

# THE ROLE OF MOBILE PHONES ON SUSTAINABLE LIVELIHOOD

*By Abdallah K. Hassan and Dora Semkwiji*

ESRF DISCUSSION PAPER No. 33



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## LIST OF ABBREVIATIONS

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|         |                                                         |
|---------|---------------------------------------------------------|
| ACBF    | African Capacity Building Foundation                    |
| AIDS    | Acquired immune deficiency syndrome                     |
| CSOs    | Civil Society Organisations                             |
| ESRF    | Economic and Social Research Foundation                 |
| FGDs    | Focus Group Discussions                                 |
| GSM     | Global System for Mobile                                |
| ICT     | Information and Communication Technology                |
| ITU     | International Telecommunication Union                   |
| MDGs    | Millennium Development Goals                            |
| MKUKUTA | Mkakati wa Kukuza Uchumi na Kupunguza Umaskini Tanzania |
| NGO     | Non-Governmental Organisation                           |
| NPES    | National Poverty Eradication Strategy                   |
| NSGRP   | National Strategy for Growth and Reduction of Poverty   |
| SMS     | Short Messages Services                                 |
| TCRA    | Tanzania Communication Regulatory Authority             |
| TDV     | Tanzania Development Vision                             |
| TTCL    | Tanzania Tele-Communication Limited                     |
| UNDP    | United Nations Development Programme                    |
| WRI     | World Resource Institute                                |

## 1.0 INTRODUCTION

---

### 1.1 Background Information

Information, Communication and Technology (ICT) are key factors in socio-economic development. Access to relevant information and knowledge improves efficiency and productivity; enhances social services delivery; increases access to market opportunities; and improves government performance, among others (UNDP, 2001b)<sup>1</sup>. For these reasons, ICT - mobile phone technology included - has been considered such vital that in most developing countries including Tanzania, it has been incorporated in the poverty alleviation and other socio-economic development strategies.

### 1.2 Global Status of Mobile Phone Sector

Mobile phones have become one of the main primary forms of telecommunication worldwide. It has been estimated that over 50% of the world's population was expected to own a mobile phone and that 80% of the world's population to be living within the range of a cellular network, by the end of 2008 (GSMA, 2007).

Several factors have contributed to the rapid growth in mobile phone subscribers. These include: (i) the relatively low cost of adding new subscribers to the cellular network (mobiles are much more scalable than fixed-line phones), (ii) the high premium placed on mobility by consumers, (iii) the strong presence of the private investors in mobile phone provision, as rising demand by consumers has boosted profits for manufacturers and operators alike, and lastly (iii) the growing favorable regulatory environment fueling this exponential growth.

According to Wireless Intelligence report<sup>2</sup>, mobile phone connections in Africa passed 280 million in the opening quarter of 2008; overtaking the United States and Canada with their 277 million connections. In 2007, growth of 38% made Africa the fastest growing region in the world, ahead of the Middle East (33 percent) and the Asia-Pacific region (29 percent).

On the other hand, two-thirds of Africa's national markets for mobile telephony are in their early phase of development, with penetration rate below 30 percent at the end of 2007. Those markets represent 28 percent of the total connections in the region over the same period. In contrast, most European markets have penetration rate close to 100 per cent.

Most of the fastest growing markets in Africa are located in northern and western Africa, which represent altogether 63 per cent of the total connections in the region. The most highly competitive markets include Nigeria, Zambia, Tanzania, the Democratic Republic of the Congo, Kenya, Tunisia, Algeria, Ghana and South Africa.

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<sup>1</sup> UNDP Human Development Report (HDR) 2001

<sup>2</sup> <http://www.wirelessintelligence.com>

### 1.3 Mobile Phone Industry in Tanzania

Like in other developing countries, in Tanzania ICT is regarded as an important tool for accelerating poverty reduction through its role in raising productivity, generating economic growth, creating jobs, facilitating learning, knowledge sharing and global information flows (ESRF: 2007). According to Tanzania Development Vision (TDV) 2025, Tanzania is expected to become a knowledge-based society, with a vision to have a universally accessible broadband infrastructure in ICT as well as expertise that enhance sustainable socio-economic development and accelerated poverty reduction; and to become the ICT development hub regionally (TDV 2025). To date there is remarkable progress towards this goal (ESRF: 2007).

Mobile phone technology in Tanzania has been growing at an amazing pace in terms of both the number of service providers as well as that of the users (table-1). Due to this growth, the Tanzanian government through the act of Parliament (2003) established the Tanzania Communication Regulatory Authority (TCRA) to regulate communication and broadcasting activities. By 2009, a total of six (6) mobile phone service providers were issued communication licenses by TCRA. These providers are TIGO, Zanzibar Telecoms (ZANTEL Mobile), Vodacom, Benson, TTCL (Mobile) and Celtel - now known as Airtel. In addition to that, two fixed line companies i.e. Tanzania Tele-Communication Limited (TTCL) and Zanzibar Telecoms (ZANTEL) have been operating along with the existing mobile phone service providers. Table 1 below shows the 2009 status of mobile phone services.

**Table 1: Mobile Phone Subscriptions per Service Provider in Tanzania-2009**

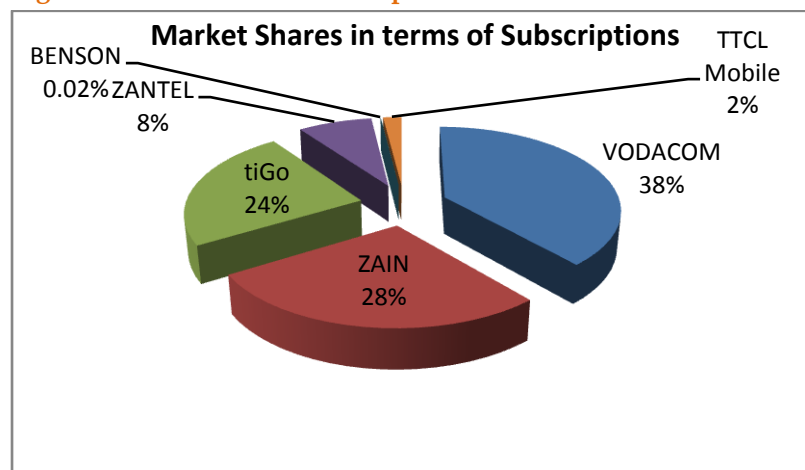
| Year | Benson | Celtel<br>(Zain/Airtel) | TIGO      | TTCL<br>Mobile | Vodacom   | ZANTEL<br>Mobile | TOTAL      |
|------|--------|-------------------------|-----------|----------------|-----------|------------------|------------|
| 2000 | -      | -                       | 56,511    | -              | 50,000    | 4,007            | 110,518    |
| 2001 | -      | -                       | 89,056    | -              | 180,000   | 6,501            | 275,557    |
| 2002 | -      | 120,089                 | 160,000   | -              | 300,000   | 26,770           | 606,859    |
| 2003 | -      | 320,000                 | 210,000   | -              | 700,000   | 68,000           | 1,298,000  |
| 2004 | -      | 504,000                 | 303,000   | -              | 1,050,000 | 85,000           | 1,942,000  |
| 2005 | -      | 882,693                 | 422,500   | -              | 1,562,435 | 96,109           | 2,963,737  |
| 2006 | -      | 1,516,832               | 760,874   | 6,390          | 2,975,580 | 355,246          | 5,614,922  |
| 2007 | 3,300  | 2,505,546               | 1,191,678 | 72,729         | 3,870,843 | 678,761          | 8,322,857  |
| 2008 | 3000   | 3,862,371               | 2,569,527 | 105,804        | 5,408,439 | 1,057,652        | 13,006,793 |
| 2009 | 3,101  | 4,910,359               | 4,178,089 | 115,681        | 6,883,661 | 1,378,595        | 17,469,486 |

**Source:** Calculated from the Operators Monthly Subscriber base reports compiled by TCRA 2009<sup>3</sup>

The rapid expansion of mobile phone usage in Tanzania has been triggered by a highly competitive market and service diversification, with the operators now providing different mobile phone services such as voice and message transmission, data services, paging as well as Internet services. In terms of market shares, Fig-1 below shows that different companies, namely Vodacom and Zain (former Celtel) Zain/Airtel, tiGO and others are faring quite well.

<sup>3</sup> <http://www.tcra.go.tz/publications/telecom.html>

**Figure 1: Market Subscriptions Shares in 2009:**



*Source: TCRA 2009*

#### 1.4 The Underlying Challenge and the Opportunities Brought by ICT

The underlying expectation in ICT development with special reference to mobile phone technology is that it would enhance socio-economic activities for the poor (ITU 2005)<sup>4</sup>. However, despite the ICT development in general and the rapid rise of mobile phones in particular in Tanzania, there is less certainty on the extent of mobile phone technology contribution toward poverty reduction. According to the Household Budget Survey (2007), the proportion of the population below the basic needs poverty line in Mainland Tanzania was 33.6% in 2007, with 37.6% in rural areas and 24.1 % in urban ones.

According to the UN Millennium Development Goals (MDGs), it was intended to eradicate extreme poverty in Tanzania (as echoed also in NPES 1997)<sup>5</sup> by halving extreme poverty (measured by income and expenditure) by 2010 (NSGRP targets) and eradicating it by 2025 (MDGs targets), which corresponds to the time span of the national development vision 2025.

In fact, following the new opportunities unleashed by the ICT, the goals of Vision 2025 as well as those of the TZ-MDG on poverty eradication seem to be in sight. New opportunities for prosperity accompanying ICT development in general and mobile phones in particular, have been created that embody enormous knowledge for empowering people; significantly reducing business transaction costs, enhancing changes in the structures of markets and of public services and institutions, integrating global and local markets, freeing-up human resources and immediately increasing the potential of human capital. Furthermore, the technology promises to generate incomes to the households if it is used for such purposes and thereby help in reducing poverty in rural areas.

<sup>4</sup> (ITU 2002) Report ICT teledensity.

## 1.5 Objectives and Purpose of the Study

Despite the optimism on the opportunities that the mobile phones have opened, the persistence of poverty in the country is a troubling concern. It is for this reason the current study was initiated: to analytically assess how people use mobile phone technology to enhance their living; and thus to assess the impact on livelihoods. Furthermore the study aimed at revealing mobile phone usage patterns among rural and urban people. Lastly, the study aimed at identifying constraints to effective use of these phones.

More precisely, this study investigated the impact of mobile phone technology on people's income generating activities and in facilitating access to various social services. Lastly the study addressed the need to have a comprehensive profile in the country on the mobile phone technology use and its impact.

## 2.0 THE CONCEPTUAL FRAMEWORK

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### 2.1 The Role of ICT in Development

Information technology has been identified as one of the determinants of growth in the globalizing economy where the world is moving towards knowledge-based economic structures and information societies (Oshikoyo & Hussain; 1999)<sup>6</sup>. In such a world, competitiveness is premised on access to information technology and knowledge rather than to natural endowments. This development trend provides Africa with opportunities and challenges for making progress with accelerated growth and poverty reduction. In Africa it is believed that ICT can contribute to fast agricultural and rural development if it is refocused to reduce subsistence farming and food security (Hafkin: 2003)<sup>7</sup>.

According to Accascina (1999)<sup>8</sup>, ICT helps to decrease poverty and foster knowledge and trade. Moreover through appropriate enabling environment, ICT can contribute in creation of and access to services, products, markets, and employment, all gravitating around IT, the Internet, data processing and telephones. Furthermore, ICT can be used in managing efficiency, creation and delivery of information related to sector services such as health, education, agriculture, transport and other services.

On the other hand ICT comes also with some negative impacts that can hinder development in developing countries (Belanger: 2003) including Tanzania. The low levels of income for the majority of the population blocks access to the web. According to the Economic Commission for Africa (2000), there are about six requirements to be met if ICT is to be of real importance in most developing countries. These include modern telecommunication infrastructure (preferably digital technology) with international connections; an adequate Tele-density (i.e. the number of telephone lines per 100 inhabitants); reliable domestic electricity supplies and well developed national technology infrastructure; an adequate level of computer literacy and computer density and lastly sufficient interest on the part of local and international private sector organizations to invest in the ICT facilities and services.

In Tanzania for example, effective adoption and use of ICT requires basic infrastructure like electricity, which is badly missing in many rural areas. It is also important to note that unless there is a critical mass of ICT adopters, its value for business is greatly compromised. (Metcalf's law). Consequently, many more people should be facilitated to access and use ICT to make it commercially viable in the country. However, a lot more needs to be done to ensure reliability, affordability, availability and usability of the mobile phones.

Another prerequisite is in improving the capacity of users at three levels. The first one is basic literacy (i.e. Ability to read and write). The second condition is language. Most of the activities on ICT

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<sup>6</sup> Oshikoyo and Hussain (1999): *Information and the Challenge of Economic Development in Africa*. Economic Research Paper No. 36, African Development Bank

<sup>7</sup> Hafkin (2003): *Gender, Information Technology and Rural Development*. Presentation to the World Bank

<sup>8</sup> Accascina (1999): *Information and Development Technologies for Development in the Arab States*. Working Paper Series. UNDP

systems are conducted in global languages such as English, French, Spanish, etc, which are not widely spoken by Tanzanians. People who lack these skills are greatly disadvantaged. The third condition is technological literacy (i.e. the technical competence to use the technologies).

For Tanzania to benefit from ICT, people have to process the capacity to harness the advantages of the technology. It is critical, therefore, that capacity development initiatives be undertaken to address this need. Such initiatives would include but not limited to: (i) Early introduction of ICT to children, (ii) Compulsory ICT classes in the school curricula, especially at secondary school level, and (iii) Demystifying ICT through specialized programmes, such as computer holiday camps where skills can be developed by sharing of knowledge. But for all this to happen, intervening difficulties have to be surmounted, e.g. by providing, as already mentioned above adequate modern telecommunication infrastructures, reliable electricity supplies, computer literacy, e.t.c. as well as actively supporting investments to expand physical access to ICT to the population, inter alia to boost teledensity. By 2009, 43% of the population was connected somewhat by telephone lines (TCRA, 2009).

## 2.2 Mobile Phone Technology in Tanzania

Since 1990s the telephone services in Tanzania was mainly depending on the fixed line, and was very unreliable. The service was provided by the Tanzania Telecommunication Company (TTCL) especially in large cities. However, since 1994 mobile phone technology started to improve. By 2005 a total of six mobile companies had been registered; they focused their coverage initially to highly populated areas especially big towns to maximize profits (TCRA; 2005). Nevertheless, with the increasing activities in mining, commerce, national parks, tourism and small towns in rural areas, the business expanded and service providers gradually directed attention to rural and peri-urban areas as well.

To-date TCRA (and the former Tanzania Communications Commission) have so far issued Communication Licenses to the following companies-

- ❖ Forty-Seven (47) broadcasting radio stations by the year 2006,
- ❖ Twenty-Nine (29) Television stations by 2006
- ❖ Six (6) mobile cellular Network Operators; tiGo, Zain, Vodacom, Zantel- Mobile, TTCL-Mobile and Benson Ltd by 2009

Following the above development, over 10 percent<sup>9</sup> of Tanzanians were owning mobile phones by 2009 (TCRA), 17 percent of Dar es Salaam population, 10 percent in other urban areas, and 4 percent of rural population.

This access to mobile phone does not depend absolutely on whether the people are rich or poor. According to the study conducted by the World Resources Institute (WRI) and the International Finance Corporation (IFC), even very poor families tend to use their meager resources to buy cell phones and airtime (WRI,IFC: 2007). Furthermore it is reported that as the family's income grew -

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<sup>9</sup> This figure should be taken with caution as Table-1 shows a figure of subscribers of 17.46 million equal to about 45.5% of total population in 2009, which should however be discounted due to some people owning more than one phone and others keeping only the sim cards.

from \$1 per day to \$4, for example – expenditure on ICT related products increased faster than spending in any other category such as education, health, and/or housing. This implies that the mobile phone is accessed even by the relatively poor in developing countries, like Tanzania.

## 2.3 The Impact of Mobile Phones in Development

Mobile telephony has been credited to have positive impact on both economic and social welfare. Economically the impact has been manifested in many different ways, such as generating income (boosting GDP); creating jobs (both in the mobile industry and the wider economy), increasing productivity in different areas and providing public revenues through taxation from mobile operators. Different sources have explained this phenomenon, viz. Mobile phone technology being one of the most important sources of GDP in both developed and developing countries (Waverman, 2005; Deloitte, 2008; Ovum, 2006 and McKinsey, 2007). It is reported that an increase of 10 mobile phones per 100 people in a typical developing country, would boost GDP growth by 6% (Vodafone, 2005). Generation of employment is another economic element considered (Ovum: 2006 and Deloitte: 2008).

In addition to the above benefits, the use of a mobile phone can itself produce follow-on economic and social benefits. These include enhancing entrepreneurship, reducing information asymmetries and market inefficiencies and substituting transportation (Jensen -2007). According to Chip Chase (2006), mobiles reduce the cost of running a business - and may even induce and enable a user to start one. Mobile phone can also enable home “distance working” potential in which people can offer services to distant companies from the comfort of their own premises.

In a study carried out by Jonas Myhr on ‘livelihood changes enabled by mobile phone’ in Tanzania, it was demonstrated that increased access to information through the use of mobile phones by fishermen in Tanzania resulted in empowering them through increased bargaining power as well as on knowledge about market opportunities (Myhr 2006).

In Tanzania efforts to eradicate poverty advocated by ICT Policy, Vision 2025 and MKUKUTA using ICT and specifically the Mobile phones, can in many ways to do that by:

- ❖ Facilitating the convergence of local and global knowledge and disseminate it to the rural areas so as to improve economic production capacity in the settings in which many of the poor live;
- ❖ Supporting the documentation of the hybrid knowledge developed from the convergence into explicit knowledge components, which are easy to transmit and store;
- ❖ Enabling the modernization of agriculture practices so as to improve yields, processing, marketing, sales and storage of the produce harvests;
- ❖ Facilitating fast, reliable, and affordable means of communication and information exchange;
- ❖ Providing new investment and revenue streams through establishment of the tele centres and other digital ventures.

Lastly there are other benefits from mobile phone technology that are not tangible. These normally are difficult to measure in terms of value. They may not have direct economic benefit, but they certainly enhance and promote the growth of culture, society and societal ties. One of these benefits is the social capital or social cohesion. In a study of communities in South Africa and Tanzania Goodman (2005) found that there are links between mobile phone usage, rural communities and social capital.

## 2.4 Conceptual Framework

This section explains the conceptual framework which was used to measure the impact of mobile phone in people's livelihood in this study. This framework conceptualizes a clear and direct relationship between the use of mobile phone technology and changes in people's livelihood. Mainly it was undertaken using a positivist, survey-based approach that requires identifying people both using and not-using the technology and to analyze their living standards, the levels of their livelihoods before and after using the mobile phones.

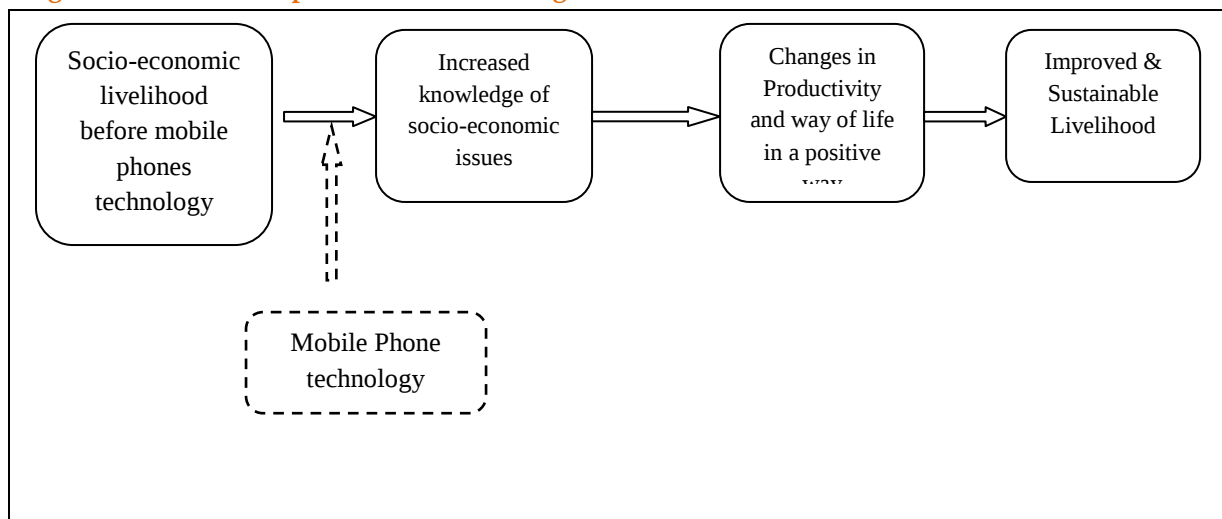
Adopted from Bertrand *et al* (2006), Communication – for – Development (C4D) model, this framework analyzes the cause- effect link whereby the independent variable is the mobile phone technology and the dependent variable is the livelihood itself defined as '*livelihood systems*' within which various factors effect the strength, resilience and vulnerability of people's ways of life<sup>10</sup>. The impact assessment therefore involves figuring out how the mobile phone technology impacts livelihood in terms of increased or decrease in knowledge over socio-economic aspects important for improved livelihood. This knowledge is expected to influence people' productivity hence changes their livelihood in a positive way.

This study also regards as important the issue of sustainable *livelihood*, conceptualized as a standard of living that is sustained and not shaken by any force either internal or external, including the onset of the mobile phone phenomenon. The study measures impact of mobile phone technology to people's livelihood using benchmarks discussed by InfoDev as adopted by McNamara. These include the increased opportunities to access resources and use capabilities via improved access to information; empowerment through information about choices that affect people and decreased vulnerability to risk due to the possibility to send and receive information via mobile phones (McNamara, 2003; Ludtig & Stern: 2000). The framework used in this study is presented in Figure 2.

---

<sup>10</sup> MRAG/DFID. 2006. 'Fisheries and poverty reduction', FMSP Policy Brief 4, London: MRAG Ltd. [http://www.fmsp.org.uk/Documents/keylessons/FMSPBrief1\\_Povert %20Reduction.pdf](http://www.fmsp.org.uk/Documents/keylessons/FMSPBrief1_Povert%20Reduction.pdf)

**Figure 2: Conceptual Framework Diagramme**



*Source: Modified from the C4C Model adopted from Bertrand et al. 2006.*

## 3.0 THE STUDY APPROACH AND METHODOLOGY

### 3.1 Research Topic

As indicated in the preceding sections, the significance of telecommunications and other ICTs in contributing to social and economic development cannot be understated. Access to the telephone has become much more widespread in Tanzania as a result of the spread of mobile wireless networks.

This study looked into the use of mobile phones and how they benefit the population, through both direct application to people' livelihood needs and challenges as well as through their role as enablers for empowerment, economic growth and job creation.

### 3.2 Research Location and Respondents:

#### 3.2.1 The Research Area:

This study was conducted in two regions, Arusha in Tanzania Mainland and Unguja in Tanzania Island (Zanzibar). The two regions were purposively selected basing on their economic activities which range from business, agriculture, fishing to tourism. These economic characteristics made the researchers *a priori* believe the regions to be good location choices for the study to be able to capture different patterns of mobile use by people with different socio-economic backgrounds and activities.

Although the initial plan was to collect data from two districts in each region, limited resources in terms of time and money forced the research team to select only one district in Arusha region and two in Zanzibar owing to its geographical convenience. The districts were purposively selected based on their population size. Arumeru district was selected for Arusha region and Unguja Urban and Unguja West for Urban West region in Zanzibar. According to *Tanzania 2002 Population and Housing Census*, Arumeru district had the highest population size in Arusha (514, 651 people) while in Zanzibar the highest populated district is Unguja Urban (205,870 people) followed by Unguja West (184,204).

**Table 2: Study Area and Sample Distribution:**

| Region   | District Visited | Wards selected | Sampled Households | FGD Discussants |
|----------|------------------|----------------|--------------------|-----------------|
| Arusha   | Arumeru          | King'ori       | 21                 | 10 (Fem=4)      |
|          |                  | USA River      | 26                 |                 |
| Zanzibar | Unguja Urban     | Meya           | 30                 | 29 (Fem=11)     |
|          | Unguja West      | Mwanakwerekwe  | 26                 | 22 (Fem=9)      |
|          |                  | <b>Total</b>   | <b>103</b>         |                 |

*Source: Field Data, 2009*

The actual data collection process was done at ward level whereby within these selected districts, four wards were purposefully selected for data collection. The selection criteria were the size of population and its location for easy accessibility. Therefore in Arusha region, the Arumeru district was represented by King'ori ward (rural) and USA River ward (Semi urban). In Zanzibar, Unguja West

district was represented by Mwanakwerekwe (Shehia<sup>11</sup>) ward while Meya ward represented Unguja Urban district. Both wards in Zanzibar are in semi-urban areas.

### **3.2.2 The Research Team:**

Data collection task was done by a research team from ESRF. This team comprised of 6 researchers, namely John Kajiba, Dora Semkwiji, Senorine Libena, Abdallah Hassan, Evonne Massawe and Irene Alenga, who divided themselves into two groups, one covering Arusha region while the other went to Zanzibar.

### **3.2.3 The Respondents and Data Collection:**

The study used survey research method to collect the needed information. Three instruments were applied to facilitate data collection, such as a structured questionnaire for interview, an interview guide (checklist) for focus group discussions (FGDs) and documentation (and/or literature).

This study has utilized both primary and secondary data whereby qualitative and quantitative information were gathered. Most of the secondary data were collected from official annual reports and publications, research reports as well as other publications related to mobile phone technology and livelihood. The primary data were gathered directly from interviewing different people in the selected wards and from community records. The interview guide was mainly used for focus group discussions with key informants in the study area. The key informants included; the village chair persons, village secretaries, head teachers, ward secretaries, members of the village council and prominent business people.

The targeted respondents for this study were residents from the selected places. Residents both owning and not owning mobile phones were chosen randomly taking into account different age groups and gender parity. A total of 103 individuals from selected households were interviewed.

In order to ensure the reliability and validity of the survey, a pilot test was conducted in order to provide insight on the kind of information that will be collected as well as to know whether the instrument is administrable. The test with 20 respondents was done in Chanika ward, in Kisarawe District Coast region to check on the clarity of the questions and the general format of the survey so as ascertain if all information needed were included. The shortcomings revealed through pilot survey were addressed and adjusted accordingly.

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<sup>11</sup> Wards in Zanzibar are commonly known as *Shehia*

## 4.0 DATA ANALYSIS

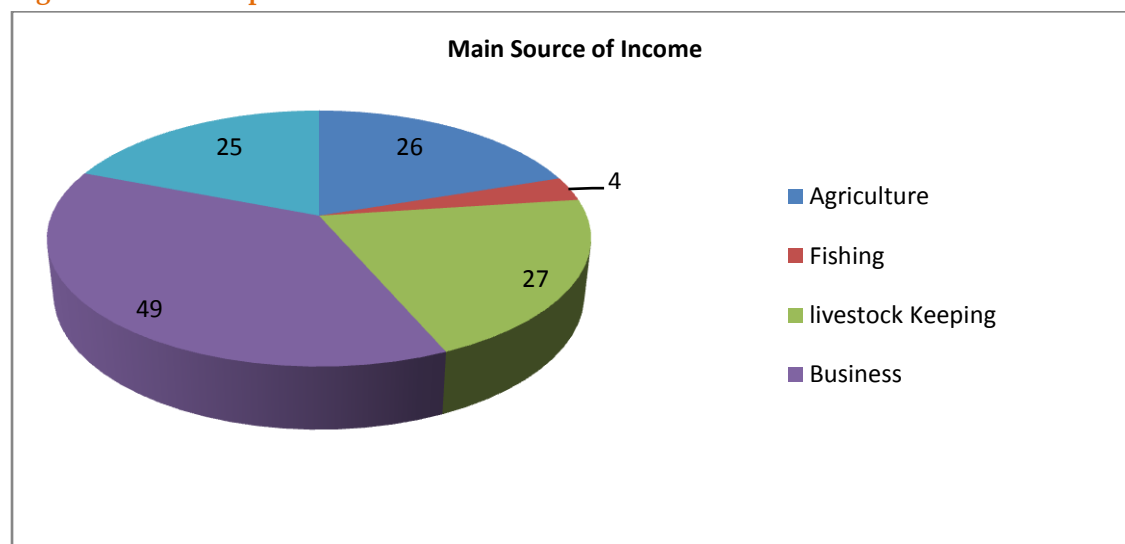
### 4.1 Demographic and General Information on Respondents

As it has been explained earlier, the study interviewed a total of 103 respondents of whom 54% were from Zanzibar and the remaining 46% from Mainland (Arusha region). Among these, 55% were male and 45% female, 66% of respondents were married, 30% single, while the remaining 4% were widowed. As far as their age is concerned, the average age for all respondents was 35 years with the younger age being 16 while the oldest was 66 years. Majority of respondents (56%) seems to have primary education while 31% had secondary education. Very few (9%) reported to have post secondary education, such as certificates and diploma education.

### 4.2 Principal source of income

Majority of respondents admitted to be conducting multiple income generating activities. Among these 32% of respondents reported formal employment as their main source of income; 26% mentioned agriculture; fishing (4%); tourism (4%) and livestock keeping (27%) as their main sources of income (Figure 3). Majority of respondents (49%) engage themselves in business activities. 25% of respondents includes retired, house wives, jobless and students.

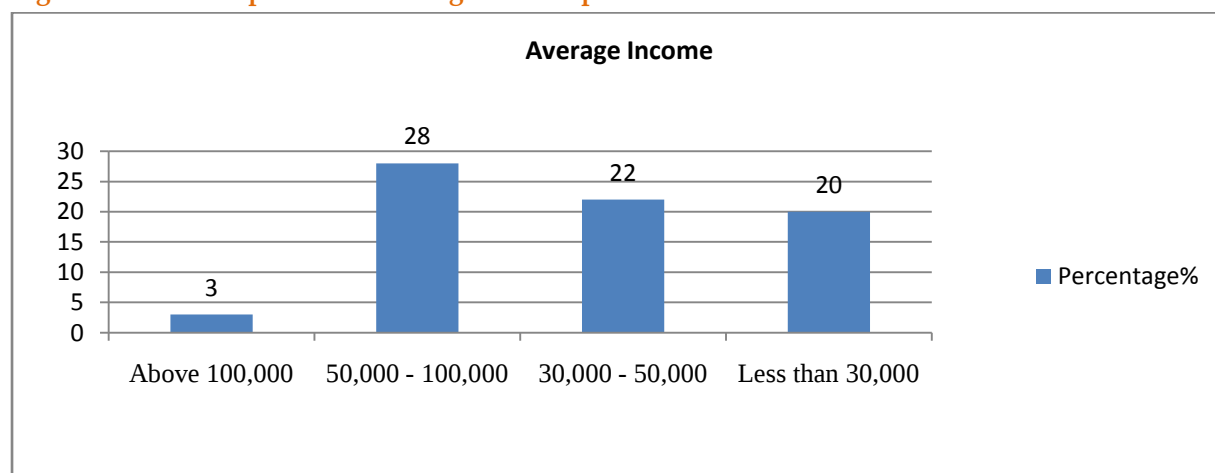
**Figure 3 Respondents' Main Source of Income:**



*Source: Field Data, 2009.*

As seen in Fig.4, most respondent (28%) indicated average monthly income ranges of between 50,000 to 100,000 Tanzanian shillings. Only 3% reported to have more than 100,000 Tanzanian shillings.

**Figure 4: Respondents' Average Income per Month:**



*Source: Field Data, 2009.*

### 4.3 Mobile phone ownership, access and usage

Eighty-nine (89%<sup>12</sup>) percent of respondents in the study areas admitted to own mobile phones (handset) and only 8% do not own mobile phones. Very few reported to have employer's mobile phones which they use for office work.

However, for those currently not owning any mobile phone, when they were asked if they had ever own one, 78% said they had mobile phones but due to various reasons they do not have anymore. Among these reasons include being stolen, damaged and others admitted to have sold them due to economic hardship. However when asked if they would like to own one, 81% said they would like to and 19% declined, reasoning that they (mobile phones) distract their studied (for students) and others do not see the need since they can access the service from telephone kiosks, relatives etc. Among those, 53% admitted to have been using the technology through mobile phones owned by family members, 20 % from telephone kiosks/ centers and 7 % from neighbours and friends' handsets. Few admitted to own their own SIM cards, asking for a handset (20%).

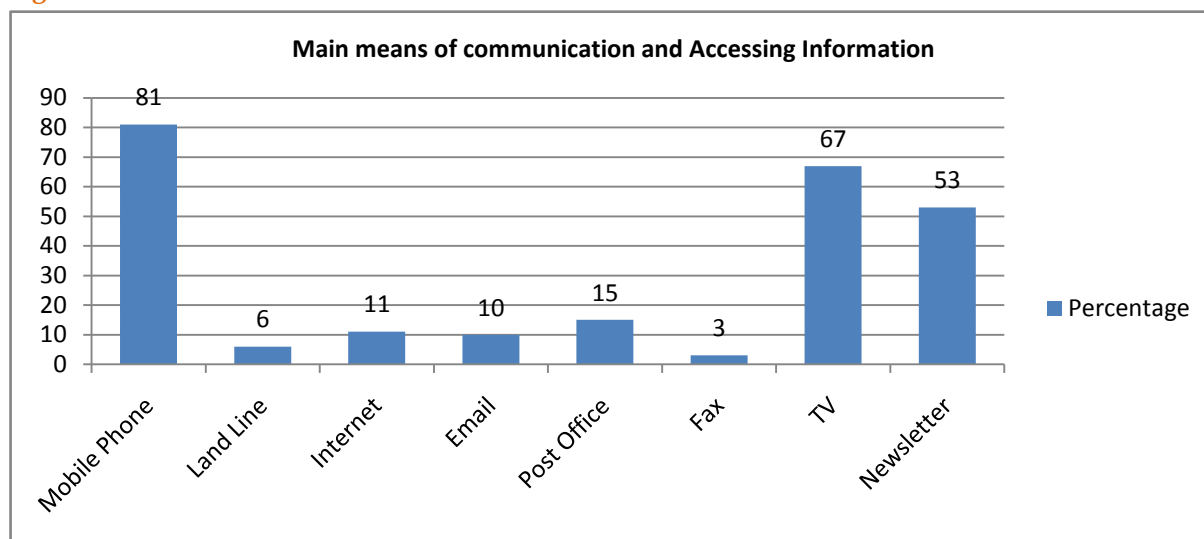
Furthermore the study revealed that it is possible for a household to have more than one mobile phone handsets. Thus majority (33%) of respondents reported to have only one mobile phone, 16% had two and 17% had 3. Few house holds have more than 5 handsets.

As far as access to service is concerned, most respondents mentioned Zain (former Celtel); Vodacom, Tigo and Zantel as the main service providers existing in the study areas. As far as reliability of the service network is concerned, majority (41%) admitted that Zain is the most reliable service provider than others in study areas. Nineteen percent mentioned Zantel, Tigo 15%, and lastly Vodacom 14%. On preferences, 37% of respondents admitted to prefer Zain, 42% Zantel, 10% Tigo and Vodacom 8%. However these findings might have been influenced by the geographical area of the study

<sup>12</sup> This is a high figure, which possibly includes also the notion of mere access rather than owning plus those who had the sets before but were no longer having them for various reasons (comment by the short version editor)

The good majority of people (81%) use mobile phones (Fig.5) as a major means of communication and accessing information compared to other ICT components. The use of the land line (only 6%) is very small nowadays. This means that if government, private institutions and civil societies will utilize effectively the mobile technology, it will help in reaching out to the majority of Tanzanians. More precisely, if services provided by these institutions and relevant information would be disseminated through mobile phone technology, the majority of Tanzanians even in rural areas would be informed and even serviced because they too own and use the mobile phones.

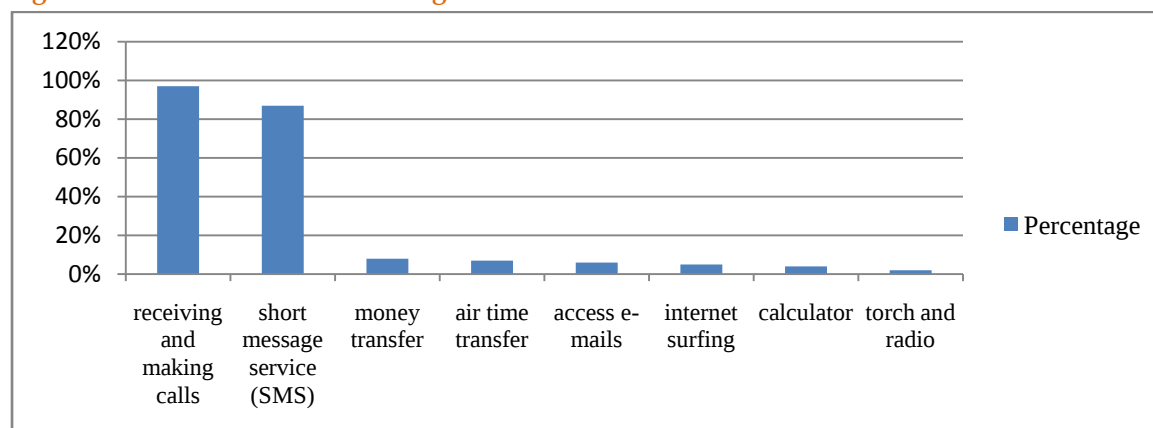
**Figure 5: Main means of communication and Access to Information:**



*Source: Field Data 2009.*

Figure - 6 on the other hand depicts the reasons for which mobile phone technology is now used. The majority (97%) of respondents in the study admitted to have been using the technology in receiving and making calls. In addition, 87% said they use it for sending short message service (sms) followed by those who use it for transferring money (8%). Very few use it for other services possibly because they are not aware of them or do not know how to use the phones, and yet others due to the type of handsets that do not allow the specific use in maximizing the possibilities in technology utilization.

**Figure 6: Mobile Phone Usage**



*Source: (Field Data 2009).*

#### 4.4 Services Received Via Mobile Phones

A variety of services from different agencies are now offered through mobile phones. According to survey data, the main service is information delivery (26%), which includes economic related information such as business news, weather conditions, types and prices of different commodities like new handsets, social information like on ceremonies, deaths, and sickness as well as and religious news.

What would mobile users prefer? The survey indicated that 36% prefer receiving business related information such as sources and prices of agricultural inputs and other commodities, agro-produce markets and prices, the use of M-pesa service e.t.c. Other preferences mentioned were education-related news, entertainment-sports, political and other government events, transport issues like weather, fares, employment information, educational health services and national and international economic news. Others mentioned the possibility of using the phones to call security agents.

#### 4.5 The Impact of Mobile Phone Technology on People's Livelihood:

When asked whether mobile phone technology has enhanced their livelihood, 91% of the respondents had positive answers, like reducing travel needs and costs and enhancing strong social bonds. Only 4% did not see any changes in their lives.

Furthermore, as far as livelihood enhancement is concerned, 68% mentioned improved communication and access to information. The mobile telephone technology is believed to increase household income, especially for those engaging themselves in mobile phone business industry, such as selling air time, running telephone kiosks; agents of M-banking and those employed by the communication service providers. In the surveyed areas several people have 16% admitted to have their businesses improved, 9% had their income improved, while improvement in access to education scored 3%. Only 2% admitted that mobile phone technology has improved security, employment and enhanced empowerment.

##### 4.5.1 Mobile Phone Technology and People's Empowerment

Fifty- four percent of the respondents admitted that the technology has also helped their voice being heard, hence empowering them, like being linked to radio and TV programmes to air their opinion, sharing their problems and seeking advices. However, 44% denied this impact, particularly those in rural areas with poor Radio and TV reception.

##### 4.5.2 Negative Impact of Mobile Phone Technology on People's Livelihood

The survey also came up with information of some negative impacts related to the technology. Among the respondents, 61%, admitted mobile phones to also have negative impacts and the remaining respondents (11%) were not sure. Only 27% said the technology does not have any negative impact to its users. Economically, the technology is believed to reduce household and individual resources which could be used for other important needs like food and health (opportunity cost). For instance respondents cited running costs as well as costs for buying mobile handsets eating up to between 50,000 - 100,000 Tanzanian shillings for airtime in a month.

Therefore 32% of respondents admitted the cost of mere owning mobile phone to be very expensive; 24% ranked the cost expensive, 43% of respondents find it fair and only 1% said it is cheap. The statistics lead the researchers to conclude that people spend more than they should in financing their mobile phones, and this could have negative impact on their livelihood.

There were other negative aspects reported such as the telephones diverting attention of students, accessing pornography, causing marriage break-ups following secrets being revealed through the phones, as well as mobile phones having facilitated robbery and other criminal acts.

Respondents also reported health worries such as dangers to hearing that mobile phone technology can inflict to users. Respondents from Zanzibar mentioned mobile rays which can cause headaches as well as brain cancer.

## 5.0 CONCLUSION AND RECOMMENDATIONS

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The study reveals that the majorities of respondents owns mobile phones or have access to it (81%); those even who do not have the mobile phones use the technology as the main means of communication. The mobile phone as voice or message is used mainly (97of respondents) for social relations and for economic-business motives. Ninety one (91%) of respondents acknowledged the technology to have enhanced their livelihood positively. On the other hand, the cost of owning and using mobile phone seems to be high and tends to put at risk the ability to meet other important household needs.

The study makes several recommendations so as to boost up the use of the mobile technology and thereby facilitate economic growth and poverty reductions.

### 5.1 Recommendations

In light of the above information and findings from primary and secondary sources, the study came up with the following recommendations:

1. Need to educate the mobile phone users on better and varied use of the mobile phone technology. The study revealed that many people are not aware of the different services they could access from their cell phones other than SMS, receiving and making calls.
2. Government should make deliberate efforts to minimize the cost of operating a mobile phone, including regulating the cross network expenses, by *inter-alia* encouraging the sharing of the available infrastructure among mobile phone providers.
3. Need for extending the network reach so as to enable maximum use of the mobile phones. With installation of M-Government, M-Health, M-Education, M-Banking etc, it will be possible to reach wider audiences.
4. Mobile phones technology is not a panacea for the enhancement of livelihood of the rural poor. Investment into other enabling infrastructure such as electricity, roads, etc. is of paramount importance.
5. Economic related information like business news, weather conditions, information on prices and social related information currently issued by mobile service providers and business firms mostly aim at promoting sales of services or products and in some occasions they have to be paid for. It is recommended that these services be regarded as public services so that Government, CSO, NGO, CBO, religious organization etc, can use the same technology to provide them to the people in rural areas as public goods (free of charge). This will require government intervention with fiscal and policy support instruments.
6. Further research needs to be done especially looking at the extent to which government ministries can utilize this technology in better service delivery; for instance how the Ministry of

Health and Social Welfare can use mobile phone technology in delivering its services to remote rural population.

7. As it is shown by this study, mobile phone technology tends to enhance people's livelihood indirectly i.e. through employment or doing business; however more needs to be revealed on the direct causal relation between the use of mobile phone and people's improved lives. One needs to assess, for example, how precisely businessmen or farmers who use mobile phone technology improve their lives and incomes and by how much. This will help in justifying public support indicated above, as well as private investments in less economic locations as a social responsibility.

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