CONTRIBUTION OF MOBILE PHONES TO RURAL LIVELIHOODS AND POVERTY REDUCTION IN MOROGORO REGION, TANZANIA

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ABSTRACT

This study examined the contribution of mobile phones to rural livelihoods and poverty reduction in Morogoro region, Tanzania. The study sample comprised of 310 households, 74 focus group participants and 22 key informants. Data were collected through questionnaire, focus groups, and key informant interviews and were analyzed using SPSS and Nvivo. The findings indicate that mobile phones contribute to reduce poverty and improve rural livelihoods by expanding and strengthening social networks; increase people's ability to deal with emergencies; cut down travel costs; maximize the outcomes of necessary journeys; increase temporal accessibility; and amplify efficiency of activities. The use of mobile phones also reduces costs of doing business and increases productivity by helping rural traders and farmers to secure better markets and prices; and promptly communicate business-related information. Although they enabled rural communities to generate some income through the sale of mobile phone services, the phones had not made important contribution in this aspect. It is concluded that mobile phones contribute to improve rural livelihoods and reduce poverty by providing rural households with fast and easy modes of communication, thereby increasing their ability to access livelihood assets, undertake diverse livelihoods strategies, and overcome their vulnerabilities.

Key words: mobile phones, rural livelihoods, poverty reduction, information and communication technologies, Tanzania

1. BACKGROUND INFORMATION

There have been spectacular developments in information and communication technologies (ICTs) around the world over the past few years. ICTs have penetrated virtually every segment of society and projections suggest increased penetration rates. Though distinctions are often made between new ICTs such as computers and mobile phones, and old ICTs such as radio, television, and landline telephony, the current technological convergences increasingly blur such divisions. Thus, single devices such as mobile phones can now receive, process, store and display text, image and sound together.

Notwithstanding the digital divide that differentiates those who have access to ICTs and those who do not, phenomenal growth rates in the mobile telephony sector, have made hitherto isolated communities to have unprecedented access to communication flows. In the developing world, there is evidence that many emerging mobile users are found in rural areas (Sood, 2006), and Africa has the world's fastest growing mobile phone subscriptions (ITU, 2006). In Tanzania, mobile telephony has been cited as the fastest growing ICT sub-sector, with five mobile providers in 2006 - TIGO, Zanzibar Telecom (ZANTEL), VODACOM, Tanzania Telecommunication Company Limited (TTCL) and CELTEL (now ZAIN). The

mobile teledensity[1] in the country had increased from almost zero to five between 1993 and 2006 (TCRA, 2006). Increased growth rates of mobile phones have been attributed to many factors including the liberalization of telecommunication markets; user-friendliness of the phones; the need for basic literacy in using the phones; prepayment modes; and usage of local languages in communication (Forlin, 2008; Rashid and Elder, 2009).

The link between ICTs such as mobile phones, livelihoods and poverty stems from the recognition that information is a critical factor for development purposes. Mobile phones have the potential to amplify the speed and ease, and to introduce new modes with which information is communicated. The phones can enable interactive communication flow unhindered by space, volume, medium or time, thereby influencing the existing[2] communicative ecologies (Tacchi et al., 2003). Accelerated communication of information, in the interplay with other factors, can increase productivity; enhance access to services; widen markets; simplify transactions; substitute for physical transport; prevent crime; improve governance, and create new socio-economic opportunities, among many other benefits. The linkage between mobile phones, livelihoods and poverty is also an echo of older discourses on development communication[3] that expounded on the positive links between communications, access to information and development (Butner, 2003). In addition, the enthusiasm about the potential of ICTs for Africa's development is based on a view that if many western countries experienced the positive impact of science and technology during the industrial revolution, ICTs would, on this basis, assist Africa to assail socio-economic problems (Obijiofor, 2009).

Despite the growing recognition about the livelihood-improving and poverty-reducing potential of mobile phones, the precise ways and extent to which these technologies contribute to sustainable livelihoods and poverty reduction in developing countries are still debatable. There are still divergent views over the nature and scope of contributions that mobile phones can make to people's livelihoods and their poverty reduction efforts. There are also concerns that evidence from research on the linkages between ICTs (including mobile phones), livelihoods and poverty in developing countries is still scarce (Braun and Torero, 2006; McNamara, 2008). It is argued that the available evidence on the topic is largely anecdotal and dominated by promises than reality (Kenny, 2002; Walsham and Sahay, 2006). It is also argued that much of the available evidence focuses on those who have used ICTs as a result of particular development initiatives such as telecentres. This scarcity of empirical research on the topic is partly attributable to the recent nature of mobile phones and partly to differences in the interpretations of the poverty and livelihood concepts (Souter et al., 2005).

Since there are many ways in which mobile phones can contribute to people's livelihoods and poverty reduction, understanding these linkages depends greatly on, among other things, how poverty and livelihoods are conceptualized and defined (Souter et al., 2005; Braun and Torero, 2006; McNamara, 2008). Conventionally, poverty means low income whereby the figure of US$1 income per day has been used as a general indicator of extreme poverty. In recent years however, there has been recognition that poverty has multiple causes and manifestations beyond lack of income. It includes non-material aspects such as social isolation, vulnerability, powerlessness, denial of rights, and lack of services and

[1]Teledensity is a term commonly used to describe the number of telephone lines per some unit of the population (often per 100 people).

[2]Communicative ecology refers to the processes which are seen to involve people communicating with others in their social networks, both face-to-face and using a mix of communication resources (Tacchi *et al*., 2003).

[3]Development communication refers to organized efforts to use communications processes and media to bring social and economic improvements in developing countries. The field emerged in the late 1950s amid high hopes that radio and television could be put to use in the world's most disadvantaged countries to bring about dramatic progress.

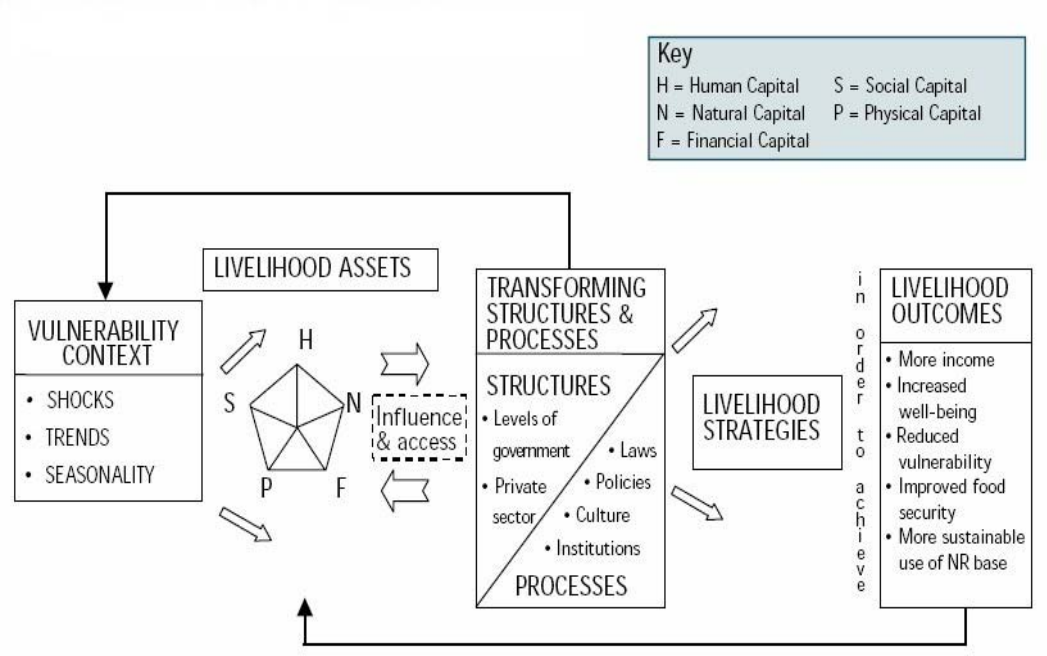
opportunities. In addition, being poor also means lack of necessary information and communication channels to convert one's own resources into value-creating activities (McNamara, 2003). The recognition of the complexity of both poverty and of poor people's response to their conditions has led to the concept of *livelihoods* - the complex set of strategies and practices that people develop to navigate poverty and the broader socio-economic conditions that reinforce that poverty. Livelihoods also entail the means, activities, entitlements and assets by which people make a living (Chambers, 1995).

In Tanzania, a few empirical studies (Goodman, 2005; Samuel et al., 2005; Souter et al., 2005; Molony, 2006, 2008) had attempted to understand the linkages between mobile phones, livelihoods and poverty reduction. Goodman (2005) studied the social impacts of mobile phones in Tanzania and South Africa and found that mobile phones were being used to maintain social networks and provide access to information on socio-economic opportunities. Samuel *et al.* (2005) assessed the socio-economic impacts of mobile communications on households, rural communities and small businesses in South Africa, Tanzania and Egypt. The authors found that mobile phones were reducing travel needs, assisting job searching, improving access to business information, and contacts with families and friends. Souter *et al.* (2005) assessed the economic impact of telephones on rural livelihoods in Mozambique, Tanzania and India. The referred study reported that the impacts of telephones on peoples' livelihoods were more evident in emergencies, social networks, and saving costs and time. However, this study weakly correlated the use of mobile phones with reduction of income poverty. Molony (2006) traced business networks in Tanzania and found out that although mobile phones were creating new forms of network, they were still far from being dominant form of network. In another paper, Molony (2008) reported that many farmers were unable to exploit new mobile phone-based services to seek information on market prices. With the exception of the study by Souter *et al.* (2005), which acknowledged the complex nature of poverty and livelihoods, the rest of the studies in Tanzania had dealt with only a few aspects of poverty. None of the studies were carried out in Morogoro region.

Considering the importance of local conditions and realities in this kind of research, this study was necessary to understand the extent to which mobile phones contribute to rural livelihoods and poverty reduction in Morogoro region. The crux of the problem was that, despite the significant penetration of mobile phones in the region, and the rhetoric of emphasis on their benefits, the precise contribution of these technologies to sustainable livelihoods and poverty reduction are not yet clearly understood. The findings reported in this paper are part of the larger study titled: *The contribution of mobile telephony, radio and television to rural livelihoods and poverty reduction in Morogoro Region, Tanzania.* It is important to note that this was a cross-sectional study that measured people's experiences with the usage of mobile phones for their livelihoods at one point in time. The study was based on the fact that in many rural areas of developing countries including Tanzania, poverty is generally pervasive and communication asymmetries are more evident.

Because of the complex and multidimensional nature of poverty and livelihoods, this study employed the Sustainable Livelihood Framework (Fig. 1), which served as an important reminder and a checklist of poverty and livelihood issues that were considered in the study. In its simplest form, the Sustainable Livelihood Framework depicts the poor as operating in a Context of Vulnerability, within which they have access to livelihood Assets. The assets gain their meaning and value through the prevailing social, institutional and organizational environment (Transforming Structures and Processes). This context decisively influences the Livelihood Strategies that are open to people in pursuit of their self-defined beneficial Livelihood Outcomes (DFID, 1999).

Figure 1: Sustainable Livelihood Framework



Source: DFID (1999)

In this study, the Sustainable Livelihood Framework provided guidance in understanding the ways to which mobile phones usage contributes to livelihood outcomes by facilitating access to information which could be used for following purposes:

- Devising appropriate coping strategies for people to become less vulnerable to trends, shocks and aspects of seasonality that affect their lives.
- Enhancing people's access to livelihood assets and increase their capability to combine different livelihood assets.
- Enhancing people's better understanding of institutions, organizations, policies and legislations that shape their livelihoods.
- Adopting and undertaking diverse livelihoods strategies.

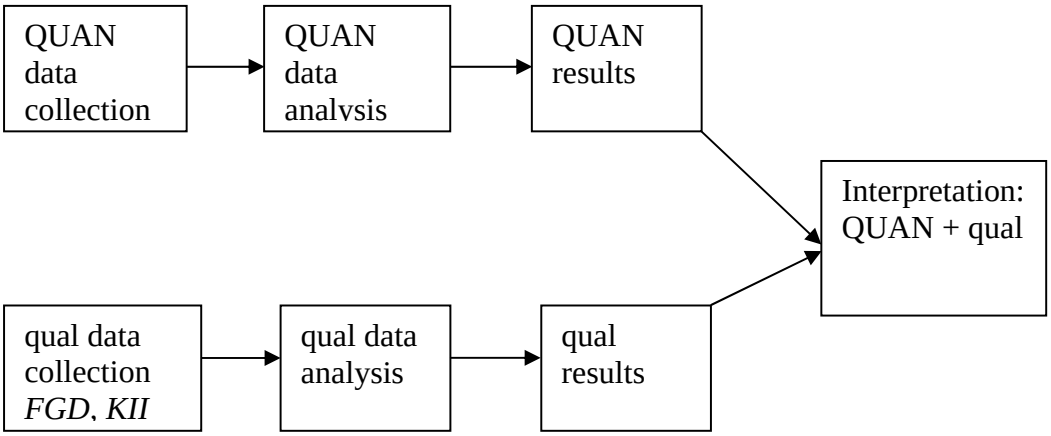
2. METHODOLOGY

This study was carried out in Morogoro region, Tanzania. Morogoro is one of the 21 administrative regions of Tanzania Mainland, located on the eastern side of the country, about 200 km west of Dar es Salaam. Administratively, Morogoro region is divided into six districts namely Kilosa, Kilombero, Morogoro rural, Morogoro urban, Mvomero and Ulanga. The basis for selecting Morogoro region as a study area was two-fold. First, during this study, the region had considerable mobile telephony developments. These developments could partly be attributed to the region's proximity to Dar es Salaam city, which has the highest ICT developments in the country. Secondly, due to the recent nature of the mobile telephony, no similar study has been carried out in the region.

Given the complex nature of the linkages between mobile phones, livelihoods and poverty, a mixed-methods design was found to be the most appropriate for this study. The study employed a *partially mixed concurrent dominant status design* (Onwuegbuzie and Collins, 2007) (Fig. 2) in which quantitative and qualitative approaches were carried out simultaneously, but with the quantitative research having a dominant status. The quantitative approach (descriptive survey) was used for the overall design of the study whereas the qualitative method (Focus Group Discussions and Key Informant Interviews) was intended to

validate and elaborate on the former. The mixed-methods design brought together the differing strengths of quantitative and qualitative methods, offset the weaknesses of each single method, and expanded the set of collected data. Alvez and Calas (1996) have emphasized the necessity to articulate multidisciplinary approaches to consider concurrently the multiple realities and subjectivities enabled by ICTs. Similarly, Carney *et al.* (1999) underscore methodological diversity to capture the many diverse elements of livelihoods.

Figure 2: Visual Diagram of the Procedures in the Study's Research Design



Key: QUAN - quantitative, qual - qualitative, + denote merging QUAN and qual data, capital letters for QUAN denote dominant status.

Source: Adapted and modified from Creswell and Plano Clack (2007)

The population for this study was made up of all households in the study area that owned mobile phones. In addition, key informants such as village leaders, extension workers, and officials responsible for ICT services in their respective districts formed a part of the study population. The study sample was drawn in four stages as follows:

i. *Selection of study districts:* Two rural districts namely Kilosa and Mvomero were randomly selected out of the five rural districts of the Morogoro region.
ii. *Selection of study divisions:* Since there is always a time lag between access to ICTs and the revelation of their effects, a total of 10 divisions (six from Kilosa and four from Mvomero district) that had mobile telephony services for more than a year were selected using stratified and random sampling techniques.
iii. *Sampling of villages:* A sampling frame of villages was compiled based on the availability of mobile telephony services. To ensure geographical coverage, identified villages were stratified based on their administrative divisions. Finally, a total of 11 villages, seven villages from Kilosa and four villages from Mvomero district were randomly selected.
iv. *Sampling of households:* The sampling units for the questionnaire-based survey were those households that had mobile phones, and respondents were the household heads. A total of 310 households were randomly surveyed in all eleven villages. This study adopted a Posel's (2001) gender neutral definition which considers household head as either a male or female adult person who usually resides in the household and is acknowledged by other household members as the household head. Households were selected as sampling units because in rural settings, most livelihood assets tend to be owned at household level.

Participants of FGDs were purposively recruited among those who participated in the questionnaire-based survey. This was necessary in order to ease the convergence of quantitative and qualitative data by avoiding characteristics of different individuals. To obtain representative groups, participants were selected based on their socio-demographic characteristics and experiences with the use of the phones. Key informants were purposively selected on the basis of them being active members of the rural community, having adequate information about the topic, and possessing a mobile phone. One FGD was planned for each village whereas two to three KIIs were planned for each village.

The field work for this study was carried out between December 2007 and March 2008. Data collection instruments were structured questionnaire, FGD and KII guides. The questionnaire consisted of dichotomous items; multiple-choice questions; and Likert type scale items. Likert scales were particularly important because the measured constructs, that is, livelihoods and poverty are quite broad and contain multiple aspects that cannot easily be measured with single items. In addition, the Likert scale was necessary because this was a cross-sectional study in which the collected data represent a snapshot of one point in time. The questionnaire was administered verbally to household heads in their domiciles. Direct administration of questionnaire (as opposed to self-administered mode) is particularly applicable to rural populations in developing countries because of their low levels of literacy (Bless and Higson-Smith, 1995; Laws *et al*., 2005). Quantitative data were analyzed using the Statistical Package for Social Sciences (SPSS) whereas the qualitative data were analyzed using NVivo. Quantitative and qualitative results are reported concurrently in such a way that the qualitative results are used to elaborate and validate the quantitative findings.

3. RESULTS AND DISCUSSION

3.1 Characteristics of the Respondents

Demographic characteristics such as age, sex and education as well as socio-economic characteristics such as household assets and livelihood activities were assessed. These characteristics provide an overview on the background of the respondents, which in turn provides an overview about the suitability of the study population. It has been pointed out that having a particular characteristic may be associated with poverty without necessarily being the source of poverty. For example, most households that depend on agriculture and livestock keeping are more likely to be poor (NBS, 2007).

3.1.1 Demographic Characteristics

The survey sample was more dominated by male (63.9%) than female (36.1%) heads of households. This is usual since the domination of male-headed households is common among African societies, most of which are patrilineal. In addition, although the questionnaire was directly administered to either male or female heads of households, it happened often that whenever both spouses were present, the wife beckoned to the husband to answer the questions. Similarly, the proportion of females that participated in the FGDs and KIIs was also low as compared to males. Less than half (45.3%) of FGDs' participants and a fifth (20%) of key informants were females. With regard to age, most household heads (86.8%) and FGD participants (69.5%) as well as half (50%) of key informants were younger than 50 years. This is an active cohort that was capable of adopting new technologies such as mobile phones. Nearly three quarters (72.6%) of household heads; more than half of FGD participants (50.7%); and key informants (55%) had primary level education (Table 1). Based on the Tanzania Household Budget Survey, households with a head educated to the primary level or below are more likely to be poor (NBS, 2007). Generally, the demographic figures in this study are characteristic to the poor rural households. Nevertheless, since using mobile

phones requires only functional literacy, it can be said that majority of those who had mobile phones had the basic level of education to make use of the technologies.

Table 1: Distribution of respondents by demographic characteristics

Demographic Characteristics		Survey (N=310)		FGD (N=75)		KII (N=20)	
		N	%	N	%	N	%
Sex	Male	198	63.9	41	54.7	16	80.0
	Female	112	36.1	34	45.3	4	20.0
Age (years)	20 -29	111	35.8	17	22.6	1	5.0
	30 – 39	100	32.3	14	18.7	6	30.0
	40 – 49	58	18.7	21	28.0	3	15.0
	50 – 59	24	7.7	14	18.7	7	35.0
	60 and above	17	5.5	9	12.0	3	15.0
Education	No formal schooling	22	7.1	5	6.6	0	0.0
	Primary education	225	72.6	38	50.7	11	55.0
	Secondary education	55	17.7	24	32.0	4	20.0
	Post secondary	8	2.6	8	10.7	5	25.0

Source: Field data (2007/8)

3.1.2 Socio-economic Characteristics

In order to understand the socio-economic status of the households, a number of household assets and livelihood activities were assessed through multiple-response questions. However, the practicability of using cash income as poverty indicator in this study was limited by its unreliability in rural areas. Obtaining accurate income data among rural households in developing countries is often difficult because rural households tend to consume their own production as food and earn very little cash income which is often seasonal, dependent on harvest, and neither systematically recorded nor monetized (Samuel *et al.*, 2005). Therefore, this study only identified households' income earning activities, and the contribution of mobile phones to livelihoods and poverty reduction was determined through such activities.

The findings show that 70% of all households had access to clean water though this was mostly available outside the respondents' homes. Only a few (19%) households were connected to the electricity grid. Apart from bicycles which were owned by nearly two-thirds (62.9%) of households, the ownership of other means of transport was very low. With regards to housing quality, the great majority (84.2%) of the houses were constructed of mud bricks and roofed with corrugated iron sheets (Table 2). In terms of livelihood activities, the most frequently occurring livelihood activity was crop farming (87.1%) followed by livestock keeping (59.7%). There was also a proportion (41.9%) of the respondents involved in small businesses such as running small shops, tea rooms, brewing local beer, as well as buying and selling crops. Only 10% of the respondents had formal employment with the majority being primary and secondary school teachers. Like in the case of demographic characteristics, these figures are socio-economic characteristic to rural households which are generally poor.

Table 2: Distribution of Respondents by Household Assets and Livelihood Activities

Household assets and livelihood activities	No of respondents (N=310)	Percentage
Services		
Protected water	217	70
Electricity	58	18.7
Means of transport		
Car	10	3.2
Motor cycle	17	5.5
Tractor	7	2.3
Bicycle	195	62.9
Housing quality		
Cement brick walled with corrugated roof	6	1.9
Mud brick walled with corrugated roof	261	84.2
Wooden walled with corrugated roof	4	1.3
Wood and mud wall with corrugated roof	18	5.8
Mud brick walled with thatched roof	16	5.2
Wood and mud wall with thatched roof	5	1.6
Principle sources of income		
Crop farming	270	87.1
Livestock keeping	185	59.7
Business	130	41.9
Salaried employment	31	10.0

Source: Field data (2007/8)

3.2 Contribution of Mobile Phones to Rural Livelihoods and Poverty Reduction

The respondents were presented with items connected to different aspects of livelihoods and poverty to indicate the extent to which mobile phones had contributed to each aspect. These poverty and livelihood aspects (presented in Table 3) were drawn from various components of the sustainable livelihoods framework. That means, specific items were set to capture respondents' experiences on the nexus between mobile phone usage and aspects related to: vulnerabilities; capital assets; structures, processes and institutions; livelihoods strategies; and livelihoods outcomes.

The results are presented in a descending order, which was obtained by computing, for each item, a mean score based on a four-point Likert type scale (1= worsened, 2 = no change, 3 = improved, 4 = greatly improved). The mean scores help to show the direction of the responses. For the purpose of this study, a mean score of 2.5 and above were used to denote that mobile phones had positive contributions whereas a mean score below 2.5 were used to denote negative contributions. Cronbach Alpha coefficient for each score ranged from 0.71 to 0.75, with the overall alpha of 0.75, suggesting that the items were suitable for measuring respondents' experiences. The Cronbach alpha coefficient normally ranges between 0 and 1, meaning that the closer the coefficient is to 1, the greater the internal consistency of the items (Cronbach, 1951). A widely accepted cut-off is that alpha should be 0.70. Percentages of responses for each item are also depicted (Table 3).

Table 3: Contribution of Mobile Phones to Rural Livelihoods and Poverty Reduction

				Percentage of Respondents				
Livelihood and poverty aspects	Poverty & livelihood aspects	Cronbach alpha	N	Worsened	No change	Improved	Greatly improved	Mean score
Relationships/contacts with friends/relatives	S	0.73	310	0.0	8.7	30.6	60.6	3.5
Efficiency of your daily activities	H	0.71	310	0.0	14.2	32.9	52.9	3.4
Help in case of emergencies	V	0.72	310	0.0	13.9	50.0	36.1	3.2
Transport (travelling and transport of goods and services)	F/S	0.73	310	0.0	17.4	51.6	31.0	3.1
Status of your business	F	0.72	182	0.0	27.5	42.9	29.7	3.0
General security in the neighbourhood	V	0.72	310	0.0	29.0	50.0	21.0	2.9
Market information for your agricultural/livestock produce	F	0.73	294	0.0	41.2	42.9	16.0	2.7
Arranging social functions	S	0.72	310	0.0	51.0	25.8	23.2	2.7
Sending/receiving money	F	0.73	293	0.3	49.5	28.3	21.8	2.7
Your household income	F	0.71	310	3.5	42.9	39.0	14.5	2.4
Communication with government departments	PIP	0.74	310	0.0	70.0	21.0	9.0	2.4
Membership in groups/networks	S	0.73	291	0.0	74.9	17.9	7.2	2.3
Status of your culture	S	0.75	310	4.8	85.5	8.1	1.6	2.1

S= social capital, F = financial capital, H = human capital, V = vulnerability, P = physical capital, PIP = Processes, Institutions and Policies
Source: Field data (2007/08)

3.2.1 Mobile Phones and Social Relationships

Expanding and strengthening social networks was the most important benefit of using mobile phones as nearly all (91.2%) respondents indicated that mobile phones had either improved or greatly improved their relationships and contacts with friends and relatives. A mean score of 3.5 on a four-point Likert scale indicates highly positive responses (Table 3). Further inquiry during KIIs and FGDs revealed that social benefits of mobile phones were also linked to reduced physical visits and increased temporal accessibility. These findings support earlier studies (Goodman, 2005; Souter et al., 2005; Frost and Sullivan, 2006; Kwaku and Kweku, 2006 and de Silva and Zainudeen, 2007) which found that mobile phone adoption leads to greater social cohesion, decrease the feeling of isolation, and improve social relationships. These findings therefore suggest that mobile phones were enabling rural households in Morogoro region to overcome vulnerabilities related to social exclusion. The phones were also reducing travel time and monetary costs; decreases physical risks; and increases the outcomes of those necessary journeys. Furthermore, increased temporal accessibility enables people to manage several activities regardless of their physical location.

3.2.2 Mobile Phones and Efficiency of Daily Activities

The link between mobile phone usage and efficiency of daily activities also produced highly positive responses, with a mean score of 3.4 on a four-point Likert scale. Overall, nearly four-fifth (79.4%) of the respondents admitted that the efficiency of their daily activities had been either improved or greatly improved (Table 3). These results tally with the opinions from KIIs and FGDs in which participants reported that mobile phone usage had enabled them to concurrently handle several livelihood activities efficiently. In a similar study, de Silva and Zainudeen (2007) found that many poor people strongly perceived that the efficiency of their daily activities had somewhat improved due to telephone ownership. Considering that often rural households depend on a portfolio of income sources and activities, these findings suggest that mobile phones can enable people to draw complex interactions between social and productive activities and coordinate geographically distant activities. This implies that the use of mobile phones allow rural households to engage in many activities, something that can be translated into improved income earning and cost savings.

3.2.3 Mobile Phones and Emergencies

Getting support during emergencies was also the most important value of mobile phone usage, with a mean score of 3.2. In total, almost three-quarters (72%) of the respondents believed that mobile phones had enhanced (improved or greatly improved) their ability to deal with emergencies (Table 3). FGDs and KIIs revealed that in Twatwatwa village, where the major ethnic group is the Maasai pastoralists, mobile phones were used to inform the police and other villagers whenever cattle robbery occurred. The phones were also used to consult distant veterinarians in case of livestock problems. These findings confirm earlier studies (Idowu et al., 2003; Souter *et al.*, 2005; Gordon, 2007; de Silva and Zainudeen, 2007) which cited mobile phones as very important devices for communicating emergencies in a wide range of situations.

Since there is overall lack of necessary social services in many rural areas, the findings in this study suggest that mobile phones can be used to seek for help during urgent situations. For example, FGDs revealed that some villagers had doctors' and nurses' phone numbers that were being used to seek for medical consultation. In Rubeho village, FGD participants reported that events of maternal mortality had dropped in their village because people were using the phones to request for transport to hospital. A key informant in Mvomero village, who was a nurse in the local dispensary, explained that she had been receiving several phone calls seeking medical advice. In another KII in Msowero village, an elderly woman who suffered from hypertension and diabetes explained that her children living in Dar es Salaam city had given her a phone to call for help whenever she falls ill. Similarly, as cattle robbery and mortality are common problems among pastoral communities in Tanzania, mobile phones were used to overcome such problems. Generally, mobile phones are regarded as a safety value in the moments of shocks.

3.2.4 Mobile Phones and Transport

Over 70% of the respondents indicated that the use of mobile phones had a positive (improved or greatly improved) impact on travelling and transportation issues (Table 3). Mobile phones were used to cut down the need to travel or simplify travelling and transport arrangements, thereby saving time and money. For instance, during this study, a one-way bus fare from Rubeho village in Kilosa district to Morogoro town (about 70 km) was about 5000 Tanzanian shillings (this was equivalent to US$ 5). This amount of money was equivalent to more than 10 minutes air time, which for many rural phone users would help them to make several phone calls. In addition, using mobile phones to make travel and transport

arrangements makes travel time more productive. However, it should be noted that the availability of mobile phones does not replace a need for a better transport infrastructure.

3.2.5 Mobile Phones and Business Activities

The study findings indicate that mobile phones have significantly changed the way rural businesses are being conducted. Of 182 respondents who answered the question on the contribution of mobile phones to their businesses, nearly three quarters (72.6%) reported that their business activities were positively (improved or greatly improved) affected (Table 3). KIIs and FGDs revealed that in some cases, instead of travelling to Morogoro town or to Dar es Salaam city to buy goods, traders could check goods and prices with different shops, make orders by using mobile phones, and arrange payments through local buses or nearby banks at Kilosa and Mikumi towns. The findings therefore suggest that mobile phones are improving business activities by helping rural traders to find better market and price information, making advance arrangements with suppliers and customers, as well as saving time and money by avoiding unnecessary travel. Since, business is an information-rich activity, the main value of mobile phones in improving rural businesses lies in the ability to promptly communicate business information, reduce costs, and speeding up transaction processes.

3.2.6 Mobile Phones and Market Information for Agricultural Produce

Of 294 respondents who answered the question on the contribution of mobile phones to market information for agriculture and livestock produce, more than half (58.9%) said that mobile phones had enhanced (improved or greatly improved) their ability to access such market information (Table 3). Additionally, FGD and KII participants reported that they had been using mobile phones to directly discuss prices with buyers and crosscheck prices for their produce, instead of relying on middlemen or a few buyers. Mobile phones were also reported as being of great help when making decisions on the best time to sell crops and animals as farmers could have instant information about prices. These findings suggest that mobile usage enables rural farmers to access to better markets and prices for their produce and were able to overcome the problem of being cheated by middlemen. Previous studies (Molony, 2006; 2008) have indicated that farmers have often complained about the low prices for their produce. They often felt that they are being cheated by the middlemen, who rarely reveal market prices.

3.2.7 Mobile Phones and Coordination of Social Events

Almost half (49%) of the household heads reported that mobile phone usage had either improved or greatly improved coordination of social activities such as marriage ceremonies, burials, meetings, and religious activities. Coordination of social events was mostly achieved through for example, sending short messages to multiple recipients. A pastor who was interviewed in-depth in Rubeho village explained how he had been sending short messages to notify church committee members to attend meetings, and to arrange collective church activities with pastors in other villages. These findings therefore suggest that the use of mobile phones reduces financial and time costs associated with coordination of social activities. Considering the communal, cooperative and collective culture available in most African societies, mobile communication can be used to enhance the social capital, upon which people draw in pursuit of their livelihood activities.

3.2.8 Sending and Receiving Money through Mobile Phones

Of 293 respondents who responded to the question about sending and receiving money through mobile phones, half (50.1%) of them reported that mobile usage had enhanced

(improved or greatly improved) their abilities in sending and receiving money (Table 3). Although the use of mobile services (m-services) for sending and receiving money was not yet introduced in the country during this study, FGDs and KIIs results revealed that mobile phones were already being used for transactions by swapping airtime for cash, goods and services. People could buy prepaid mobile phone cards, and send the codes to others via short messages and the recipients could then sell the codes. Unfortunately, this system is unsuitable for exchanging large amounts of money.

Qualitative responses (FGDs and KIIs) also found that mobile phones were enabling arrangements to remit money through social networks. People could send money through buses to their relatives and to their school children at distant places and use mobile phones to inform the recipients and monitor the status of these transactions. In this way, the risk of sending money through buses could be reduced. It is widely known that in many developing countries theft, cheating and delays in delivering money are common incidents when money is sent by traditional means of remittances such as via friends and relatives. These findings are consistent with those of McNamara (2008) which indicate that remittances were being facilitated through mobile communications in rural areas of developing countries.

3.2.9 Mobile Phones and Household Income

Questions on the contribution of mobile phones to household income produced mixed findings. On one hand, more than half (56.5%) of household heads indicated that mobile phones had not improved their household income (Table 3) while on the other qualitative (FGDs and KIIs) results revealed that rural households were able to cut down many costs, especially those related to travelling. Only a few households were earning some money through selling mobile phone-related goods and services such as recharge voucher (10.6%), making phone calls and sending SMS (9.7%), charging phone batteries (5.5%), and repairing mobile phones (1.0%) (Table 4). These findings suggest that mobile phones can provide both direct (selling mobile phone services) and indirect income (monetary and time savings). However, the fact that only a small proportion of respondents (43.5%) indicated that their household incomes had improved and that very few households were earning some money through selling mobile phone-related goods and services suggests that the phones have not made notable contributions to improve household income.

Table 4: Distribution of Respondents by Mobile Phone-Related Goods and Services

Goods and/or services	No of respondents (N=310)	Percentage
Selling recharge voucher	33	10.6
Selling air time (making calls, beeps, SMS)	30	9.7
Charging phone batteries	17	5.5
Repairing mobile phones	3	1.0
Selling mobile phones	2	0.6

Source: Field data (2007/08)

4. CONCLUSION

The findings in this study have shown that mobile phones provide rural households with fast and easy modes of communication, thereby increasing their ability to access livelihood assets, undertake diverse livelihoods strategies, and overcome their vulnerabilities. The phones contribute to reduce poverty and improve rural livelihoods through a number of ways. First, by expanding and strengthening social networks; increase people's ability to deal with emergencies and to work together thereby reducing costs and increasing productivity. Secondly, mobile phones enable rural people to cut down travel costs; minimize physical risks; maximize the outcomes of necessary journeys; increase temporal accessibility; amplify efficiency of activities; and send and receive money. Thirdly, mobile phones help rural traders and farmers to secure better markets and prices; save time and money; and promptly communicate business-related information. However, mobile phones have not made important contributions to improve incomes of rural households.

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