

**THE USE OF INFORMATION AND COMMUNICATION
TECHNOLOGIES IN POVERTY ALLEVIATION IN RURAL
COMMUNITIES IN THE CENTRAL REGION OF GHANA**

**BY
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DEPARTMENT OF INFORMATION STUDIES

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DECLARATION

I hereby certify that except for references to other people's work which I have duly acknowledged, this thesis is the result of my own research work and has not been submitted either in part or wholly to any University for another degree.

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DEDICATION

To God be the glory. This work is dedicated to:

My wife, Nana Adwoa Nyaawa;

My daughter, Maame Araba Tawiah;

My sons, Nana Saam, Nana Appiatse and Papa Mensah for their prayers, support and encouragement throughout the study.

May God richly bless you all.



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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
ADP	Accelerated Development Programme
BDO	Building Digital Opportunities
BOP	Base-of-the-Pyramid
CARE	Cooperative for Assistance and Relief Everywhere
CHD	Coronary Heart Disease
CTA	Technical Centre for Agricultural and Rural Cooperation
DFID	Department for International Development
DHS	Demographic and Health Surveys
DOT Force	Digital Opportunity Task Force
DTH	Direct-to-Home
ECA	Economic Commission for Africa
FGD	Focus Group Discussions
FM	Frequency Modulation
GAID	Global Alliance for ICTs and Development
GDP	Gross Domestic Profit
GIFEC	Ghana Investment Fund for Electronic Communications
GIFTEL	Ghana Investment Fund for Telecommunications
GLSS	Ghana Living Standards Survey
GOG	Government of Ghana
GPRS I	Ghana Poverty Reduction Strategy
GPRS II	Growth and Poverty Reduction Strategy

GSGDA	Ghana Shared Growth and Development Agenda
GSS	Ghana Statistical Service
HC	Human Capital
HDI	Human Development Index
HIPC	Heavily Indebted Poor Countries
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
ICT	Information and Communications Technology
ICT4D	ICT for Development
ICT4AD	ICT for Accelerated Development
IDI	ICT Development Index
IDG	International Development Goals
IFAD	International Fund for Agricultural Development
ILO	International Labour Organization
IMF	International Monetary Fund
ISP	Internet Service Provider
ITU	International Telecommunications Union
JSS/JHS	Junior Secondary School/Junior High School
KII	Key Informant Interview
LDCs	Least Developed Countries
MDGs	Millennium Development Goals
MMDAs	Metropolitan Municipal and District Assemblies
MSE	Medium and Small Enterprise
NCA	National Communications Authority of Ghana

NDPC	National Development Planning Commission of Ghana
NEPAD	New Partnership for Africa's Development
NMC	National Media Commission of Ghana
NTP	National Telecommunications Policy
OECD	Organization for Economic Cooperation and Development
PHC	Population and Housing Census
SADC	Southern African Development Community
SIDA	Swedish International Development Agency
SIM	Subscriber Identity Module
SIMA	Sistema De Informacao De Mercados Agricolas of Mozambique
SLF	Sustainable Livelihoods Framework
SMEs	Small and Medium Enterprises
SMS	Short Messaging Service
SPSS	Software Package for the Social Sciences
SSA	Sub-Saharan Africa
SSS/SHS	Senior Secondary School/ Senior High School
TV	Television
UN	United Nations
UNDP	United Nations Development Programme
US	United States of America
VSAT	Very Small Aperture Terminal
WAP	Wireless Application Protocol
WSIS	World Summit on the Information Society

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ABSTRACT

Information and communication technologies (ICTs) have the potential to improve the welfare of the poor by providing opportunities to increase social capital; improve availability of market information; creation of new economic opportunities; improve economic efficiency and competitiveness; better access to health and education facilities and more efficient and effective governance. In spite of the significant ICT development and growing recognition of their benefits, there are concerns about the role of ICTs in facilitating communication of information for sustainable livelihoods and poverty alleviation in Ghana, particularly in rural areas. There is a lack of clear empirical evidence between ICTs, livelihoods and poverty in Ghana as the few studies undertaken have not yielded sufficient evidence to comprehensively understand the subject. These studies were also confined to mobile phones to the exclusion of radio and television which are widely used in rural communities. This is the research gap the study intended to fill. The overall research question was: what is the use of some information and communication technologies (mobile phones, radio and television) in poverty alleviation at the individual and household levels in two rural districts of the Central Region of Ghana.

The study was guided by the Sustainable Livelihoods Framework (SLF) as developed by the United Kingdom Department for International Development (DfID). The case study research design, with a combination of both quantitative and qualitative methods of data collection with the quantitative as the dominant method used for the study. Data was collected through the use of questionnaire, focus group discussion and key informant interviews. The respondents for the study was made up of four hundred and twelve heads of household, fifty one focus group participants and eleven key informants. Data collected was analyzed using the Statistical

Package for Social Sciences (SPSS) version 21.0. Descriptive statistics including frequencies and percentages were computed and used to summarize data. The research results obtained were presented in a very simple and non-technical form by using percentage and frequency tables, and charts. Inferential statistics was used and various tools for inferring meaning, including measures of central tendency (mostly the mean and standard deviation), and chi-square evaluations were made in order to appreciate the deeper implications of the results and to confirm the results which the percentages will not be able to bring out clearly.

The study established that most of the heads of household were below the age of 50 years with Junior Secondary School Certificate as the highest qualification obtained by majority of them. Crop farming was the principal occupation and main source of income with about a third of the respondents earning less than Gh¢500 (\$250) per annum. The respondents had modest accommodation with electricity and pipe borne water available in some of the houses.

It was found that majority of the respondents had access to and made use of mobile phones more than radio and television. The ICT tools under study have been beneficial to the owners as well as non-owners of the tools since they share them with the owners. Network coverage as well as quality of service was generally good. Cost of mobile phone services was generally high and some innovative means have been found to reduce it. Time of broadcast, language and programme content are the determining factors for watching television or listening to radio and most of the respondents watch and listen to entertainment, musicals, local and international news.

The study established that the ICTs under study have played significant roles to reduce poverty and improve livelihoods through expanding and strengthening social networks, overcoming social and economic exclusion, dealing with emergencies, reducing cost and increasing productivity, minimizing physical risks, improving efficiency of activities, increasing entertainment options, increasing awareness and general knowledge of respondents to participate in development activities. Some detrimental effects and barriers to effective access and use to the studied ICTs are noted. These include: increased immoral behavior, exposure to unethical information, high cost of ICTs and erratic power supply, among others.

Recommendations made include: rural development strategies incorporating ICTs, social protection policies and improving infrastructure, among others with the view that when these are implemented it would go a long way to improve access to and use of the studied ICTs. This would eventually improve livelihoods, well-being and reduce poverty. The purpose for which the study was conducted was achieved and areas have been identified for further research.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Globally, it is estimated that a fifth of the world's population live in extreme poverty. Extreme poverty, experienced by about 1.2 billion people is considered by many to be the worst human rights violation in the world. Consequently, the global development community has endorsed in the United Nations' Millennium Development Goals its commitment to halving the number of people living under one United States dollar a day by 2015. The figure of one US dollar per day is widely accepted as a general indicator of extreme poverty within development discourse, but of course there is no absolute cut-off and income is only one indicator of the results of poverty, among many others (Harris, 2004). Most of the world's poor are found in developing countries, particularly in sub-Saharan Africa. Ghana is among the developing countries of the world with about 28.5 percent of its population living below the poverty line of one US dollar per day as of 2007 (CIA World Fact Book, 2010). To be able to come out of the poverty bracket by individuals and countries require the application of a number of development interventions in agriculture, commerce and industry.

Since Ghana attained independence in 1957, successive governments have pursued, with varying degrees of success, programmes to accelerate the growth of the economy and raise the living standards of the people. With the return to constitutional rule in 1993, successive Governments have provided various policy frameworks and development plans to guide the

overall economic and social development of Ghana in line with Article 36 (5) of the Constitution (Government of Ghana, 2010).

In 1995, Government presented to Parliament the *Coordinated Programme of Economic and Social Development Policies* with the theme, *Ghana: Vision 2020*, aimed at making Ghana a middle-income country in 25 years. *The First Medium-Term Development Plan (1997-2000)* based on Vision 2020 focused on the following priority areas: human development, economic growth, rural development, urban development, infrastructure development, and an enabling environment (Government of Ghana, 2010).

The Vision 2020 was followed by the Ghana Poverty Reduction Strategy (GPRS I, 2003-2005) and the Growth and Poverty Reduction Strategy (GPRS II, 2006-2009). GPRS I was initiated as a condition for development assistance under the IMF-World Bank-supported Heavily Indebted Poor Countries (HIPC) debt relief initiative in 2002. It sought to restore macroeconomic stability and reduce the incidence of poverty. It focused on the following themes: production and gainful employment, human resource development and basic services, special programmes for the poor and vulnerable, and governance. Across these themes, five areas were selected for priority action: infrastructure, rural development based on modernized agriculture, enhanced social services, good governance, and private sector development (Government of Ghana, 2010).

The GPRS-II placed emphasis on growth as the basis for sustained poverty reduction “so that Ghana can achieve middle-income status within a measurable planning period”. Its

thematic areas were: Continued Macroeconomic Stability, Private Sector Competitiveness, Human Resource Development, and Good Governance and Civic Responsibility. Both GPRS I and GPRS II contributed significantly to guiding the allocation of resources and also provided a platform for dialogue between the Government of Ghana and the Development Partners, and mainstreamed the Millennium Development Goals (MDGs) and other international commitments relevant to poverty reduction into the national development agenda (Government of Ghana, 2010).

Under GPRS I and GPRS II substantial progress was made towards the realisation of macroeconomic stability and the achievement of poverty reduction goals. However, structural challenges also emerged, characterized by large fiscal and balance of payment deficits mainly as a result of fiscal over-runs and external shocks including upsurge in crude oil and food prices. Remittances declined and access to private external financing became more difficult as a result of the global financial crisis. This was in spite of favourable global market conditions for cocoa and gold exports (Government of Ghana, 2010).

In many respects, the current medium-term national development framework, known as Ghana Shared Growth and Development Agenda (GSGDA), 2010-2013 seeks to address the challenges that had emerged at the end of 2008. These included a fiscal deficit that had risen to 14.5 percent of Gross Domestic Product (GDP) excluding new domestic expenditure arrears of 4.2 percent of GDP as well as resurgence of macroeconomic

instability that manifested in an end-year inflation rate of 18.1 percent and increased volatility on the foreign exchange market (Government of Ghana, 2010).

In spite of the impressive GDP performance recorded over the period 2003-2009, available data indicates that agriculture, especially crops and livestock, and fisheries as well as manufacturing, which have the potential to generate large scale employment opportunities, did not perform well. Not surprisingly, poverty studies in Ghana, including various Ghana Living Standard Surveys (GLSS), have indicated that while poverty has continued to fall in the forest zones and cocoa producing communities of Ghana, it has increased in predominantly food crops producing areas and fishing communities of Ghana (Government of Ghana, 2010).

Considering the challenges and setbacks of the immediate past, the current framework outlines the development policies and strategies that will guide the management of the economy between 2010 and 2013. Within the period, emphasis will be placed on human development, transparent and accountable governance and infrastructural development, in support of agricultural modernization, natural resource development, particularly oil and gas, private sector development, ICT, housing and energy for accelerated employment creation and income generation for poverty reduction. The framework also envisages protecting the environment and minimizing the impacts of climate change (Government of Ghana, 2010).

In view of agriculture's dominance as the single largest sector, in terms of income, employment, food security, and export earnings, the sector needs to be modernized to improve its performance. Government considers the modernization of agriculture as a pre-condition for the structural transformation of the economy and the sustainable reduction in the incidence of poverty. Policy options will therefore be focused in this strategic direction (Government of Ghana, 2010).

Despite significant improvements in the performance of the economy in the last two decades, there remain a number of macroeconomic and structural challenges that limit the capacity of the economy to achieve sustainable improvements in the standards of living of the people. These include over-reliance on the production of primary commodities without sufficient linkages to other sectors of the economy, over-reliance on rain-fed agriculture and low application of science, technology and innovation in the various production and distribution chains (Government of Ghana, 2010).

In the medium-term, the strategic direction will be to lay the foundation for the structural transformation of the economy through industrialization especially manufacturing, based on modernized agriculture and sustainable exploitation of Ghana's natural resources, particularly minerals, oil and gas. The process will be underpinned by rapid infrastructural and human development as well as the application of science, technology and innovation. This will enhance the creation of employment and income earning opportunities for rapid and sustained poverty reduction. The strategy will entail: improved enabling environment to empower the private sector; active collaboration between the public and private sectors,

including public-private partnerships and civil society organizations; active Government interventions where appropriate; transparent and accountable governance and efficiency in public service delivery at all levels; and effective decentralization for enhanced local economic development (Government of Ghana, 2010).

Ghana's performance in eradicating poverty has been quite remarkable at the national level and urban areas. However, there are worrying trends in terms of disparities across the ten regions and socio-economic groups in terms of the poverty incidence and the depth. The country managed to halve extreme poverty from 36.5 percent to 18.2 percent between 1991 and 2006, and almost halve the proportion of people living below upper poverty line from 51.7 percent to 28.5 percent over the same period. However, the three northern savannah regions and food crop farmers have not benefited from this remarkable decline in poverty incidence (NDPC & UN, 2012).

The incidence of poverty remains very high and far above the national average at 52 percent in the Northern, 70 percent in Upper West and 88 percent in the Upper East Regions. The Northern Region managed to reduce upper poverty incidence from 63 percent in 1991 to 52 percent in 2006 while Upper East recorded an increase from 67 percent to 70 percent over the same period. The Upper West saw a decline in poverty incidence from 88 percent in 1991 to 84 percent in 1999 but increased again to 88 percent in 2006. The remaining regions managed to halve upper (except Volta region) and extreme poverty ahead of 2015 (NDPC & UN, 2012).

The high poverty incidence in rural Ghana and the three Northern Regions (Northern Region, Upper East Region and Upper West Region) is also reflected in the distribution of poverty in the country. About a quarter of the poor in Ghana in 2006 are estimated to come from the Northern Region while the Upper East and West regions contribute about 16 percent each. On the contrary, only one out of every ten poor people in Ghana comes from the Ashanti Region. Four regions, Western, Central, Greater Accra and Eastern Regions account for less than 5 percent each of national poverty while Volta and Brong Ahafo Regions contribute 6 percent and 8 percent respectively to national poverty (NDPC & UN, 2012).

The various measures adopted by the Government of Ghana to address the problem of poverty placed emphasis on growth as a means to accelerate poverty reduction and to eliminate the worst manifestation of poverty, social deprivation and economic injustice from Ghanaian society. It therefore, focuses on the implementation of growth-inducing policies and programmes which have the potential to transform the structure of the economy and maximize the benefits of shared accelerated growth.

Poverty is a multi-dimensional phenomenon, encompassing a lack of opportunity, empowerment and security. Information and Communication Technology (ICT) access can have powerful impact in addressing these constraints, giving the poor a stronger voice, facilitating their participation in decision-making processes and in demanding accountable government (World Bank, 2001). Local radio is a medium particularly suited to promoting economic development and empowerment, as it is affordable and accessible to listeners and

demands few specific skills. A recent study found that the radio plays a prominent role in tackling gender issues and promoting women's visibility. South Africa, where the average person listens to radio for more than four hours every day, and Mali are examples of countries with a vibrant radio landscape, including but not limited to community radio (African Partnership Forum, 2008). ICTs increase efficiency, provide access to new markets or services, create new opportunities for income generation and improving governance and give poor people a voice. The use of ICT provides positive externalities, enhancing creativity, learning and problem-solving skills (African Partnership Forum, 2008).

ICTs may also improve poor people's access to education, health, government and financial services (Cecchini & Scott, 2003). It is rapidly transforming lives, the way people do business, access information and services, communicate with each other and entertain themselves. It fuels the global economy. It also relates to human rights, helping, at best, to support freedom of expression and right to information according to Article 19 of the Universal Declaration of Human Rights (Kelles-Viitanen, 2003). Several studies have emphasized the positive role of ICTs in economic growth and the reduction of poverty (Braun & Torero, 2006; Djiofack-Zebaze and Keck, 2009; Flor, 2001). A study based on data from 113 countries over a twenty-year period found that a one percent increase in internet connectivity can result in a growth in GDP of 0.03 percent (Braun & Torero, 2006). For mobiles, this figure is even higher; a one percent growth in mobile networks resulted in a five percent increase in GDP per capita (Djiofack-Zebaze and Keck, 2009). Flor (2001) found a negative correlation between the use of ICTs and the human poverty

index in Southeast Asia: the higher the use of ICTs, the lower the rate of human poverty. Others argue that ICTs are powerful tools for empowerment and income generation in developing countries, as well as for increasing access to other social services (Kenny, 2002; McNamara, 2003). Arguably, the values of ICTs can be particularly high in areas where other forms of communication such as postal systems and roads are poor.

In the view of Greenberg (2005), ICT empowers people, as it allows information to be transferred across distances without face-to-face contacts, cutting down on costs. Where e-government applications have been used, people can access government services and at the same time spend less time meeting their obligations to government. ICT is also used to improve health and education services through telemedicine and distance education. Greenberg (2005) emphasizes that despite the various pitfalls associated with deploying ICT projects, there is growing evidence that the use of ICT can be a critical and required component of addressing some facets of poverty.

An example of measurable results of ICT resulting in poverty reduction is the well-known Grameen Village Phone Project in Bangladesh where mobile phones have contributed significantly to the incomes of many poor families. Now there are more than 30,000 telephone ladies providing the service. Their minimum income is US\$ 50 a month net profit and it goes all the way to US\$ 500 per month (Mathison, 2003). In Ghana, mobile services developed by Esoko, a local company, include placement of buy/sell orders by farmers and traders (Martiz, 2011). Esoko has a network of agents that collect price information on about 20 agricultural commodities in 30 markets in the country. They have

a system for providing price information to farmers and others on a subscription basis (Martiz, 2011).

Furthermore, studies conducted by Building Digital Opportunities (BDO) programme and local partners in Mali, Uganda and Zambia demonstrated that ICTs can contribute significantly to poverty reduction in all three dimensions of empowerment, opportunity and security, and to an attainment of the Millennium Development Goals (MDGs) (Gerster & Zimmermann, 2003).

Natural Resource Management is another area where ICTs contributed to as was the case for a community radio in Obane rural community in the Dangme East District of Ghana. The Radio Ada followed participatory approaches in the production of broadcasts where listeners determine the content that is put on air and take turns in producing the broadcasts in villages. It took only four years of broadcast in mobilizing people to dredge a clogged 10km long river which was neglected for 40 years, providing once again the chance to channel water to the irrigation canals of riverside farms (Larweh, 2006).

The development of ICTs has facilitated the dissemination of knowledge and information and it is revolutionizing the use of technology in agricultural production and provision of market information to maximize the returns to agriculture (Asenso-Okyere & Mekonnen, 2012).

Information and the ability to communicate are essential components of human existence. Information and knowledge are critical components of poverty alleviation strategies, and ICTs offer the promise of easy access to huge amounts of information useful for the poor. However, the digital divide is argued to be the result rather than the cause of poverty, and efforts to bridge it must be embedded within effective strategies that address the causes of poverty (Harris, 2004).

Electronic communication technologies have made it easier, faster, and cheaper to communicate over short and long distances, bringing personal and competitive advantage to users. The desire to enjoy these advantages is evident in the national communication policies of developing countries, as well as the programmes of international development agencies, all of which seek to harness the potential of information and communication technologies (ICTs) for the transformation of their economies (Singh, 1999) as cited by Sey (2008). In the process, a variety of policy and practical best practices have been developed to address the challenges of introducing, deploying and enabling the use of these technologies in contexts that differ significantly from the contexts in which the technologies were created (Sey, 2008).

ICTs encompass a range of technologies that facilitate, by electronic means, the production, storage and exchange of information, though a distinction is often made between new ICTs such as computers, Internet and mobile phones and old ICTs such as newspapers, radio, television and landline telephony. In rural communities the most common, widely accessible and used ICTs in households are mobile phones, radio and television. The computer-based ICTs are not too common in rural households. The new ICTs are known

for their digital transmission mechanisms, greater interactivity, wider geographical coverage, cost-effectiveness, and availability on 24/7 basis. By contrast, the old ICTs use analog transmission mechanisms and mostly provide one-way communication (Greenberg, 2005). In developing countries, phenomenal growth rates in mobile telephony and broadcasting media, in particular, have made hitherto isolated communities to have unprecedented access to communication and information flows. There is evidence that many emerging mobile users in the developing world are found in rural areas (Sood, 2006) as cited by Sife, Koindo and Lyimo-Macha (2010).

Radio, according to Myers (2008) is still the dominant mass-medium in Africa with the widest geographical reach and the highest audiences compared with television, newspapers and other information and communication technologies. Comparing radio receivers with other equipment owned in all parts of the continent show that radio is in the lead right across the board, registering ownership levels among adults of 70 and 80 percent on average (Myers, 2008). Radio has achieved impressive results in the delivery of useful information to poor people. One of its strengths is its ubiquity. For example, a recent survey of fifteen hill villages in Nepal found radios in every village, with farmers listening to them while working in their fields. Another survey of 21,000 farmers enrolled in radio-backed farm forums in Zambia found that 90 percent found programmes relevant and more than 50 percent credited the programmes and forums with increasing crop yields (Harris, 2004). The National Institute for Disaster Management in Mozambique distributed Freeplay radios so that flood victims could receive broadcasts on the weather, health issues, government policy toward the displaced, missing family members, the activities of the aid

community, and the location of land mines. In Ghana, the government distributed 30,000 Freeplay radios so villagers could follow elections (Harris, 2004).

Television broadcasting is also growing, though it is still less widely available in rural areas. In sub-Saharan Africa, only six percent of rural households had television sets in 2006 (Bhavnani *et al.*, 2008). In recent years, a new hope for ICT access in developing countries has emerged in mobile telephony. Compared to computer-based ICTs, mobile phone adoption rates have been exceptionally high worldwide, hitting 50 percent (3.3bn subscriptions) of the global population in November 2007 (Telecoms.com, 2007). The process began in August 1981 with the launch of the first mobile phone network in Sweden and Norway and zero percent penetration. However, after taking 20 years to connect 500 million subscribers globally, it took the industry just seven more years to reach the 3 billion mark (Telecoms.com, 2007).

New information and communication technologies (ICTs) continue to penetrate countries in all regions of the world, as more people are getting connected. The year 2011 saw persistent growth in ICT uptake worldwide, with an increase in all key indicators except the number of fixed telephone lines, which has been in decline since 2005. Indeed, more countries are reaching a critical mass in terms of ICT access and use, which accelerates ICT diffusion and further boosts demand, driven by the spread of mobile Internet (ITU, 2012).

Between 2010 and 2011, mobile-cellular subscriptions registered continuous double-digit growth in developing country markets, but an overall slowdown in comparison with

previous years. The number of mobile-cellular subscriptions increased by more than 600 million, almost all of them in the developing world, to a total of around 6 billion, or 86 per 100 inhabitants, globally. China alone is home to 1 billion subscriptions, and India is expected to hit the 1 billion mark in 2012. Mobile-cellular penetration increased by 11 per cent worldwide, compared to 13 per cent the previous year. In developing countries, growth was 13 per cent (as against 18 per cent the year before), and penetration stood at almost 78 per cent by end 2011. The strong growth in the mobile sector in developing countries has been driven by increased competition and affordable services and devices (International Telecommunications Union, 2012). Although developing countries still lag behind other world regions in the diffusion of ICTs, the global landscape of communication has been transformed by developments in mobile telephony (International Telecommunications Union, 2012). In Africa, mobile penetration has increased rapidly in the last 12 years, from just 1 percent in 2000 to 54 percent in 2012, representing a compound annual growth rate of over 36 percent. Today there are more than 454 million connections in Sub-Saharan Africa. However, as it is common in Sub-Saharan Africa to share mobile phones or to use public mobile phones, mobile services extend far beyond actual penetration levels (Deloitte, 2012).

In Ghana, the ICT sector generally and mobile telephony in particular have experienced an unprecedented growth in the last decade. Vast resources have been invested to extend the reach and application of ICTs across the country. The ICT landscape in Ghana is driven by two policies, namely: the National Telecom Policy and the ICT for Accelerated Development Policy (ICT4AD). The strategic focus of the policy was to target simultaneously the development of the ICT sector and industry as well as use ICT as a

broad-based driver of developmental goals with emphasis on the development, deployment and exploitation of ICT as engines for all sectors of the economy (Government of Ghana, 2003).

The well-known case of Grameen hand phones in Bangladesh, in which the Grameen Bank, the village-based micro-finance organization, leases cellular mobile phones to successful members, has delivered significant benefits to the poor. The phones are mostly used for exchanging price and business and health-related information (Bayes, Braun & Akhter, 1999). They have generated information flows that have resulted in better prices for outputs and inputs, easier job searches, reduced mortality rates for livestock and poultry, and better returns on foreign exchange transactions (Bayes, Braun & Akhter, 1999). Phone owners also earn additional income from providing phone services to others in the community. Poor people account for one-fourth of all the phone calls made. For villagers in general, the phones offer additional non-economic benefits such as improved law enforcement, reduced inequality, more rapid and effective communication during disasters and stronger kinship bonding. The phones also have perceptible and positive effects on the empowerment and social status of phone-leasing women and their households (Bayes, Braun & Akhter, 1999).

The emergence of international initiatives such as the Digital Opportunity Task Force (DOT Force), the World Summit on the Information Society (WSIS), the Global Alliance for ICTs and Development (GAID), portray the worldwide concern over the potential of ICTs in contributing to development (Okpaku, 2003). In Africa, development agencies such as the New Partnership for Africa's Development (NEPAD), the Southern African

Development Community (SADC), and the Economic Commission for Africa (ECA), increasingly appreciate and place much emphasis on exploiting the potentials of ICTs for greater socio-economic development (Okpaku, 2003). This therefore, calls for empirical research on the use of ICTs in poverty alleviation.

The term rural community is generally defined operationally as referring to non-urban areas. It offers mostly a geographic delineation, although it has some economic reference since certain economic activities, mostly agricultural are associated with rural areas. The increasing heterogeneity of economic activity in rural communities is one of the trends that should be understood and capitalized on for enhancing sustainable livelihoods particularly for the poor are more likely to be enhanced by diversification of economic activities beyond the agricultural sector than by intensifying agricultural production in the world today (Agbaje & Agbaje, 2013). For the purposes of this study, the classification of communities into 'urban' and 'rural' was based on population size. Communities with 5,000 or more persons were classified as urban while communities with less than 5,000 persons were classified as rural (GSS, 2012).

Rural communities usually lack the social and economic infrastructure that exists in most urban communities. This result in inequality of opportunity for rural people: there are fewer services, limited choices of employment, and limited recreational facilities (International Federation of Social Workers, 2012). In addition, there are some groups within society that are particularly at risk of being left behind when others move forward into better conditions of living. Such groups are the poor, the physically and developmentally handicapped,

women, and in many countries, the aboriginal or indigenous peoples. Very often, members of some, or even all, of these risk groups are to be found in rural communities (International Federation of Social Workers, 2012).

Sustainability has many dimensions all of which are important to the sustainable livelihoods approach. Livelihoods are sustainable when they: are resistant in the face of external shocks and stress; are not dependent upon external support or if they are, this support itself should be economically and institutionally sustainable; maintain the long-term productivity of natural resources; and do not undermine the livelihoods of, or compromise the livelihoods options open to others (Marsh, 2003).

Another way of conceptualizing the many dimensions of sustainability is to distinguish between environmental, economic, social and institutional. Environmental sustainability is achieved when the productivity of life-supporting natural resources is conserved or enhanced for use by future generations. Economic sustainability is achieved when a given level of expenditure can be maintained over time. In the context of the livelihoods of the poor, economic sustainability is achieved if a baseline level of economic welfare can be achieved and sustained. With respect to social sustainability, it is achieved when social exclusion is minimized and social equity maximized. Institutional sustainability is achieved when prevailing structures and processes have the capacity to continue to perform their functions over the long term (Welland and Copestake, 2000) as cited by Agbaje and Agbaje (2013). For the purposes of this study, a livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and

assets both now and in the future, while not undermining the natural resource base (DFID, 1999).

1.2 Statement of the Problem

ICTs are believed to bring about social and economic development by creating an enabling environment. Almost every single activity in the modern world is becoming more dependent on the application of ICTs for one use or another. The benefits of ICTs reach even those who do not themselves have first-hand access to them (Asenso-Okyere & Mekonnen, 2012). Through ICTs, for example, a doctor in a rural village can get up-to-date information regarding certain diseases and can use that information to advice and treat patients; an agricultural extension worker can learn new technologies, rainfall forecasts, commodity prices, and use that information to advice farmers in rural villages (Asenso-Okyere & Mekonnen, 2012).

The need to conduct empirical research on ICTs and poverty alleviation arose out of the concern that although ICTs have been shown to promote economic growth, the precise linkages between ICTs and poverty alleviation are unclear. As observed by Braun and Torero (2006), the variety of views about ICTs reveal that their role in development is unclear, especially without convincing evidence of their impact and little research has been conducted on the direct and indirect links between ICTs and poverty reduction. In the view of Harindranath and Sein (2007), ICTs are widely accepted to have an important role in national development, but the nature of the link between the two remains unclear. They posit that much of this state is due to lack of clarity on how ICT is conceptualized in this

context. Furthermore, Souter *et al.* (2005) argue that the available evidence focuses on those who have made some use of ICTs as a result of particular development initiatives such as telecentres. There is, therefore, the need to conduct empirical research on the linkage between ICTs and poverty alleviation.

ICTs have the potential to improve the welfare of the poor by providing opportunities to increase social capital; improve availability of market information; creation of new economic opportunities; improve economic efficiency and competitiveness; better access to health and education facilities and more efficient and effective governance. ICTs have in fact made a new development paradigm possible (Hilbert, 2001).

In spite of the significant ICT developments and the growing recognition of their benefits, there are concerns about the role of ICTs in facilitating the communication of information for sustainable livelihoods and poverty alleviation in Ghana, particularly in rural areas where poverty is pervasive. There is generally a lack of clear empirical evidence on the linkage between ICTs, livelihoods and poverty in Ghana as the few studies available have not yielded sufficient evidence to comprehensively understand the subject.

Earlier research in Ghana on the subject has largely focused on impact of mobile telephony, ICTs and empowerment of women (Kwapong, 2008), mobile phones and sustainable livelihoods (Sey, 2008), mobile phones and micro and small business development (Frempong, Essegbey & Tetteh, 2007), adoption of ICTs by women food producers (Sampong, Egyir & Osei-Asare, 2007) and ICTs and rural development (Boateng, 2012). With respect to the rapidly changing nature of ICTs coupled with the multi-dimensional

nature of poverty, these few studies have not provided sufficient evidence to understand the use of ICTs in sustainable livelihoods and poverty alleviation at the household level in Ghana. Following from the above, it is apparent that only a few empirical researches have been undertaken on the subject and it is therefore necessary to do it to have a better understanding of the subject. Also most of the studies were confined to mobile phones to the exclusion of radio and television which are common, widely accessible and used in rural communities.

The study recognizes that there are a wide range of ICTs from print media (newspaper), video, digital camera to the Internet. However, three technologies, namely: mobile phones, radio and television are used for the study. These ICT tools are common, widely accessible and used in the rural areas and therefore qualify to be used in an exploratory study of the use of ICTs in poverty alleviation. Most studies in ICTs for poverty alleviation use mobile phones, but the view of the researcher is that the older ICT tools of radio and television which have been used in disseminating information in agricultural extension in rural areas, for instance, also have the potential of playing a significant role in poverty alleviation, hence their inclusion. This is the research gap that the present study is intended to fill.

It is against this background that this study was undertaken to explore the use of mobile phones, radio and television in poverty alleviation at the individual and household levels in eighteen rural villages in two districts of the Central Region in Ghana. As indicated earlier on, despite the benefits of ICTs, its precise role in sustainable livelihoods and poverty alleviation at the household level is not yet known in Ghana. Furthermore, on completion

of the study, it will provide information to inform and influence current policy and practice concerning the reduction of poverty in Ghana; improve research capacity for undertaking analysis on the ICT/poverty nexus in Ghana and raise the profile of researchers and institutions in Ghana who undertake research on the relationship between ICTs and poverty.

1.3 Assumptions of the Study

On the basis of the statement of the problem above, this thesis is based on the following standpoints taken by the researcher, namely that: there is a relationship between ICT access and use, poverty alleviation and sustainable livelihoods. The relationship between ICT access and use and poverty alleviation is complex. ICTs are one of the ingredients in poverty alleviation and sustainable livelihoods. The more people use ICTs, the lower the rate of poverty (Flor, 2001). There is a great potential for the use of ICTs to reduce the many dimensions of poverty; and ICTs, if supported with the right policies will complement and strengthen other multi-sectoral efforts that are required for poverty alleviation.

1.4 Purpose of the Study

The purpose of this case study has been to explore the use of Information and Communication Technologies (mobile phones, radio and television) in poverty alleviation in two districts (Effutu Municipal and Awutu-Senya District) of the Central Region of Ghana. Poverty alleviation is defined as the substantial reduction in all the negative aspects

of poverty, namely: ill-health, illiteracy, low income and expenditure, education, vulnerability, assets, poverty level, and business turnover.

Specific objectives of the study

Specifically, the study sought to:

1. Investigate the access to and use of mobile phones, radio and television in two rural districts of the Central Region of Ghana;
2. Determine the influence of mobile phones, radio and television on rural communication and information exchange;
3. Investigate the detrimental effects of the use of mobile phones, radio and television on users in two rural districts of the Central Region of Ghana;
4. Identify barriers to the effective use of mobile phones, radio and television in two rural districts of the Central Region of Ghana; and
5. Discover the extent to which access to and use of ICTs (mobile phones, radio and television) have reduced the individual components of poverty with specific reference to ill-health, illiteracy, low income and expenditure, education, vulnerability, assets, poverty level, and business turnover in two rural districts of the Central Region of Ghana.

1.5 Research Question

1.5.1 Overall research question

The overall research question was: What is the use of Information and Communication Technologies (mobile phones, radio and television) in poverty alleviation at the individual

and household level in eighteen rural villages in two districts (Effutu Municipal and Awutu-Senya District) of the Central Region of Ghana?

1.5.2 Specific research questions

The study attempted to find answers to the following questions:

1. How are people in the two rural districts of the Central Region of Ghana accessing and using mobile phones, radio and television?
2. How do mobile phones, radio and television influence rural communication and information exchange?
3. What are the detrimental effects of using mobile phones, radio and television in two rural districts of the Central Region of Ghana?
4. What are the barriers to the effective use of mobile phones, radio and television in two rural districts of the Central Region of Ghana?
5. How has access to and use of ICTs (mobile phones, radio and television) reduced the individual components of poverty in two rural districts of the Central Region of Ghana with specific reference to ill-health, illiteracy, low income and expenditure, education, vulnerability, assets, poverty level, and business turnover?

1.6 Significance of the Study

Understanding the contribution of ICTs to poverty reduction and improved livelihoods is a complex undertaking, as there are so many ways in which ICTs can impact on people's lives along these lines. For this reason, several studies (Souter *et al.*, 2005; Braun and

Torero, 2006; McNamara, 2008) have indicated that this kind of research depends greatly on among other things, how poverty and livelihoods are conceptualized, defined and measured.

In recent years, there has been recognition that poverty has multiple causes and manifestations beyond lack of income. Besides economic insecurity, poverty also includes non-material aspects such as social isolation, vulnerability, powerlessness, denial of rights, and lack of services and 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). Consequently, improving people's access to information and their ability to communicate with each other and with their environment should give them the power to improve their quality of life. Understanding the linkages between ICTs, livelihoods and poverty also requires prior understanding of the influence that ICTs have on the existing information and communication flows. This is the information that this study intends to provide to have a better understanding of the use of ICTs in poverty alleviation. It is, therefore, very significant to development discourse as it will provide development planners with empirical evidence as they plan to develop and implement development plans for socio-economic development.

As noted earlier on, despite the significant benefits of ICTs to socio-economic development, there is generally a lack of clear empirical evidence of the role played by ICTs in poverty alleviation. In Ghana, the few studies identified such as Kwapong (2008), Sey (2008), Frempong, Essegbey and Tetteh (2007) and Sampong, Egyir and Osei-Asare

(2007) have not provided sufficient empirical evidence to understand the use of ICTs in poverty alleviation.

The present study is relevant in a number of ways and contributes to the growing literature on the contribution of ICTs, poverty alleviation, and sustainable livelihoods. The study contributes to the growing literature on ICTs and rural development. It is significant because it is multi-disciplinary in nature in that it combines ICTs, poverty alleviation and livelihoods concepts which have their roots in information technology, communication studies and development studies.

Another significance of the study is that it presents one of the first attempts in the Central Region of Ghana to conduct a comprehensive empirical study on the linkages between ICTs, poverty and sustainable livelihoods in rural areas. Reliable data on ICTs and how they contribute to poverty alleviation and sustainable livelihoods is minimal in Ghana. It, therefore, provides literature to understand the critical role of ICTs in poverty alleviation at the individual and household levels.

The study has implications for policy and practice and the growing literature on ICTs for sustainable development and poverty alleviation. The study, therefore, has positive contributions to make to the global discussions on Information and Communication Technologies for Development (ICT4D) and is of particular importance to ICT policy and decision makers and all development practitioners interested in ICT4D in rural communities. This is for the simple reason that if the findings and recommendations are

implemented, this would go a long way to reduce many of the manifestations of poverty at the individual and household level.

The findings and recommendations, if adopted, would assist policy and decision makers and development practitioners in the development and implementation of appropriate ICT policies and strategies on evidence-based research. It would also be useful in developing policy measures that ensure users recognition of the use of ICTs in improving livelihoods and alleviating poverty. In developing policy frameworks and communicating them to the end users, it would ensure the creation of a favourable condition for users to take advantage of the opportunities provided by ICTs and thereby enhance their livelihoods.

The study focused on five key specific objectives to establish the relationship between ICTs and poverty alleviation. Studying these specific objectives was of significance to knowledge as the information generated throws more light on how people in rural communities are accessing and using ICTs for agricultural, educational, health, social benefits. Also in times of emergencies (flood, fire outbreaks, robberies) they use ICTs to overcome these difficulties and to seek for assistance and how they overcome vulnerabilities, use it to interact with government agencies and persons, interact with groups and networks to overcome social isolation. The findings would therefore impact positively on the fight against poverty at the national level.

Furthermore, another significance of undertaking the study, especially in addressing the specific objectives is that it provided empirical evidence on the relationship between

poverty and ICTs and provide a better understanding of how people in rural communities access and use ICTs so that any development intervention would be based on verifiable information. In terms of the detrimental effects and the constraints in ICT access and use, the data collected from the study would be a rich source of information for government, development partners and other agencies interested in rural development to have sufficient empirical evidence on the deployment of ICTs in rural communities. The study also provided baseline information for a national study on ICT access and use in poverty alleviation generally and particularly in rural communities.

The outcome of the study would further assist in developing and implementing ICT policies and strategies which are appropriate for rural communities based on empirical evidence. This then would significantly close the gap identified for which this study is being undertaken and therefore contributes significantly to the literature on the use of ICTs in poverty alleviation in rural communities. It would thereby provide valuable information to be used in designing and implementing policy decisions concerning the allocation and targeting of resources for poverty alleviation in Ghana.

Finally, another significance of the study was the suggestion to policy/decision makers, rural development practitioners and development partners that there is the need for pro-rural poor ICT strategies and policies that can be implemented in rural communities in order to make the rural people have access to opportunities which would assist them improve upon their livelihoods and thereby alleviating poverty.

1.7 Scope and Limitations of Study

The study explored the use of information and communication technologies (mobile phones, radio and television) in poverty alleviation in two rural districts of the Central Region of Ghana. It was undertaken using the multi-dimensional aspects of sustainable livelihoods framework. The sustainable livelihoods identify five clusters of assets or capital: financial, human, physical, social, and natural but this study used only the first four in exploring the use of ICTs in poverty alleviation in the study area.

The financial cluster considered the flow of money and how it is reflected in the household income, expenditure and assets. Human cluster considered the educational level of household members, physical cluster considered access to social services such as water, electricity and quality of housing, social cluster considered aspects such as vulnerability and exclusion/inclusion. The study did not include natural capital which is the natural resources available to the households because the time in which the study was carried out was not long enough to have an impact on natural resources. It must be stated that all the five capitals (financial, human, physical, social, and natural) reflect ICT usage but only the first four was used for the stated reason. In view of the fact that the study is on poverty alleviation, ICT access and usage among wealthy people was not examined.

The focus of the study was on the beneficial use of ICTs. It did not include an analysis of telecommunications policy or the political economy of telecommunications in Ghana. Additionally, the study did not examine particular development initiatives such as telecentres. The study was limited to mobile phones, radio and television as they were the

most common, widely accessible and used in rural communities. Internet was not studied because poor people do not have meaningful access to it and using the Internet to target directly the information and communication needs of the poor is unlikely to be a successful strategy for poverty reduction. For this reason, the Internet was excluded from the study.

In terms of methodology, the study used the case study design with a combination of both quantitative and qualitative methods of data collection with the quantitative as the dominant method. The study was limited to two districts of the Central Region out of two hundred and twelve metropolitan, municipal and districts in Ghana. In the two districts, it was delimited to eighteen rural villages and further delimited in the rural villages to households that had mobile phone, radio and television and used at least one of them. In a household, the study was further delimited to the head of the household.

A number of constraints were faced from a comprehensive study of this nature. These were: in some communities, heads of household were not cooperative; appointments for some interviews were not honoured in some cases; the findings may therefore have limited value for making generalization to the whole population. These limitations notwithstanding, the quality of work did not suffer in any way.

1.8 Definition of Concepts and Terms of Study

With respect to this study, the following key concepts and terms are defined:

Access: refers to not only connectivity but also of capability to use new tools and relevant content provided in accessible and useful forms.

Household: A household is defined as a person or a group of persons, who live together in the same house or compound and shared the same house-keeping arrangements. In general, a household consisted of a man, his wife, children and some other relatives or a house help who may be living with them. However, it is important to remember that members of a household are not necessarily related (by blood or marriage) because non-relatives (e.g. house helps) may form part of a household (GSS, 2012).

Head of Household: The household head is defined as a male or female member of the household recognised as such by the other household members. The head of household is generally the person who has economic and social responsibility for the household. All relationships are defined with reference to the head (GSS, 2012).

Information: A number of scholars and information practitioners define the concept based on their own descriptive and prescriptive point of view. For the purposes of this study, the term information means any fact, figure and text generated, processed, stored, retrieved and disseminated in any medium to assist people in undertaking their livelihoods activities.

Information and Communication Technologies: ICTs encompass technologies that can process different kinds of information (voice, video, audio, text and data) and facilitate different forms of communication among human agents, among humans and information systems, and among information systems. They are about capturing, storing, processing, sharing, displaying, protecting, and managing information.

Livelihoods: A livelihood is essentially “a means of gaining a living” consisting of capabilities, assets and activities. Livelihood capabilities are people’s physical abilities, skills, knowledge and creativity, which can be likened to human capital. As regards this study, the definition of livelihoods that stems from Chambers and Conway (1992) that

livelihood “is the means, activities, entitlements and assets by which people make a living” was adopted.

Poverty: SIDA (2005) defines poverty as lack of power, choice and material resources. Poverty is not just a case of low income, but also a lack of access to health care, schools and social security. This study, however, adopted the multidimensional definition that considers poverty as a state of low income, vulnerability, powerlessness, social exclusion, lack of assets needed to attain basic necessities, and lack of access to essential services (UN, 2000).

Poverty alleviation: The operational definition of poverty for this study includes far more than financial solvency. In this respect the operational definition of poverty alleviation for this study refers to substantial reduction in all the negative aspects of poverty, namely: ill-health, illiteracy, low income and expenditure, education, vulnerability, assets, poverty level, and business turnover.

Rural community: The classification of communities into ‘urban’ and ‘rural’ was based on population size. Communities with 5,000 or more persons were classified as urban while communities with less than 5,000 persons were classified as rural (GSS, 2012).

Sustainable livelihoods: A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (DFID, 1999).

Use: refers to the application of ICTs for communicating, exchanging and disseminating information.

1.9 Organization of the Study

The study is organized into eight chapters. Chapter One is the introduction to the study. It provides background information to the study, problem statement, the objectives and research questions of the study, significance of the study, scope and limitations of the study, and a brief outline of the study.

Chapter Two explains and justifies the theoretical framework that guided the study and the application of the framework in other studies. Chapter Three presents the review of the literature relevant to the study, namely: ICTs, poverty, poverty alleviation and positions it within similar studies. The literature relating to access and use of ICTs, the role of access and use of ICTs in poverty alleviation, ICTs and economic development are also reviewed. Furthermore, a review of the constraints and detrimental effects of access to and use of ICTs is also presented.

Chapter Four describes the study area and the reasons for choosing the particular areas. It explains and justifies the research design and the methodologies used. Furthermore, the methods for data collection and procedures used in analysing the data are described. Chapter Five presents the results of the data obtained from the field work with respect to respondents' personal characteristics such as gender, age, education, religion, ethnicity and occupation. Furthermore, the household characteristics of respondents, their socio-economic status and issues of social exclusion and vulnerability are discussed.

Chapter Six presents the empirical results as regards access to and use of ICTs and provides and explanation for the results obtained. Chapter Seven presents and discusses empirical data on the role of access and use of ICTs in poverty alleviation, influence of ICTs on rural communication and exchange, detrimental effects and barriers to the effective use of ICTs. Chapter Eight presents a summary of the findings of the study, conclusions, recommendations and implications of the study with respect to research contribution to information science, advocacy, policy and areas of further research.

1.10 Summary

Chapter One introduces the work and sets the scene for the study. The point is made that the study is an attempt to have a better understanding of the use of ICTs in poverty alleviation in two rural districts of the Central Region of Ghana based on empirical evidence at the individual and household level. The issues discussed in the chapter include: background to the study, statement of the problem, purpose of the study, objectives and research questions, significance of the study. Other issues described include: scope and limitations of the study, definitions of terms and concepts, and the organization of the study.

The view is presented in the chapter that ICTs are changing rapidly and poverty is multi-dimensional in nature. There are a lot of benefits of ICTs but its precise role in sustainable livelihoods and poverty alleviation at the household level are not yet known in Ghana. Very few studies have been done in Ghana, but these studies have not provided sufficient empirical evidence to understand the use of ICTs in poverty alleviation. This is the

research gap that this study intended to fill. This, therefore, lays the foundation for the study which is set out to understand the use of mobile phones, radio and television in poverty alleviation at the individual and household levels based on empirical evidence in two rural districts of the Central Region of Ghana.

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CHAPTER TWO

THEORETICAL FRAMEWORK

2.1 Introduction

This chapter describes the theoretical framework that guided the study. It is centred on the Sustainable Livelihoods Framework (SLF) as developed by the Department for International Development (DFID). A justification for the selection of SLF as the theoretical framework for the study is made along with critiques of the framework and finally some applications of the framework in previous research.

2.2 Theoretical Framework

Various frameworks and models have been used in the past in studies on ICTs, poverty alleviation and sustainable livelihoods. These include: the information chain model (Heeks, 2005), onion ring model, push and pull model, the sustainable livelihoods framework (SLF) as used by DFID, CARE and the UNDP. Heeks (2005) argues that to effectively improve upon the livelihoods of a people, all the components of the “information chain package” (data, economic, social, and action resources) must be taken into consideration. From the onion ring model, (also proposed by Richard Heeks), Uddin (2012) argues that the livelihood status of the poor will be promoted if information is considered as the starting point. This model further argues that all information handling techniques must be embraced, without bias to digital technologies, since information systems add value when they interact with information, people and processes. Finally, this model argues that information systems do not work in isolation, but respond and interact with the surrounding social, economic, political and legal environment (Uddin, 2012).

In the context of achieving the Millennium Development Goals (MDGs), the OECD (2005) discusses the push and pull strategies for promoting livelihoods among the poor. It is argued that “ICT/technology-push” projects are not the best contributors to fulfilling the MDGs; but MDG-led development co-operation, “pulling” in ICTs where appropriate and efficient, have more of an impact on poverty (OECD, 2005). The organization proposes that “the outcomes of the MDGs will be reached through three basic processes – livelihood enhancement, efficiency in delivering services, and efficiencies and voice in the planning processes” which must have information as its central resource (OECD, 2005). According to Hussein (2002), the common thread that unites all these frameworks is that they have been developed to help understand and analyze the livelihoods of the poor and assess the contributions made by the existing activities.

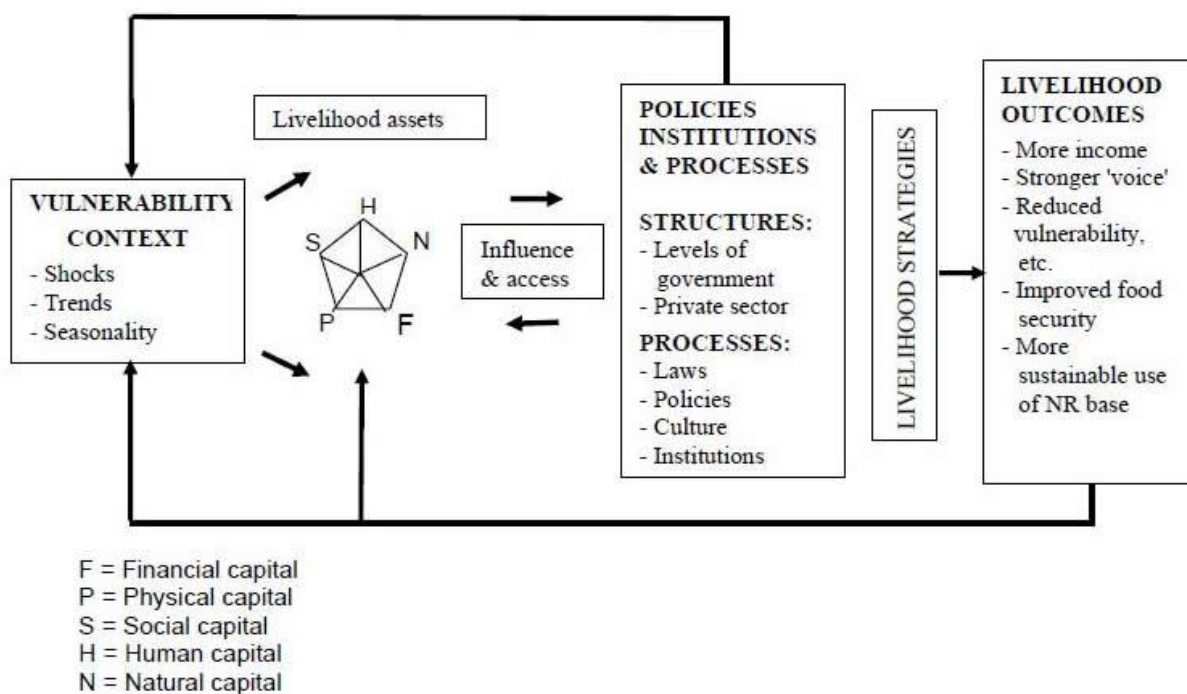
The theoretical basis of this study was guided by the Sustainable Livelihoods Framework as developed and used by DFID because it best presents the main factors that affect people’s livelihoods, and typical relationships between these factors in a clear manner.

2.2.1 Sustainable Livelihoods Framework

The Sustainable Livelihoods Framework, which is presented in schematic form in figure 2.1, was developed to help understand and analyse the livelihoods of the poor. It is also useful in assessing the effectiveness of existing efforts to reduce poverty. Like all frameworks, it is a simplification; the full diversity and richness of livelihoods can be understood only by qualitative and participatory analysis at a local level. The framework does not attempt to provide an exact representation of reality. It does, however, endeavour

to provide a way of thinking about the livelihoods of poor people that will stimulate debate and reflection, thereby improving performance in poverty reduction.

According to Chambers and Conway (1992), a livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets, both now and in the future, while not undermining the natural resource base. This will therefore depend on the ability of the people to develop appropriate strategies to manage their assets, over which they have little control to achieve their desired livelihood outcome (DfID, 1999).



Adapted from: Carney *et al* 1999

Figure 2.1: Sustainable Livelihoods Framework

The SLF serves as an important reminder of the complexity of rural poverty and of the equally complex strategies that the poor deploy to address their daily vulnerabilities. It is a flexible tool that enables users to explore livelihoods of different communities from different angles. In other words, the holism of SLF helps to describe the multidimensionality of livelihoods and poverty. It provides a checklist of poverty and livelihood issues to be considered.

SLF is an approach to development and poverty reduction which has evolved from changing perspectives on poverty, participation and sustainable development (Chambers and Conway, 1992; DFID, 2001). The livelihoods framework focuses on sustainable local level poverty reduction strategies, which strengthen people's own inventive solutions. In its simplest form, the framework views people as operating in a context of vulnerability. Within this context, they have access to certain assets or poverty reducing factors. These gain their meaning and value through the prevailing social, institutional and organizational environment. This environment also influences the livelihood strategies – ways of combining and using assets – that are open to people in pursuit of beneficial livelihood outcomes that meet their own livelihood objectives (DfID, 1999).

Key elements of the Sustainable Livelihoods Framework

The key elements of the framework include the vulnerability context, the livelihood assets, the transforming structures and processes, livelihood strategies, and livelihood outcomes. As shown in Figure 2.1, the SL framework identifies and maps out the relationships and feedback loops between the key elements and factors that determine these outcomes.

Vulnerability Context

The Vulnerability Context frames the external environment in which people exist. People's livelihoods and the wider availability of assets are fundamentally affected by critical trends as well as by shocks and seasonality – over which they have limited or no control. The factors that make up the Vulnerability Context are important because they have a direct impact upon people's asset status and the options that are open to them in pursuit of beneficial livelihood outcomes (DfID, 1999). It is only with a critical evaluation of a people's vulnerability situation that capability strategies can be developed to overcome them, hence rendering their livelihoods sustainable.

Shocks can destroy assets directly in the case of floods, storms, civil conflict and so on. They can also force people to abandon their home areas and dispose of assets such as land prematurely as part of coping strategies. Recent events have highlighted the impact that international economic shocks, including rapid changes in exchange rates and terms of trade, can have on the very poor. Trends may or may not be more benign, though they are more predictable. They have a particularly important influence on rates of return (economic or otherwise) to chosen livelihood strategies. To this effect, Baumann (2002) includes continuous changes (either increasing/decreasing) in population, resources, and technological trends as likely factors that can make people vulnerable.

Seasonal shifts in prices, employment opportunities and food availability are one of the greatest and most enduring sources of hardship for poor people in developing countries. Meena and O'Keefe (2007) indicate that both livelihood assets and expenses could be

seasonal as their study in the Kilimanjaro region of Tanzania revealed that school fees, fuelwood, water, markets, and off-farm employments were seasonal throughout the year.

It must be pointed out that not all the trends listed above are negative or cause vulnerability. For example, economic indicators can move in favourable directions, diseases can be eradicated and new technologies may be very valuable to poor people. However, use of the term “vulnerability context” draws attention to the fact that this complex of influences is directly or indirectly responsible for many of the hardships faced by the poorest people in the world. It is common for these to be a vicious circle in action. The inherent fragility of poor people’s livelihoods makes them unable to cope with stresses, whether predictable or not. It also makes them less able to manipulate or influence their environment to reduce those stresses. As a result they become increasingly vulnerable. Even when trends move in the right direction, the poorest are often unable to benefit because they lack assets and strong institutions working in their favour (DfID, 1999).

Livelihoods Assets

According to Murray and Ferguson (2001), livelihoods assets are the building blocks of a sustainable livelihood. By building assets, individuals and households develop their capacity to cope with the challenges they encounter and to meet their needs on a sustained basis. The framework draws attention to the variety of assets that contribute to making a sustainable livelihood and to ways in which they are interdependent. In the view of Diga (2007) the sum of the household’s assets is the overall view of household strengths, which will either assist or hinder the strategies and outcomes of maintaining the lives of the

vulnerable. This is contrasted with a conventional definition of poverty that compares the household's income or consumption level, to either the dollar a day poverty line or a national poverty line. As Figure 2.1 shows, sustainable livelihoods framework presents assets as a pentagon to enable information about people's assets to be presented visually. There are five broad categories of assets (human, social, natural, physical and financial).

DfID (1999) describe human capital as the skills, knowledge, ability to labour and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives. At a household level human capital is a factor of the amount and quality of labour available; this varies according to household size, skill levels, leadership potential, health status, and so on. It can therefore be said that human capital comprises the main elements of adequate education (both formal and informal; including technical and vocational training) and good health. Without these two elements, it would be highly difficult for an individual or a household to influence their livelihoods.

Human capital appears in the generic framework as a livelihood asset, that is, as a building block or means of achieving livelihood outcomes, but its accumulation can also be an end in itself (DfID, 1999). Many people regard ill-health or lack of education as core dimensions of poverty and thus overcoming these conditions may be one of their primary livelihood objectives. In the view of DfID (1999), as well as being of intrinsic value, human capital (knowledge and labour or the ability to command labour) is required in order to make use of any of the four other types of assets. It is therefore necessary, though not on its own sufficiency, for the achievement of positive livelihood outcomes.

Social capital, which is another livelihood asset in the context of the sustainable livelihoods framework, is taken to mean the social resources upon which people draw in pursuit of their livelihood objectives (DfID, 1999). These are developed through networks and connectedness, membership and relationships of trust. Networks and connectedness, either vertical (patron/client) or horizontal (between individuals with shared interests) increase people's trust and ability to work together and expand their access to wider institutions, such as political or civic bodies. Membership of more formalized groups often entails adherence to mutually-agreed or commonly accepted rules, norms and sanctions; and relationships of trust, includes the reciprocity and exchanges that facilitate co-operation, reduce transaction costs and may provide the basis for informal safety nets amongst the poor. All these (networks, memberships and relationships) are inter-related according to DfID (1999). For example, membership of groups and associations can extend people's access to and influence over other institutions. Likewise trust is likely to develop between people who are connected through kinship relations or otherwise.

Of all the five livelihood building blocks, social capital is the most intimately connected to transforming structures and processes (see fig. 2.1). In fact, it can be useful to think of social capital as a product of these structures and processes, though this over-simplifies the relationship. Structures and processes might themselves be products of social capital; the relationship goes two ways and can be self-reinforcing. For example, when people are already linked through common norms and sanctions they may be more likely to form new organizations to pursue their interests; and strong civil society groups help people to shape policies and ensure that their interests are reflected in legislation.

Mutual trust and reciprocity lower the costs of working together. This means that social capital has a direct impact upon other types of capital: By improving the efficiency of economic relations, social capital can help increase people's incomes and rates of saving (financial capital). Social capital can help to reduce the 'free rider' problems associated with public goods. This means that it can be effective in improving the management of common resources (natural capital) and the maintenance of shared infrastructure (physical capital). Social networks facilitate innovation, the development of knowledge and sharing of that knowledge. There is, therefore, a close relationship between social and human capital. Social capital, like other types of capital, can also be valued as a good in itself. It can make a particularly important contribution to people's sense of well-being (through identity, honour and belonging) (DfID, 1999).

Furthermore, natural capital according to DfID (1999) is the term used for the natural resource stocks from which resource flows and services (e.g. nutrient cycling, erosion protection) useful for livelihoods are derived. There is a wide variation in the resources that make up natural capital, from intangible public goods such as the atmosphere and biodiversity to divisible assets used directly for production (trees, land, etc.). Within the sustainable livelihoods framework, the relationship between natural capital and the Vulnerability Context is particularly close. Many of the shocks that devastate the livelihoods of the poor are themselves natural processes that destroy natural capital (e.g. fires that destroy forests, floods and earthquakes that destroy agricultural land) and seasonality is largely due to changes in the value or productivity of natural capital over the year.

Clearly, natural capital is very important to those who derive all or part of their livelihoods from resource-based activities (farming, fishing, gathering in forests, mineral extraction, etc.). However, its importance goes way beyond this. None of us would survive without the help of key environmental services and food produced from natural capital. Health (human capital) will tend to suffer in areas where air quality is poor as a result of industrial activities or natural disasters (e.g. forest fires). And although our understanding of linkages between resources remains limited, we know that we depend for our health and well-being upon the continued functioning of complex ecosystems (which are often undervalued until the adverse effects of disturbing them become apparent) (DfID, 1999).

From the DfID (1999) point of view, physical capital comprises the basic infrastructure and producer goods needed to support livelihoods. Infrastructure consists of changes to the physical environment that help people to meet their basic needs and to be more productive. Producer goods are the tools and equipment that people use to function more productively. The components of infrastructure which are usually essential for sustainable livelihoods: affordable transport; secure shelter and buildings; adequate water supply and sanitation; clean, affordable energy; and access to information (communications). Infrastructure is commonly a public good that is used without direct payment. Exceptions include shelter, which is often privately owned, and some other infrastructure that is accessed for a fee related to usage (e.g. toll roads and energy supplies). Producer goods may be owned on an individual or group basis or accessed through rental or 'fee for service' markets, the latter being common with more sophisticated equipment.

Many participatory poverty assessments have found that a lack of particular type of infrastructure is considered to be a core dimension of poverty. Without adequate access to services such as water and energy, human health deteriorates and long periods are spent in non-productive activities such as the collection of water and fuel wood. The opportunity costs associated with poor infrastructure can preclude education, access to health services and income generation. For example, without transport infrastructure, essential fertilizer cannot be distributed effectively, agricultural yields remain low and it is then difficult and expensive to transport limited produce to the market. The increased cost (in terms of all types of capital) of production and transport means that producers operate at a comparative disadvantage in the market. Insufficient or inappropriate producer goods also constrain people's productive capacity and therefore the human capital at their disposal. More time and effort are spent on meeting basic needs, production and gaining access to the market (DfID, 1999).

Finally, financial capital with respect to DfID (1999) denotes the financial resources that people use to achieve their livelihood objectives. The definition used here is not economically robust in that it includes flows as well as stocks and it can contribute to consumption as well as production. However, it has been adopted to try to capture an important livelihood building block, namely the availability of cash or equivalent that enables people to adopt different livelihood strategies. According to DfID (1999), there are two main sources of financial capital. These are available stocks and regular inflows of money. With respect to available stocks, savings are the preferred type of financial capital because they do not have liabilities attached and usually do not entail reliance on others.

They can be held in several forms: cash, bank deposits or liquid assets such as livestock and jewellery. Financial resources can also be obtained through credit-providing institutions. As regards regular inflows of money, apart from earned income, the most common types of inflows are pensions, or other transfers from the state, and remittances. In order to make a positive contribution to financial capital these inflows must be reliable.

Financial capital is probably the most versatile of the five categories of assets. It can be converted – with varying degrees of ease, depending upon transforming structures and processes – into other types of capital. It can be used for direct achievement of livelihood outcomes – for example when food is purchased to reduce food insecurity. Rightly or wrongly, it can also be transformed into political influence and can free people up for more active participation in organizations that formulate policy and legislation and govern access to resources. However, it is also the asset that tends to be the least available to the poor. Indeed, it is because the poor lack financial capital that other types of capital are so important to them. There are, in addition, assets or desirable outcomes that may not be achievable through the medium of money (DfID, 1999).

Transforming Structures and Processes

Souter *et al.* (2005) observed that people's access to assets, and their freedom of choice in how to deploy them, are strongly influenced by 'transforming structures and processes' within the livelihoods framework; which are the institutions, organizations, policies and legislation that shape livelihoods. These agents operate at all levels, from the household to the international arena, and in all spheres, from the most private to the most public. They

effectively determine access (to various types of capital, to livelihood strategies and to decision-making bodies and sources of influence); the terms of exchange between different types of capital; and returns (economic and otherwise) to any given livelihood strategy. There is a growing emphasis on the structures of institutions and organizations, and processes; but most importantly, there has been an increased discussion on their relationships with governance, rights and power (Cahn, 2006).

Structures in the Sustainable Livelihoods Framework are the hardware – the organizations, both private and public – that set and implement policy and legislation, deliver services, purchase, trade, and perform all manner of other functions that affect livelihoods. They draw their legitimacy from the basic governance framework. Structures exist at various levels. This is most obvious in the case of governmental organizations. These operate in cascading levels with varying degrees of autonomy and scope of authority, depending upon the extent and nature of decentralization. Private commercial organizations also operate at different levels from the multi-national to the very local; it is not only the local level that is relevant to livelihoods. Analysis should therefore be sensitive to the roles and responsibilities of the different levels of structures and seek to identify those that are of greatest importance to livelihoods (DfID, 1999).

According to DfID (1999), structures are important because they make processes function. Without legislative bodies there is no legislation. Without courts to enforce it, legislation is meaningless. Without traders, markets would be limited to direct trades between buyers and sellers. An absence of appropriate structures can be a major constraint to development.

This is a particular problem in remote rural areas. Many important organizations – both private and public sector – do not reach these areas. As a result services go undelivered, markets do not function and people's overall vulnerability and poverty increases. Moreover, when people do not have access to organizations of the state, they often have little knowledge of their rights and only a very limited understanding of the way in which government functions. This disenfranchises them and makes it hard for them to exert pressure for change in the processes (policies, legislation, etc.) that affect their livelihoods.

If structures can be thought of as hardware, processes can be thought of as software (DfID, 1999) which may refer to the myriad of activities, relationships, interactions and linkages that occur in policy and institutions, and are related to the achievement of sustainable livelihoods (Cahn, 2006). Processes determine the way in which structures – and individuals – operate and interact; and they are both crucial and complex. There are many types of processes operating at a variety of different levels, but incidentally, there are overlaps and conflicts between and among them. Policies, for instance, inform the development of new legislation and provide a framework for the actions of public sector implementing agencies and their sub-contractors. Institutions have been variously defined as the 'rules of the game', 'standard operating practices', 'routines, conventions and customs' or 'the way things are done'. They are both formal and informal practices that structure relationships and make the behaviour of organizations somewhat predictable. Thus, informal arrangements on land access are institutions, as are markets. 'Rules of the game' operate both within structures and in interactions between structures (DfID, 1999).

Processes are important to every aspect of livelihoods. They provide the incentives – from markets through cultural constraints to coercion – that stimulate people to make particular choices (about which livelihood strategy to pursue, where to pursue it, how much to invest in different types of livelihood assets, how to manage a resource, etc.). They grant or deny access to assets. They enable people to transform one type of asset into another (through markets). They have a strong influence on inter-personal relations – how different groups treat each other.

One of the main problems faced by the poor is that the processes that frame their livelihoods systematically restrict them and their opportunities for advancement. This is a characteristic of social exclusion and it is one reason why it is so important that governments adopt pro-poor policies. If higher-level policy is genuinely pro-poor and designed to protect the rights of excluded minorities, this may in time filter down and influence not only legislation but also less formal processes (DfID, 1999). Hence, an improved understanding of transforming structures and policies available to a people, from macro-levels through meso levels to the very micro levels will increase appreciation of their livelihood choices; and enhance strategies to adopt in making these choices sustainable.

Livelihood Strategies

There are a range and combination of activities and choices that people undertake in order to achieve their livelihood goals; and these are referred to as livelihood strategies. These strategies have to be understood as a dynamic process in which people combine activities

to meet their various needs at different times and on different geographical or economical levels, and they may even differ within a household. This element of the Sustainable Livelihoods Framework is highly interactive with the other elements of the framework, namely vulnerability contexts, livelihood assets, transforming structures and processes, and the desired livelihood outcomes. An extremely critical vulnerability context implies the adoption of very timely strategies to cope with and overcome the situation; and in the manner, very carefully designed and implemented livelihood strategies would yield very positive outcomes, and vice versa.

Various scholars and development oriented researchers have described myriads of livelihood strategies that are used by the poor and vulnerable to mitigate the challenges they encounter in their environments. Some have classified these strategies into ‘agricultural intensification/extensification’, ‘diversification’, and ‘migration’ (Scoones, 1998) cited in Cahn (2006); with the primary targets being an agrarian population. Carney (1998) cited in Cahn (2006) classified livelihood strategies as ‘natural resource based’, ‘non-natural resource based’, and migration, probably with the background that these livelihood strategies are widespread among communities, and not only agrarian ones. But Ellis (2000) cited in Cahn (2006) summed up all livelihood strategies into activities that are ‘natural resource based’ and ‘non natural resource based’ so that remittance, transfers, and alliances are better covered.

The more choice and flexibility that people have in their livelihood strategies, the greater their ability to withstand – or adapt to – the shocks and stresses of the vulnerability context.

Strategies are intimately connected with people's objectives – the beneficial livelihood outcomes that they seek (DfID, 1999).

Livelihood Outcomes

The final element of the Sustainable Livelihoods Framework is the livelihood outcomes, which are the achievements or outputs of livelihood strategies. Once again, the important idea associated with this component of the framework is that we, as outsiders, investigate, observe and listen, rather than jumping to quick conclusions or making hasty judgments about the exact nature of the outcomes that people pursue. In particular, we should not assume that people are entirely dedicated to maximizing their income. Rather, we should recognize and seek to understand the richness of potential livelihood goals. This, in turn, will help us to understand people's priorities, why they do what they do, and where the major constraints lie (DfID, 1999).

Figure 2.1 contains the livelihood outcomes that appear in the generic framework proposed by DfID (1999) and is summarized into: more income, increased well-being, reduced vulnerability, improved food security, and more sustainable use of the natural resource base. With respect to more income, although income measures of poverty have been much criticized, people certainly continue to seek a simple increase in net returns to the activities they undertake and overall increases in the amount of money coming into the household (or their own pocket). Increased income also relates to the idea of the economic sustainability of livelihoods (DfID, 1999).

As regards increased well-being, in addition to income and things that money can buy, people value non-material goods. Their sense of well-being is affected by numerous factors, possibly including their self-esteem, sense of control and inclusion, physical security of household members, their health status, access to services, political enfranchisement, maintenance of their cultural heritage, and many more (DfID, 1999). In the case of reduced vulnerability, poor people are often forced to live very precariously. With no cushion against the adverse effects of the vulnerability context; their livelihoods are to all intents and purposes unsustainable. For such people, reducing their vulnerability to the downside and increasing the overall social sustainability of their livelihoods may well take precedence over seeking to maximize the upside.

Food insecurity is a core dimension of vulnerability. It appears as a separate category in the framework in order to emphasize its fundamental importance, and because this helps to locate the activities of those governments and donors that focus on food security. It is also worth noting that participatory poverty assessments have shown hunger and dietary inadequacy to be a distinct dimension of deprivation. Sustainable use of the natural resource base relates to environmental sustainability, or sustainability of the natural resource base, and it is not the only dimension of sustainability that is important to DFID. However, it is a major concern that is not adequately captured in the other livelihood outcome categories. Although often viewed as a donor objective, it is of course shared by many who recognize the long-term benefits of prudent resource use (DfID, 1999).

2.3 Application of the Sustainable Livelihoods Framework (SLF)

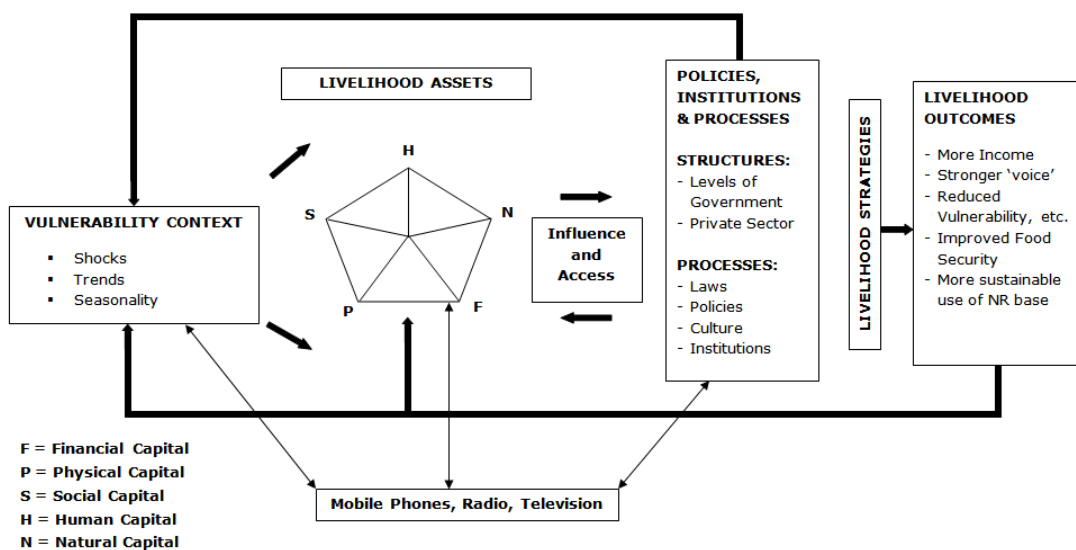
The potential for applications of the SLA are manifold and not restricted to livelihood thinking only, as the approach includes ideas of other recent theoretical approaches. Its flexible design and openness to changes makes it adaptable to diverse local settings, where it can be applied to different extents associated to the development research or project objectives. Prior to any development activity the SLA might serve as an analytical tool for the identification of development priorities and new activities in order to understand the way a socially constructed environment works and to find potential beneficiaries or partners in practice (Kollmair & St. Gamper, 2002).

According to Kollmair and St. Gamper (2002) the uses of the SLA are diverse and flexibly adaptable to many settings, but it does not represent a magic tool being able to eliminate problems of poverty with a single sign, nor is it a complete new idea that will be revolutionary for development research and cooperation. Still, the SLF delivers a good tool to structure development research and increase efficiency of development projects.

The application of SLF in the analysis of the linkages between ICTs, livelihoods and poverty is based on the fact that information and communication, though not explicitly acknowledged in the framework, are important factors in achieving sustainable livelihoods and poverty reduction. Their influence is seen in all the main building blocks of the livelihoods framework outlined previously. With the introduction of new modes of communication, information acquisition and knowledge sharing, ICTs add to the pattern of communication flows available for managing and enhancing livelihoods frameworks.

For this reason, this study adapted and modified the SLF (fig. 2.1) because it is a flexible framework which can incorporate ICTs. The modified SLF (fig. 2.2) suggests that information and communication technologies (mobile phones, radio, and television) are capable of influencing the efficacy of poverty alleviation mechanisms such as sustainable livelihoods. Figure 2.2 indicates three ways in which ICTs can fit in the framework through: affecting the vulnerability context; through linkages to the livelihood assets and; of policies, institutions, and processes.

Access to and use of ICTs (mobile phones, radio, and television) can reduce the impact of vulnerability situations, while enhancing the efficacy of livelihood assets and popular interaction with governmental systems of policy, institutions and processes. The relationship between ICTs and these variables is bi-directional, as the availability and deployment of ICTs are also influenced by all three constructs: vulnerability context, livelihood assets, and policies, institutions, and processes.



Adapted from Carney *et al* (1999)

Figure 2.2: The Sustainable Livelihoods Framework with ICTs

For example, many of the vulnerabilities that people face can be attributed to either lack of information or knowledge. Farmers can be vulnerable to the market power of intermediaries and large companies if they have less information than they do about trends or short-term changes in market prices in other places, particularly where there is limited competition to purchase their produce (Souter *et al.*, 2005).

Shocks and unexpected events such as changes in human and animal health, disasters including earthquakes, floods, fire outbreaks; unfavourable trends like rising costs of farm inputs, decline of resources, and population increases; as well as seasonal events including perennial droughts, employment opportunities, are realities that exist in communities. If unchecked and/or unprepared for, livelihoods of societies could derail at horrendous rates.

Access to and use of the ICTs (mobile phones, radio and television) could be employed in managing these vulnerabilities and contribute to reduced poverty and improved livelihoods. ICTs have been used to reduce healthcare vulnerabilities in developing countries, through weather forecasts to assist fishermen at sea and other disasters. Early warning systems through access to and use of ICTs can detect, warn and inform communities about disasters.

As ICTs reduce the possibility and impact of vulnerabilities, vulnerabilities are also capable of influencing the deployment of technologies (fig. 2.2). Massive technological investments in disaster prone localities are usually destroyed in the event of tornadoes, earthquakes, and conflicts. In the event of disasters the devastation of ICT infrastructure are capable of

halting relief efforts, as most modern relief aids such as helicopters and delivery vans employ modern ICTs for locating and communicating with disaster victims. Major health scares and deteriorating standards of education have tendencies of redirecting ICT investments into these areas.

From the modified framework (fig. 2.2), it is indicated that ICTs are strongly linked to livelihood assets and access to and use of these ICTs can enhance people's access to the five livelihood assets. Assets play critical roles for poverty alleviation and improving livelihoods. The range of asset choices to a people influences to a great extent their capacity to overcome vulnerabilities. Access to and use of mobile phone has enabled the reduction of other expenditure such as transportation, while introducing relatively cheaper expenditure like airtime. It has also resulted in the reallocation of time saved from embarking on long distances for communication purposes to other economically viable activities.

Human capital, in the form of knowledge and skills, is often required to properly make use of many new technologies, ICTs inclusive. Through education and training, the capacities of people are built and help them to improve on their livelihoods. They can therefore access and use ICTs to improve their livelihoods through better utilization of information. It is now increasingly recognized that social capital can facilitate adoption of technologies. Access to and use of ICTs facilitates communication between family members and members of social networks. Maintaining strong family ties is critical to mental and physical well-being, especially while working away from home. Access to and use of ICTs

allow people to pursue economic opportunity wherever they find it (for, at least, they reduce the social or familial cost of doing so). It can also help establish new networks which can assist in building their socio-economic assets. Access to finance is an important financial capital and it can assist in improving livelihoods. Access to and use of ICTs can improve the livelihoods of people by way of increasing their access to potential markets, reduction of transaction costs, reduce time and hence costs associated with receiving market information such as prices.

On the other hand, livelihood assets have influence on ICTs and their deployment. This has been the motivating assumption behind the Bottom of the Pyramid (BoP) models. For such models, it is believed that private enterprises should develop products that are not only economically viable, but also socially responsible and enhance the livelihoods of the poor (Loh, 2013). For example, a mobile phone assembly company could develop models that satisfy the needs of the poor, and produce them at a relatively low cost. As the poor are able to afford these products and utilize their associated services their livelihood improves, and hence are capable of consuming more sophisticated products from producers. Increases in the stock of livelihood assets of a people have influence on their ability to utilize ICTs.

Finally, access to and use of ICTs can enhance the understanding of policies, institutions and processes that shape the livelihoods of the people and thereby reduce poverty. Use of ICTs increases political participation, greater transparency and accountability in governance, better delivery of government services and greater government responsiveness. People whose voices were unheard of because of social restrictions are now able to

influence social and political decisions through the use of ICTs. Government institutions like local government, agriculture and health services can also disseminate information and create awareness about policies, rules and regulations through the use of ICTs. ICTs can also be used by government ministries, departments and agencies to transform relations with businesses and the citizens.

On the other hand, ICT access and use are influenced by the policies, institutions and processes that guide their deployment. For example, government has the power to change the balance between facilitating ease of access (which favours the poor) and the need for more complex registration procedures that may make it more expensive and more complex to own and use a mobile phone SIM card (Duncombe, 2012). Government decides whether policies towards universal (or greater) access to mobile infrastructure are pursued through a lessening of regulation and taxation and greater competition or through expansion of universal access funds and cross-subsidisation. Government controls the rate at which mobile devices and call rates are taxed and can thus influence market prices. Government also plays a lead role in the broader policy arena which governs decisions over capital investment in new technologies and infrastructure, not only for new mobile phone technologies, such as third generation networks and broadband, but also the complementary investments in the electrical and transport infrastructure that are required to attain the potential benefits offered by further expansion of mobile networks (Duncombe, 2012).

Further application of the SLF is seen in a study undertaken by Ellis (2000) as cited by Kollmair and St. Gamper (2002) in three Tanzanian villages stress the importance of a detailed livelihood analysis for successful development cooperation. In a region commonly known as famous for its coffee production, a detailed livelihood analysis was successful to demonstrate that coffee production contributed to the household income only with 1 percent – a striking fact that might have been overlooked without a detailed livelihood analysis. A similar result was yielded by Calow (2001) as cited by Kollmair and St. Gamper (2002) who analysed water supply systems in Ethiopia, for which conventional inquiries highlighted scarcity in water availability as the most hindering factor. Calow (2001) used a broader perspective in order to find out which stakeholders have access, how much water they use and how these factor changes associated to household and region.

Further the SLA might be applied in the form of a livelihood analysis to assess how development activities ‘fit’ with the livelihoods of the poor, whilst the SLF might be of use as a checklist or means of structuring ideas. Ashley (2000) as cited by Kollmair and St. Gamper (2002) explored in Namibia and Kenya how rural livelihoods affect and is affected by natural resource management initiatives and what this implies for these programmes. As lessons to learn, she mentioned for instance the potential of SLA for the reshaping of a programme to enhance the ‘fit’ with livelihoods, for impact assessment and as a focus for participatory planning with communities.

According to Duncombe (2006) information plays a dual role in relation to SLF – the analytical role of information that focuses on accessing and assessing empirical evidence to

understand livelihoods and the functional role focuses on the manner in which information is used within livelihood strategies to create favourable livelihood outcomes. Similarly, Heeks (1999) pointed out that as ICTs continue to diffuse and as greater attempts are made to apply them to current poverty-focused agenda goals, there are increasing opportunities for livelihoods frameworks and tools to make a contribution to understanding ICTs and development.

In the view of Gerster (2006) the application of the livelihoods framework in poverty reduction initiatives using ICTs is of paramount importance because the role of ICTs in poverty reduction is not limited to reducing income poverty, but includes non-economic dimensions such as empowerment, disadvantages in access to land, credit and services, vulnerability, powerlessness, and social exclusion.

The intention of SLF is to employ a holistic perspective in the analysis of livelihoods, in order to identify a manageable number of key entry points where an intervention could be strategically important for effective poverty reduction (Chapman, Slaymaker & Young, 2005). A number of studies have employed SLF to analyze the relationships between ICTs, livelihoods and poverty, both on wider populations as well as on assessing the impacts of ICT projects. Sey (2007) employed the framework to explore the link between mobile phones and sustainable livelihoods in Prampram, Ghana.

Soriano (2007) applied SLF to explore the link between ICTs and rural poverty reduction, by analyzing the role of community telecentres in enhancing the livelihoods strategies of

rural poor households in selected villages in Wu'an, China. Diga (2007) also employed the framework in carrying out a case study in the village of Katote in Uganda to examine the spending behavior of six households with mobile phones and whether such strategies affected the well-being of the community members. The study was, however, limited methodologically as only six households were purposively selected for the study.

Duncombe (2006) applied SLF in a case study of ICT applications by micro-entrepreneurs in Botswana. The study provided insightful discussion on the role of information within each component of the framework but was confined to a specific target group of entrepreneurs. In another study by Duncombe (2012), the study sought to address the gap between technological artefacts and socio-economic development processes, as well as assessment of the outcomes that arise from its use. The study reviewed existing evidence about the use and impact of mobile phones in developing countries using the key components of the livelihood framework as a template for analysis. The study identified points of intersection between the use of mobile phones and livelihood assets within diverse vulnerability contexts and illustrated how processes of intermediation impact upon the ability of the poor to mobilize assets through use of mobile phones, demonstrating areas of contribution to livelihood strategies.

Sife, Kiondo and Lyimo-Macha (2010) applied SLF to examine the contribution of mobile phones, radio and television to rural livelihoods and poverty reduction in Morogoro region, Tanzania. The study sample comprised 310 households, 74 focus group participants and 22 key informants. One of the conclusions of this study was that mobile phones contribute to

improve rural livelihoods and reduce poverty by providing rural livelihoods with fast and easy modes of communication, thereby increasing their ability to access livelihood assets, undertake diverse livelihood strategies and overcome their vulnerabilities.

According to Dirwayi (2010) the SLF was used by the government of the Eastern Cape Province to investigate the impact of the Massive Food Production Programme. This approach was used in both conceptualizing the study and the selection of variables. The DFID Sustainable Livelihood Approach was selected because unlike the CARE or UNDP Sustainable Livelihood models, it was designed for such purposes. The study revealed that to some extent the Massive Food Production Programme has managed to improve the asset base of the farmers. This study applied SLF to explore the role of ICTs (mobile phone, radio and television) in a wider rural context and also a wide spectrum of people.

2.4 Summary

The Sustainable Livelihoods Framework as developed by Dfid was used as the theoretical framework for the study. The SLF was found to be the most suitable framework to guide the study as it presents the complexity of rural poverty and of the equally complex strategies that the poor deploy to address their daily vulnerabilities. It was realized that within the context of vulnerability, the poor have access to certain assets or poverty reducing factors.

A detailed presentation of the key elements of the SLF is made as well as the linkages between the various elements. The applications of the SLF in previous studies are

highlighted. It was observed that the framework had been applied to disciplines other than livelihoods thinking and though it is adaptable to many settings; it does not represent a magic tool to eliminate the problems of poverty at a go. It is shown that it had been previously applied in the analysis of the linkages between ICTs, livelihoods and poverty and that the application of the livelihoods framework in poverty alleviation initiatives using ICTs is of paramount importance.

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CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

The main purpose of this case study research is to provide an empirical evidence on the use of Information and Communication Technologies (mobile phones, radio and television) in poverty alleviation at the individual and household levels in eighteen rural villages in two districts (Effutu Municipal and Awutu-Senya District) of the Central Region of Ghana. The study also sought an explanation on the detrimental effects and constraints to the use of information and communication technologies by heads of households in eighteen rural villages in the districts.

This chapter reviews the literature on the use of mobile phones, radio and television in poverty alleviation which relate to the main and specific objectives of the study. The review starts with a discussion of the literature on poverty and poverty alleviation. This is then followed by an overview of ICTs generally and Ghana in particular. It then discusses the literature on access to and use of ICTs, the extent to which access to and use of ICTs play a role in poverty alleviation, the influence of ICTs on rural communication and information exchange and finally the detrimental effects and constraints of using ICTs.

3.2 Evolution of Poverty

Poverty is blessed with a rich vocabulary, in all cultures and throughout history. From an analytical perspective, thinking about poverty can be traced back at least to the codification of poor laws in medieval England, through to the pioneering empirical studies, at the turn

of the century, by Booth in London and by Rowntree in York. Rowntree's study, published in 1901, was the first to develop a poverty standard for individual families, based on estimates of nutritional and other requirements (Hakim, 2009).

The issue of poverty became prominent globally in the 1970s, notably as a result of Robert McNamara's celebrated speech to the World Bank Board of Governors in Nairobi in 1973. McNamara (1973) was of the view that:

“the world is characterized by a massive degree of inequality; the difference in living standards between the rich nations and the poor nations is a gap of gigantic proportions. The industrial base of the wealthy nations is so great, their technological capacity so advanced, and their consequent advantages so immense that it is unrealistic to expect that the gap will narrow by the end of the century. Every indication is that it will continue to grow. Nothing we can do is likely to prevent this. But what we can do is begin to move now to insure that absolute poverty - utter degradation - is ended. We can contribute to this by expanding the wholly inadequate flow of Official Development Assistance”.

Two other factors played a part in making prominent the concept of poverty on the development agenda. The first was the work of Runciman (1966) and Townsend (1979) as cited by Fahey (2010) on relative deprivation. They helped to define poverty: not just as a failure to meet minimum nutrition or subsistence levels, but rather as a failure to keep up with the standards prevalent in a given society (Fahey, 2010).

The second shift was to broaden the concept of income poverty, to a wider set of “basic needs” by Streeten and Burki, (1978) as cited by Hakim (2009) including those provided socially. Thus, following the International Labour Organization's pioneering work in the mid-1970s; poverty came to be defined not just as lack of income, but also as lack of access to health, education and other services. The concept of basic needs inspired policies like

integrated rural development. Its influence continues to be seen in current debates about human development (Hakim, 2009).

New layers of complexity were added in the 1980s. The principal innovations were: (a) the incorporation of non-monetary aspects, particularly as a result of Robert Chambers' work on powerlessness and isolation. This helped to inspire greater attention to participation; (b) a new interest in vulnerability, and its counterpart, security, associated with better understanding of seasonality and of the impact of shocks, notably drought. This pointed to the importance of assets as buffers, and also to social relations (the moral economy, social capital). It led to new work on coping strategies (Hakim, 2009); (c) A broadening of the concept of poverty to a wider construct, livelihood. This was adopted by the Brundtland Commission on Sustainability and the Environment, which popularized the term sustainable livelihood; (d) Theoretical work by Amartya Sen, who had earlier contributed the notion of food entitlement, or access, emphasized that income was only valuable in so far as it increased the "capabilities" of individuals and thereby permitted "functionings" in society; (e) Finally, the 1980s was characterized by a rapid increase in the study of gender. The debate moved from a focus on women alone (women in development), to wider gender relations (gender and development). Policies followed to empower women and find ways to underpin autonomy, or agency (Hakim, 2009).

The 1990s saw further development of the poverty concept. The idea of well-being came to act as a metaphor for absence of poverty, with concomitant emphasis on how poor people themselves view their situation. At the same time, inspired by Sen, UNDP developed the

idea of human development: “the denial of opportunities and choices... to lead a long, healthy, creative life and to enjoy a decent standard of living, freedom, dignity, self-esteem and the respect of others” (Sen, 1999).

3.2.1 Concepts of poverty

Poverty had not been an easy concept to define. As a result, a range of definitions exist, influenced by different disciplinary approaches and ideologies. The dominant Western definition since World War II has defined poverty in monetary terms, using levels of income or consumption to measure poverty (Grusky & Kanbur, 2006) and defining the poor by a headcount of those who fall below a given income/consumption level or ‘poverty line’ (Lipton & Ravallion, 1993).

However, this economic definition has been complemented in recent years by other approaches that define poverty in a more multidimensional way (Subramanian, 1997). These approaches include the basic needs approach (Streeton *et al.*, 1981), the capabilities approach (Sen, 1999) and the human development approach (UNDP, 1990). Their acceptance is reflected in the widespread use of the United Nations Development Programme’s (UNDP) Human Development Index (HDI), which is a composite measure of three dimensions of human development: (i) life expectancy, (ii) educational attainment and (iii) standard of living, measured by income in terms of its purchasing power parity (UNDP, 2006). It is also reflected in the Organization for Economic Co-operation and Development (OECD) conceptualization of multidimensional poverty, defined as interlinked forms of deprivation in the economic, human, political, socio-cultural and

protective spheres (OECD, 2006). Poverty is also defined by a sense of helplessness, dependence and lack of opportunities, self-confidence and self-respect on the part of the poor. Indeed, the poor themselves see powerlessness and voicelessness as key aspects of their poverty (Narayan *et al.*, 2000). Further, the acknowledgement of the multidimensionality of poverty is reflected in the range of both quantitative and qualitative methodological approaches adopted to conceptualize and measure poverty. This study, however, adopted the multidimensional definition that considers poverty as a state of low income, vulnerability, powerlessness, social exclusion, lack of assets needed to attain basic necessities, and lack of access to essential services (UN, 2000).

The Asian Development Bank (1999) defines poverty as the deprivation of essential assets and opportunities to which every human is entitled. Everyone should have access to basic education and primary health services. Beyond income and basic services, individuals and societies are also poor-and tend to remain so-if they are not empowered to participate in making the decisions that shape their lives. Poverty is thus better measured in terms of basic education; health care; nutrition; water and sanitation; as well as income, employment, and wages.

In the view of Lok-Dessallien (1999), there is a considerable body of literature on different types or categories of poverty indicators. His work attempted to present an overview of different concepts of poverty, as well as to approaches to its measurement. The work highlighted the point that much still remains to be done to expand conventional sets of indicators to make them reflect a broader understanding of poverty. At a conceptual level,

Lok-Dessallien pointed out that poverty can be viewed in absolute and relative terms. Absolute poverty refers to subsistence below the minimum and socially acceptable living conditions. On the other hand, relative poverty compares the lowest bracket of a population with the upper bracket. Chowdhury (2000) defined poverty as inadequate ownership or gainful control over assets (tangible and intangible), manual motor power or other forms of production skills. He outlined a number of issues that characterized the poor people. These include lack of literacy and lack of access to accurate information.

In *Development as Freedom*, Sen (1999) identified poverty as the deprivation of basic capabilities that provide a person with the freedom to choose the life he or she has reason to value. These capabilities include good health, education, social networks, command over economic resources, and influence on decision-making that affects one's life. Income is important because money allows a person to develop his or her capabilities, but it is only a means to live a valuable life. From this perspective, poverty is a condition with many interdependent and closely related dimensions which can be summarized in three broad categories:

- (a) Lack of regular income and employment, productive assets (such as land and housing), access to social safety nets;
- (b) Lack of access to services such as education, health care, information, credit, water supply and sanitation;
- (c) Lack of political power, participation, dignity and respect (Sen, 1999).

Poverty is pronounced deprivation in well-being, and comprises many dimensions. It includes low incomes and the inability to acquire the basic goods and services necessary for survival with dignity. Poverty also encompasses low levels of health and education, poor access to clean water and sanitation, inadequate physical security, lack of voice, and insufficient capacity and opportunity to better one's life (World Bank, 2000).

One approach is to think of well-being as the command over commodities in general, so people are better off if they have a greater command over resources. The main focus is on whether households or individuals have enough resources to meet their needs. Typically, poverty is then measured by comparing individuals' income or consumption with some defined threshold below which they are considered to be poor. This is the most conventional view—poverty is seen largely in monetary terms—and is the starting point for most analyses of poverty (Haughton & Khandker, 2009).

A second approach to well-being (and hence poverty) is to ask whether people are able to obtain a *specific* type of consumption good: Do they have enough food? Or shelter? Or health care? Or education? In this view the analyst goes beyond the more traditional monetary measures of poverty: Nutritional poverty might be measured by examining whether children are stunted or wasted; and educational poverty might be measured by asking whether people are literate or how much formal schooling they have received (Haughton & Khandker, 2009).

Perhaps the broadest approach to well-being is the one articulated by Sen (1985), who argued that well-being comes from a capability to function in society. Thus, poverty arises when people lack key capabilities, and so have inadequate incomes or education, or poor health, or insecurity, or low self-confidence, or a sense of powerlessness, or the absence of rights such as freedom of speech. Viewed in this way, poverty is a multidimensional phenomenon and less amenable to simple solutions. For instance, while higher average incomes will certainly help reduce poverty, these may need to be accompanied by measures to empower the poor, or insure them against risks, or to address specific weaknesses such as inadequate availability of schools or a corrupt health service (Sen, 1985).

Poverty stems from a situation where gross inequality of assets persists because of vested interests and entrenched power structures. Markets can provoke collusions that block the potential benefits of competition to the poor, and the disadvantaged can easily fall outside distributional coalitions. Markets can thus be biased in favour of more affluent and powerful social groups and against poor and disadvantaged groups (Leyson and Thrift, 1997). Such biased coalitions are considered as the most significant cause of inequality within societies. The level of the playing field is not even for the poor. Even under otherwise ideal market conditions, the poor may end up paying more, earn less, and face a number of constraints, to an extent not experienced by others (Bowles, 1999). At national as well as at local levels economic gains may be captured by elites that may form patronage and clientele networks for the redistribution of benefits. Lack of good governance and inadequate legislation or its enforcement may further reinforce such capture (Kelles-Viitanen, 2003).

Poor people often lack essential assets such as good productive resources and capital. Their employment situation is insecure, and their incomes seasonal and meager. They live in remote, unhygienic and resource-poor areas, in distant villages and in appalling slums. Their poverty results from lack of incomes, poor health and lack of education, lack of social safety nets, and discrimination. They also suffer from poor government services and corruption. Assistance may also not reach them because of lack of political will, poor governance and corruption, and inappropriate public policies and programmes (World Bank, 2001). Poverty is thus a highly complex socio-economic problem that needs to be tackled concurrently in various sectors in order to untangle the ‘Gordian knot’ of poverty. It is the synergy of combined efforts that produces the most sustainable results (ADB, 1999).

From Sowa’s (2002) perspective, apart from the more conventional approach based on income expenditures, the amount of calorie in-take and even social indicators such as *security, freedom from harassment and dignity* can all indicate poverty levels. In his view, the characteristics of the poor entails living in a state of deprivation involving either:

- material deprivation - lack of income, resources and assets.
- physical weakness - malnutrition, sickness, disability, lack of strength.
- isolation - illiteracy, lack of access to education and resources, peripheral locations, marginalization and discrimination.
- vulnerability - to contingencies which increase poverty (e.g. war, climatic changes, seasonal fluctuations, disability).
- powerlessness - the inability to avoid poverty or change the situation.

For the purposes of the Ghana Poverty Reduction Strategy (GPRS) poverty is described as unacceptable physiological and social deprivation (2002). According to the Ghana Statistical Service (2000), poverty in Ghana has many dimensions. Poor communities are characterized by low income, malnutrition, ill-health, illiteracy, and insecurity. There is also a sense of powerlessness and isolation. These different aspects interact and combine to keep households, and at times whole communities, in persistent poverty. As evidenced by actions taken to effectively reduce poverty globally, policies must be comprehensive and based on timely information on the living standards of the population.

In the view of Flor (2001) there seems to be a general agreement on the definition of poverty. As to its causes, however, there are differing points of view. These may be classified under four major paradigms used in analyzing poverty, namely: the technological paradigm, the economic paradigm, the structural paradigm, and the cultural or values paradigm.

Technological Paradigm – Adopting a point-of-view based on technological determinism, many technologists and engineers believe that the primary cause of poverty is the lack of technological know-how in the developing world. Their premise is based on the observation that Western nations are rich because they employ modern technology in agriculture, industry, transportation, telecommunications and health. They argue that the Third World will solve most of its problems by adopting new technology.

Economic Paradigm – Economists argue that poverty is caused by the lack of sound fiscal and/or monetary policies within the government. Hence, the IMF occasionally recommends policy reform for developing economies.

Structural Paradigm – Most political scientists and ideologues believe that poverty is a function of the social structure. The primary exponents of this view believe that the only way to combat poverty is to change the so-called System or the government. The structural paradigm distinguishes between elites and the masses, centres and peripheries, conflicts of interests and harmony of interests.

Cultural Paradigm – Some anthropologists and sociologists argue that poverty is a function of culture or social values. It has been observed that the ‘Asian Tiger’ (Singapore, Taiwan, Korea) economies had predominantly Chinese populations or were, at one time or another, influenced by Confucian teachings. The countries that lagged behind were predominantly Malay (Malaysia, Philippines, Indonesia). With the proper values and worldview, one can combat poverty effectively.

Flor (2001) then asks the question, which of these paradigms should be adopted in the use of ICT for poverty alleviation? He posits that the situation reminds us of the poem *The Blind Men and the Elephant* wherein six blind men attempted to describe an elephant through the part of the animal that they approached and touched. In a way, many people are blind when it comes to poverty. They approach the issue from one direction and arrive at a conclusion of what is based on the part we address. One thing is certain, however. There are ICT interventions for any of the four paradigms enumerated above.

Technologically, there are small independent initiatives being undertaken by non-governmental organizations and governments to bridge the Digital Divide. The most common of these initiatives is the actual introduction of low-end information and

communication technology to impoverished areas. ICT can improve economic policy and facilitate the policy making process. ICT can be used for policy advocacy, local governance and educational development (Flor, 2001).

In the view of Mascarenhas (2010), while money metric indicators of poverty/wealth such as poverty lines based on per capita income and expenditure are still being used to delineate development of countries and groups, there is increasing recognition of the fact that poverty is a multi-dimensional phenomenon. Adeya (2002) pointed out that most arguments related to poverty focus on insufficient nutrition, inadequate shelter and so on. It is only recently that some have started to argue that lack of access to information and communications technologies (ICTs) is an element of poverty. This contention is not comparable to traditional discussions of poverty issues, although it is recognised that ICTs have the potential of having a crucial role in poverty alleviation efforts (Kenny, 2002). In this respect, Kenny (2002) discussed the use of ICTs in poverty alleviation in relation to poor people's limited access to ICTs. He proposed the implementation of government policies that might help to overcome the so-called 'digital-divide.'

Poverty is measured in several ways: the ones used widely are household income and expenditure. Multi-indicator measures and surveys are becoming frequent; and participatory and community based monitoring mechanisms are spreading. Numbers and percentages of absolute and relative poverty are typically measured against a national poverty (income) line, but with better information (nutrition, health, education etc),

understanding of household and individual poverty is gradually becoming clearer and more current in most countries.

3.3 Poverty Alleviation

Poverty reduction (or poverty alleviation) is any process which seeks to reduce the level of poverty in a community, or amongst a group of people or countries. Poverty reduction programmes may be aimed at economic or non-economic poverty. Some of the popular methods used are education, economic development, and income redistribution. Poverty reduction efforts may also be aimed at removing social and legal barriers to income growth among the poor (Caricom, n.d.). For the purposes of this study, the operational definition of poverty alleviation refers to substantial reduction in all the negative aspects of poverty, namely: ill-health, illiteracy, low income and expenditure, education, vulnerability, assets, poverty level, and business turnover.

A number of programmes have been available for some time now to alleviate poverty. Some of these are highlighted below. Most of these were principally introduced by governments, governmental organizations, non-governmental organizations and international development partners who set the targets to alleviate poverty. The present study looks at poverty alleviation from the perspective of the user so it is more demand-driven than supply-driven mode put forward by the governmental agencies and development partners.

Poverty reduction is now a global agenda. During the 1980s and 1990s when structural adjustment was in vogue, there was the general belief that if one could endure the short-run social costs the long-run benefits would be enormous. Never was it reckoned that the long run referred to was a Keynes “long-run”, when all may be dead! Nevertheless the call for putting a “human face” on adjustment by some non-governmental organizations and some United Nations agencies was finally heeded to when towards the close of the 1990s consensus was reached between the donor community, the United Nations and the developing countries on the International Development Goals (IDG). The principal objective of the IDG is to reduce by half the proportion of people living in extreme poverty by 2015 (Sowa, 2002).

Poverty alleviation programmes that were introduced took various forms, and have mostly been spearheaded by intergovernmental development partners such as the World Bank, the International Monetary Fund (IMF), and the United Nations Development Programme (UNDP). Chinsinga (2003) recalls some poverty alleviation programmes that were introduced in developing countries including the Bolivia Emergency Fund (Bolivia); the Economic Recovery Programme (Zambia); the Programme of Action to Mitigate the Social Costs of Adjustment (Ghana); the Social Development Programme (Zimbabwe); and the Poverty Alleviation Programme (Malawi).

In recent years, there has been renewed interest in agriculture as a key driver of development and poverty reduction. And in the aftermath of the food price surge, a number of global initiatives have emerged that seek to revitalize agriculture in developing

countries. At the same time, growing attention is being given both to issues of adaptation to climate change in smallholder agriculture, and to ways in which poor rural people can participate in, and benefit from, market opportunities linked to environmental services and climate change mitigation. Also, the role of the state in agriculture and rural poverty reduction is being reassessed, and there is new interest in thinking through the role that public policies and investment can play in mitigating market volatility and assuring national food security (IFAD, 2010).

There is broad agreement that growth in agriculture usually generates the greatest improvements for the poorest people – particularly in poor, agriculture-based economies. IFAD recognizes that agriculture, if better suited to meeting new environmental and market risks and opportunities facing small holders, can remain a primary engine of rural growth and poverty reduction. And this is particularly true in the poorest countries. In all countries, however, creating new opportunities for rural poverty reduction and economic growth requires a broad approach to rural development, which includes the rural non-farm economy as well as agriculture. A healthy agricultural sector is often critical for stimulating diversified rural growth. But there are also new, non-agricultural drivers of rural growth emerging in many contexts, which can be harnessed (IFAD, 2010).

It has been observed that popular participation is a critical success factor in initiatives intended to alleviate poverty in most societies. A participatory approach to poverty alleviation involves defining problems, and suggesting solutions to these problems from the grassroots level. Popular participation in poverty alleviation programmes need

reorientation; which is largely based on the perception that, for a project to be sustainable, it must address those problems and aspirations which are identified by the poor themselves and it must have a management structure in which they have confidence (Chinsinga, 2003).

Also, London (2007) in his discussion of the base-of-the-pyramid (BOP) perspective on poverty alleviation explained the base-of-the-pyramid as a representation of the poor at the base of the global socio-economic ladder, who primarily transact in an informal market economy. This approach to poverty alleviation, which targets this group of people with the participation of the locals and sponsorship mainly from business enterprises, could yield greater mutual value for both parties; thus, while this poverty alleviation strategy improves upon the livelihood of the poorest of the poor, it concurrently creates new market for such ventures. This strategy, he concedes, is market-based, which is quite different from the traditional grant-based strategies employed by most intergovernmental organizations and international nongovernmental organizations (London, 2007).

Another approach to poverty alleviation in poor communities is to tackle it through decentralization. Bird and Rodriguez (1999) explained that poverty alleviation encompasses several different strategies, the desirability and feasibility of which varies from country to country, depending upon political, economic, administrative and timing factors. This administrative approach to poverty alleviation stems from the general agreement in development discourse of the impact that decentralization can have on efficiency in public expenditure (Bird & Rodriguez, 1999). They believed that carefully crafted public delivery services such as health, education, housing and infrastructure,

through the administrative system of decentralization, could improve upon the standards of living of the marginalized poor in their communities, compared to a centralized system of public service delivery. This notwithstanding, a comparative review of poverty alleviation through decentralized administration by Bird and Rodriguez (1999) revealed consistencies that results from this strategy owing to factors that include the wealth of the countries, capacity of decentralized institutions, sizes of the communities and migration.

Chapman, Slaymaker and Young (2003) argue that poverty reduction strategies must target the use of “a balanced portfolio of assets in which, knowledge, access to information, and a means to communicate are essential components” of the strategies. Together they recognize ICT tools and interventions as very vital components of poverty alleviation in their discussion of promoting sustainable livelihoods using ICTs. They also confirm the general belief among scholars that though ICTs have been acknowledged to be a basic infrastructure to promote development, very little has been done to integrate them into poverty alleviation programmes (Chapman, Slaymaker & Young, 2003).

Likewise, Adeya (2002) observed that most arguments related to poverty focus on insufficient nutrition, inadequate shelter and low income. It is only recently that some scholars notably Kenny (2001) as cited by Adeya (2002) has started to argue the lack of access to information and communications technologies (ICTs) as an element of poverty. This contention is not comparable to traditional discussions of poverty issues, although it is recognised that ICTs have the potential of having a crucial role in poverty alleviation efforts. In this respect, Kenny (2001; cited in Adeya, 2002) discussed the use of ICTs in

poverty alleviation in relation to poor people's limited access to ICTs. He proposed the implementation of government policies that might help to overcome the so-called 'digital-divide'.

The emergence of Information and Communication Technologies (ICTs) has resulted in a redirection of poverty alleviation campaigns. Many development theorists and partners have called for the adoption of these technologies to tackle poverty issues, especially in less developed countries (LDCs) (Adeya, 2002; Obayelu & Ogunlade, 2006). According to Obayelu and Ogunlade (2006), information and knowledge are critical components of poverty alleviation; hence the potential of ICTs to transmit these assets to the poor is a great relief in poverty reduction efforts. They observe that deregulation of telecommunication systems in Nigeria really improved upon efforts to reduce poverty among rural Nigerians and the poor in general. Mobile phones, television and radio (and many other ICT platforms) are among ICT tools used in many largely discrete poverty alleviation programmes across Nigeria. These technologies, together with telecenters and rural information centers have been used to communicate information on prices, markets, technology and weather to poor farmers participating in cassava and rice initiatives in Nigeria. And ICTs have also been used in health service delivery (telemedicine), employment generation, micro-enterprise promotion and participatory governance (Obayelu & Ogunlade, 2006).

In this same direction Harris (2004) mentioned twelve different poverty alleviation strategies that use ICTs for their successful implementation, namely: distributing locally

relevant information, targeting disadvantaged and marginalized groups, promoting local entrepreneurship, improving poor people's health, strengthening education and promoting trade and commerce. Additionally, supporting good governance, building capacity and capability, enriching culture, supporting agriculture, creating employment opportunities and reinforcing social mobilization are some of the strategies that use ICTs to alleviate poverty (Harris, 2004).

3.4 Rural Communities and Sustainable Livelihoods

Scholars have different views about what constitutes a rural area/community. Ward and Brown (2009) identified rural areas as 'places of tradition rather than modernity, of agriculture rather than industry, of nature rather than culture, and of changelessness rather than dynamism'. This assertion is not entirely true. All rural areas/communities do undergo some kind of change, whether spatial, in land use, demographic, economic or social. It is probably more accurate to say they undergo a slower pace of change, especially when compared with urban areas. In Sub-Saharan Africa (SSA), there is an assumption that all rural people are poor and disadvantaged (Phuhlisani, 2009) as cited by Chigbu (2013). This is far from correct, because some rural areas are the location of wealth as well as poverty. Nigeria's Niger Delta region is a good example of a rural area that serves as a location of oil wealth. However, despite being locations of wealth, these areas are still poor. This shows that rural areas can be locations of wealth or poverty and can have wealth and poverty existing side by side.

The Government of South Africa (2000) notes that in rural areas ‘agriculture is often the dominant, and sometimes the exclusive economic sector, and opportunities for resource mobilisation are limited’. This situation is also prevalent in SSA. It means that the ‘spatial dispersion of rural populations often increases the cost and difficulty of providing rural goods and services effectively’ (Government of South Africa, 2000). However, this does not mean that rural areas in SSA have no urban character. Chigbu (2013) expressed this notion with a Venn diagram (see Figure 3.1) that specifically highlights rural–urban differences and commonalities in SSA.

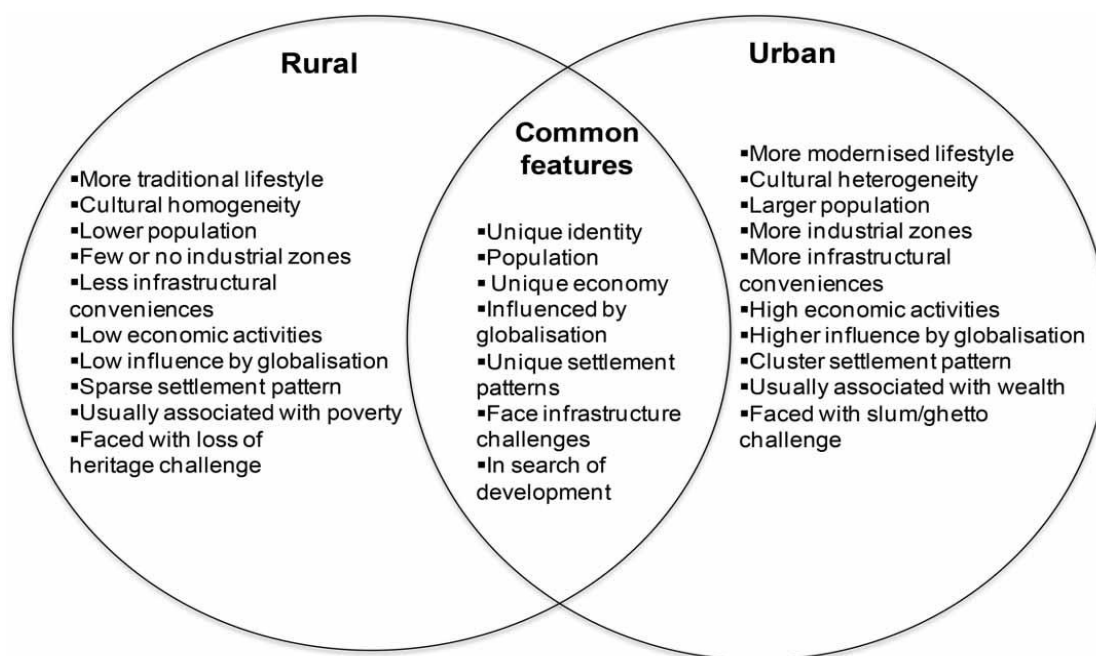


Figure 3.1. Understanding ‘rural’ by emphasising its differences and commonalities with ‘urban’
Source: Adapted from Chigbu (2013).

Figure 3.1 suggests differences and commonalities between rural and urban areas as spatial units. Their differences make them unique while their commonalities provide a basis for their cooperation. Most explanations or definitions ignore these commonalities and focus

mainly on the differences (Nchuchuwe & Adejuwon, 2012). Defining ‘rural’ from the perspective of its differences (from ‘urban’) has contributed significantly to the failure to ‘construct any comprehensive and generally accepted definition’ of the term (Van der Ploeg *et al.*, 2000). With this in view, Chigbu (2013) considers the differences and commonalities between rural and urban areas (alongside other factors) in providing an understanding of rural areas in SSA. Following this logic, rural areas in SSA is defined as ‘land-spaces with culturally defined identity; situated within a place statutorily recognised as non-urban; and occupied by settlers predominantly depending on primary sources of labour for their livelihood’ (Chigbu, 2013). This definition is relevant to and broad enough in the SSA perspective.

Most places in SSA are not fully rural; they are largely rural, with some urban character. Despite this, they are geographies that are culturally and statutorily distinguishable from urban areas. This definition of rural areas includes places of traditional living that have not been socially, geographically or statutorily designated as either urban, peri-urban or fringe (Chigbu, 2013). Rural areas are changing in response to technology and globalisation. This makes it difficult to provide an all encompassing definition of the term. In addition to all the characteristics provided, this study defined rural areas/communities in terms of the number of people who occupy a particular spatial location. If the community has less than 5,000 people, it is termed as rural.

In reviewing the literature on sustainable livelihoods, (Agbaje, 2001) cited by Agbaje and Agbaje (2013) found that much of the thinking and writing focused on sustainable

livelihood approaches and he identified three analytical elements as giving rise to livelihoods, namely: the capacities that people have for engaging in productive economic activity; the activities that produce value-added and also income or other benefits that make people's lives more satisfactory and secure, and the assets that underline these activities (Agbaje & Agbaje, 2013).

The SL approach arose from the broad context of rural development, and it has become central to the discourse on poverty alleviation, rural development, natural resources and environmental management (Baumann, 2000; Ellis, 2000; ODI, 1999; Scoones, 1998, 2009). It was first officially proposed by an Advisory Panel of the World Commission on Environment and Development (WCED) in 1987, and has been further developed by Chambers and Conway (1991) and others in the 1990s (DFID, 1999; Scoones, 1998). In defining SL, Chambers and Conway (1991) reviewed previous research and offered the following key features:

A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living.

A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation, and which contributes net benefits to other livelihoods at the local and global levels in the short and long term.

The SL approach has a set of widely shared principles – it is people-centered, responsive and participatory, holistic, conducted in partnership, sustainable and dynamic, and it links the micro-macro (Carney, 2003; DFID, 1999; ODI, 1999). The first and foremost principle is that development work has to focus on people – which means that development should start with an analysis of people's aspirations for specific livelihoods, as the background for considering livelihoods portfolios. In particular, the approach suggests that development

should focus on what matters for the poor, the differences among people, and how these differences affect the way they understand and appreciate livelihoods. The core principle also suggests that the poor themselves have to be key actors in identifying the important aspects of their own livelihoods (Petersen & Pedersen, 2010).

The SL approach is different from conventional development approaches, such as production, employment, and poverty-line thinking (Chambers & Conway, 1991). The SL approach, by reflecting the multisectoral character of real life and the diverse ways in which people make a living and build their world, arguably better represents the dynamic and complex nature of poverty (Bebbington, 1999; Carney, 2003; World Bank, 2000; Zhao & Ritchie, 2007).

By centering on the objectives, scopes, and priorities for development from the perspective of the poor, the SL approach underpins the core thinking and requirement of pro-poor growth, which is people-centered (Narayan, Patel, Schafft, Rademacher, & Koch-Schulte, 2000; UN, 2008). At its most useful, the SL approach offers an integrative framework for understanding the nature of poverty and how interventions can be better tailored to enhance livelihoods for the poor at different stages of development and across different sectors (Norton & Foster, 2001; ODI, 1999).

3.5 Overview of ICT Access and Use Globally

ICTs are described as technologies that facilitate communication and the processing and transmission of information by electronic means. They are sometimes categorized into

‘old’ technologies (radio, television, newspapers) and ‘new’ technologies (mobile phones, computers, Internet, satellite communications). The ‘old’ and ‘new’ qualifiers are, more or less, non-technical synonyms for ‘analogue’ and ‘digital’. This is not to say that non-electronic media such as print are unimportant for addressing information and communication needs.

New information and communication technologies (ICTs) continue to penetrate countries in all regions of the world, as more and more people are getting connected. The year 2011 saw persistent growth in ICT uptake worldwide, with an increase in all key indicators except the number of fixed telephone lines, which has been in decline since 2005. Indeed, more and more countries are reaching a critical mass in terms of ICT access and use, which accelerates ICT diffusion and further boosts demand, driven by the spread of mobile Internet (International Telecommunications Union, 2012).

3.5.1 Cellular penetration

Mobile-cellular penetration increased by 11 per cent worldwide, compared to 13 per cent in 2011. In developing countries, growth was 13 per cent (as against 18 per cent the year before), and penetration stood at almost 78 per cent by end 2011. The 7 per cent rise in mobile cellular subscriptions in developed countries – yielding a penetration rate of 122 per cent – is largely due to a strong increase in two of the largest markets, the United States and the Russian Federation (International Telecommunications Union, 2012). In particular, the United States, which was characterized by relatively low penetration rates (relative to other developed countries), experienced strong growth of almost 20 per cent over the past year,

taking it past the 100 per cent penetration threshold. Excluding those two countries, growth in the developed world stood at no more than 3 per cent, clearly reflecting saturation in the mobile-cellular market. The strong growth in the mobile sector in developing countries has been driven by increased competition and affordable services and devices. Mobile-cellular telephony continues to replace fixed-line services, the latter still being dominated by the incumbent operator in many developing countries (International Telecommunications Union, 2012).

Fixed-broadband penetration, on the other hand, is growing more slowly, by 10 per cent worldwide, 5 per cent in developed countries and 18 per cent in developing countries in 2011. The number of subscriptions has increased from 530 to 590 million, attaining a global penetration rate of 8.5 per cent, with 25 per cent penetration in the developed countries as compared with almost 5 per cent in developing countries (International Telecommunications Union, 2012).

Internet user growth was higher in developing (16 per cent) than developed (5 per cent) countries. This reflects the large differences in penetration rates, which by end 2011 stood at 70 per cent in developed countries compared with 24 per cent in developing countries. Internet user penetration rates in developing countries have tripled over the past five years, and the developing countries' share of the world's total number of Internet users has increased from 44 per cent in 2006 to 62 per cent in 2011 (International Telecommunications Union, 2012).

Ghana was among the first countries in Africa to introduce the Internet into its ICT market. However, the market has not experienced the dynamism that would lead to massive deployment of Internet services in the country. As at December 2011, the regulator had licensed 165 Internet service providers (ISPs), but only 29 were operational. Similarly, 176 Data VSAT operators have been granted licenses, but only 29 are in operation. In case of Public/Corporate Data Operators, 99 companies were issued with licenses, but only 25 had commenced business (National Communications Authority, 2012; KPMG, 2012). Though the large numbers of unutilized licenses epitomizes regulatory laxity, it also illustrates how liberal the market is in the country.

A survey conducted under the auspices of AudienceScapes, revealed that the level of residential Internet penetration was 4 percent (Bowen, 2010). Though poor telecom infrastructure negatively affects Internet access for many in Ghana, another major challenge appears to be lack of knowledge about the service. The AudienceScapes study revealed that over half of the respondents who did not use the Internet indicated their lack of knowledge about the service (Bowen, 2010). For this and other reasons, Internet was excluded from the present study mainly due to its inaccessibility and lack of knowledge about the service.

Penetration rates have risen significantly in a number of developed and developing countries alike. The United Kingdom, Estonia and Austria, where mobile-broadband penetration was already at quite high levels in 2010, attained penetration rates of 62, 42 and 43 per cent by the end of 2011 respectively. In developing countries such as Azerbaijan,

Ghana and Saudi Arabia, mobile-broadband penetration was below 10 per cent in 2010, but took off in 2011, climbing to 22, 23 and 40 per cent respectively (International Telecommunications Union, 2012).

In Ghana, mobile broadband penetration improved sharply, while in Kenya the number of Internet users doubled from 2010 to 2011. Zimbabwe progressed in both the access and use sub-indices, mostly by expanding mobile-broadband penetration and international Internet bandwidth. Rwanda rose seven places in the global rankings, although the country still ranks low, not only globally (133rd) but even within the African region (International Telecommunications Union, 2012). Ghana, which ranked 117th in the ICT Development Index (IDI) in 2011, is the country with the highest relative IDI change (23 per cent). The values of both the access and use sub-indices improved with the strongest growth in the latter. Fixed (wired)-broadband penetration remains marginal, but mobile broadband took off, with a remarkable surge in penetration from 7 per cent in 2010 to 23 per cent in 2011. This makes Ghana the country with the highest mobile-broadband penetration in Africa (International Telecommunications Union, 2012).

3.5.2 Fixed (wired)-broadband penetration

Fixed (wired)-broadband penetration, on the other hand, remains negligible, at below 0.3 per cent. Some 14 per cent of Ghanaians are now Internet users, up from 10 per cent in 2010. Mobile-broadband penetration more than tripled, and stands at 23 per cent in 2011. This is an impressive jump, which puts Ghana in first place in Africa in terms of mobile-broadband penetration (International Telecommunications Union, 2012). Ghana's mobile

market is very competitive, and five operators are providing 3G services. The country's mobile broadband prices are relatively low (14 per cent of GNI per capita) in comparison with the African average (64 per cent of GNI per capita for prepaid handset-based usage and 54 percent of GNI per capita for postpaid computer-based usage), according to the 2011 ITU price data-collection exercise. Low prices attract customers, as do the variety of tailored mobile-broadband offers available from the mobile market leader MTN. Prepaid customers can choose from various packages with different data allowances (from 25 MB to 10 GB) and validity periods (one day to 30 days).

The prices for mobile-cellular services have gone down by 37 per cent over the past four years; and while prices have stabilized at very low levels in the developed world since 2010, they continue to fall in the developing countries. Overall, the increasing number of service providers has led to sometimes fierce competition in the sector and driven down consumer prices significantly, which has been a key factor in growth in the mobile market and will continue to be driven by prepaid services, more affordable devices, and the increasing availability of mobile-broadband services (International Telecommunications Union, 2012). The combined effect of all these indices and the potential benefits of mobile phones to improve livelihoods informed the decision to include mobile phones in the study.

In a study which compared the number of telephone lines, Internet users and personal computers in developing countries in Asia, out of the 16 countries discussed, nine had less than one Internet user per 100 people. Only Malaysia (24), Thailand (6) and Maldives (4) had more than three Internet users per 100 people. Given that Internet users are less likely

to be counted among the poor, the study concluded that, in statistical terms, the poorest people in Asia presently have no meaningful access to the Internet. Therefore, using the Internet to target directly the information and communication needs of the poorest people is unlikely to be a successful strategy for poverty reduction (International Telecommunications Union, 2012). The same can be said for Africa generally and Ghana in particular.

Household ICT access is still quite low: in 13 (out of 36) African countries, only 2 per cent or less of households have Internet access. However, progress in ICT household access has been made in the region's top performing countries, Seychelles and Mauritius, where penetration rates increased by over seven percentage points. Mobile-broadband services play an important role in the region, and have the potential to drive ICT developments in the continent (International Telecommunications Union, 2012). It is no surprise that, in the most dynamic African countries, including Ghana, Zimbabwe and Rwanda, growth in mobile-broadband penetration had a major impact in terms of improving their IDI scores. Ghana now has the highest mobile-broadband penetration rate in the region, at 23 per cent, which is comparable to that of many developed countries. However, 12 out of 36 African countries have not yet launched 3G commercially (International Telecommunications Union, 2012).

Between 2010 and 2011, mobile-cellular subscriptions registered continuous double-digit growth in developing country markets, but an overall slowdown in comparison with previous years. The number of mobile-cellular subscriptions increased by more than 600

million, almost all of them in the developing world, to a total of around 6 billion, or 86 per 100 inhabitants, globally (International Telecommunications Union, 2012).

Mobile broadband continues to be the ICT service displaying the sharpest growth rates. Between 2010 and 2011, growth continued at a high rate of 40 per cent globally, 23 per cent in the developed world and 76 per cent in developing countries. By the end of 2011, more than 160 economies worldwide had launched 3G services commercially, and 45 per cent of the world's population was covered by a 3G mobile network. On the back of the increase in broadband services worldwide, in particular wireless-broadband services in developing countries, the number of people using the Internet grew by 11 per cent in 2011. By the end of 2011, more than one-third of the population worldwide was online, i.e. 2.3 billion people (International Telecommunications Union, 2012).

3.5.3 Radio and Television

Long before 'ICT for Development' became official and fashionable, 'old' technologies like radio and television had been used to disseminate information among the poor. As a medium for delivering information directly to the poor, radio has the potential to achieve far wider outreach than the Internet. Even in those countries with high incidence of poverty, radio receivers are relatively common. Furthermore, whereas an Internet user represents just one person, many people can listen to a single radio receiver. Generally, there are about half as many televisions as there are radio receivers in each of the developing countries in Asia, although in both China and Thailand the count of each is about equal. Like radio, television far outstrips the Internet in terms of potential outreach.

Radio is considered as a top medium in terms of the number of people that it reaches. Even though television has shown considerable growth (especially in the 1990s) and despite a widespread liberalization of the press over the same period, radio still outstrips both television and the press in reaching most people on the continent (Mytton, n.d.). The main exception to this is in South Africa, where television and the press are both very strong, and in the Arab North Africa, where television is now the dominant medium. In South of the Sahara and north of the Limpopo River, radio remains dominant at the start of the 21st century (Mytton, n.d.).

There is much variation between African countries in access to and use of radio. The weekly reach of radio ranges from about 50 percent of adults in the poorer countries to virtually everyone in the more developed ones. But even in some poor countries the reach of radio can be very high. In Tanzania, for example, nearly nine out of ten adults listen to radio in an average week. High figures for radio use contrast sharply with those for India or Pakistan, for example, where less than half the population is reached by radio.

3.6 Overview of ICT Development in Ghana

In response to global changes in the industry, many governments have reformed their sector through the termination of state-owned monopolies through deregulation, privatization and liberalization. The underlying principle of such reforms is to enable the subscriber to enjoy wider, better, new and less costly services. Ghana liberalized its telecom market in the early 1990s to take advantage of the potential benefits of the reform. It introduced a five-year Accelerated Development Programme (ADP) in 1994 with the

general objective of increasing telephone coverage in the country by allowing private participation in all sectors of the industry (Government of Ghana, 2003).

The airwaves were also liberalized in response to constitutional provisions, and also in consonance with changes in the global environment. The Fourth Republican Constitution called for the removal of impediments to the establishment or operation of both print and electronic media. As a result of these developments the ICT landscape in Ghana is now characterized by the proliferation of services such as cellular phones, pagers, cable television, the Internet and its ancillary services and of a myriad print and electronic media operators, all trying to utilize niches in the market (Government of Ghana, 2003).

3.6.1 ICT policies in Ghana

The ICT landscape in Ghana is driven by two policies, namely: the ICT for Accelerated Development Policy (ICT4AD) and the National Telecommunication Policy (NTP). The Ghana ICT4AD was launched in 2003 with the overall objective of engineering an ICT-led socio-economic development process with the potential to transform Ghana into a middle income, information-rich, knowledge-based, and technology driven economy and society (Government of Ghana, 2003). The strategic focus of the policy was to target simultaneously the development of the ICT sector and industry as well as use ICT as a broad-based driver of developmental goals with emphasis on the development, deployment and exploitation of ICTs as engines for all sectors of the economy.

The NTP on the other hand, provides a framework within which the Ghana telecommunications sector will contribute to the achievement of government's overarching ICT policy vision of improving the quality of life of the people of Ghana by significantly enriching their social, economic and cultural well-being through the rapid development and modernization of the economy and society, using information and communication technologies as the main engine for accelerated and sustainable economic and social development (Government of Ghana, 2003).

The legal and regulatory regime has seen some rigorous developments. New laws have been passed to support the implementation of the two ICT policies and improve the regulation of the sector. The laws include: National Communications Authority Act, 2008 Act 769; National Information Technology Agency Act, 2008, Act 771; Electronic Transactions Act, 2008, Act 772; and the Electronic Communications Act, 2008, Act 775.

The National Communications Authority Act, 2008 Act 769 granted the National Communications Authority (NCA) the authority to issue, allocate and manage frequency spectrum in the country. The Act resolved the controversy between the National Media Commission (NMC) and National Communications Authority over the right to license and allocate frequency for the electronic media. Provisions were made for the NMC to serve on the board of the NCA. In that sense, the NMC has some role to play in the operations of the NCA (Frempong, 2010).

The National Information Technology Agency Act, 2008 Act 771 granted the National Information Technology Agency the authority to regulate the provision of information communications technology, ensure the provision of quality information communications technology, promote standards of efficiency and ensure high quality of service (Government of Ghana, 2008).

The Electronic Transactions Law of 2008, Act 772 provides the framework for the development of e-applications/services in the country. An e-financial service is one of the electronic services which are not well developed in Ghana. The Ghanaian financial sector has few e-financial services which are mostly in their formative stages. Ghana is, however, showing slow but steady acceptance of mobile money services, which can help its rural population save money as well as increase financial security. Research funded by SWIFT Institute, a messaging provider for more than 10,000 financial institutions and corporations in 212 countries and regions, and carried out by US-based Tufts University in northern Ghana's rural communities, demonstrate that mobile money can help to promote financial inclusion and boost savings (Croft, 2013). The research showed that take-up of mobile money in the region, which has little access to financial services, can be easily promoted and the use can help encourage a savings culture. A month into the project, the data showed that 10 percent of participants had used the service solely for money transfer. Two and a half months later, the mobile money usage increased to 26 percent in the Ghanaian households, with 86 percent of users receiving money transfers and 70 percent of users saving money on their mobile phones (Croft, 2013).

Under the Ghana ICT Policy for Accelerated Development, the Ghana Investment Fund for Electronic Communications (GIFEC), (formerly the Ghana Investment Fund for Telecommunications (GIFTEL)) was created as an implementing agency of the Ministry of Communications, in January 2004, to facilitate the provision of ICT, Internet connectivity and infrastructure to underserved and un-served areas of the country. The Electronic Communications Act 775 promulgated in 2008, gave the legal backing to the agency (which started operations in January 2005), changed the agency's name to the Ghana Investment Fund for Electronic Communication (GIFEC) and widened the scope of its mandate to include the provision of access to electronic services including ICT, broadcasting, internet, multimedia service and basic telephony, by the unserved and underserved communities in Ghana (GIFEC, 2013).

3.6.2 Liberalization of the ICT sector in Ghana

According to the National Communications Authority (2012), the telecom sector of Ghana is one of the most liberalized markets in Africa. The market has two national fixed-network operators and six operating mobile telephone companies. The fixed-line telephone segment is almost a monopolistic market since Vodafone Ghana controls almost 96.2 percent of the market, while Airtel Ghana, the second network provider, has only 3.8 percent market share as at September 2012 (National Communications Authority, 2012). To improve access, the telecom market experienced a growth of 17.2 percent between December 2011 and September 2012. The total access lines stood at 21,450,564 at the end of December 2011. This represents a penetration rate of 86.1 percent with mobile telephony accounting for 98.7 percent of the total access lines. Unfortunately, fixed access lines decreased from

284,721 in the fourth quarter of 2011 to 274,804 by the end of September 2012 representing about 0.03 percent decrease (National Communications Authority, 2012). This is indicative of the trend in a growing preference for mobile telephony in developing countries in contrast to fixed lines.

The NCA has issued licenses to many companies to provide radio, Frequency Modulation (FM) and TV broadcasting in the country. As at September 2012, 286 companies were licensed to provide FM broadcasting, of which 225 were operational. Most of these FM stations are commercial and largely concentrated in the regional capitals, especially Accra and Kumasi. There are a few community FM stations which should in principle address local issues and provide programmes/platforms that support community development (National Communications Authority, 2012).

In the case of television broadcasting, nine companies are broadcasting free on air and five pay-per view TV broadcasting companies are operating. In the case of direct to home satellite services (DTH), 23 companies have been given authorization to operate, but none has commenced business (National Communications Authority, 2012). One of the problems associated with TV broadcasting, especially those re-broadcasting from foreign countries, notably South Africa, is the issue of content. Most of these stations have little or no local content and the lack of local content means no jobs are being created for the local content developers in the country. This raises a regulatory issue that lies squarely in the ambit of the NMC which has the mandate, among others, to regulate local content development (National Communications Authority, 2012).

3.7 Access to and Use of ICTs in Poverty Alleviation

It has been argued that there is a gap in access to and use of ICTs between developed and developing countries in that developed countries have better access to and use of ICTs than developing countries. In developing countries, there is a further divide between those in the urban areas and those in the rural areas. Thus, even though it is estimated that most people in the developing world are found in the rural areas, they are disadvantaged with respect to ICT access and use.

Issues have also been raised as to whether or not access and use gap of ICTs between developed and developing countries is widening or dwindling. Available statistics from the International Telecommunications Union indicate that there is persistent growth in ICT uptake worldwide and that more and more countries are reaching a critical mass in terms of ICT access and use (International Telecommunications Union, 2012). Mobile cellular penetration worldwide increased by 11 percent in 2011. Growth rate in developing countries was 13 percent and a penetration rate of 78 percent, while the growth rate of developed countries was 7 percent yielding a penetration rate of 122 percent which was largely due to a strong increase in two of the largest markets – United States of America and Russian Federation (International Telecommunications Union, 2012).

The gap in access to and use of ICTs between developed and a developing country is gradually dwindling. This is as a result of the phenomenal growth in access to and use of mobile phones in developing countries.

3.7.1 Access to and use of mobile phones in poverty alleviation

The last five years have seen tremendous growth in telephone ownership and use in developing countries. Until the mid-1990s, telephones were only available in the urban centres of poor countries. Some African countries had telephone densities as low as one per thousand people. Since then, mobile telephone networks have spread rapidly in most low income countries. Many people, even in low income communities, now own telephones while many adults make some use of them, wherever they are available, usually relying on public kiosks, phone shops or airtime bought from individual phone owners. The mobile phone has become a symbol of the use of new ICTs in the developing world.

The strong growth in the mobile sector in developing countries has been driven by increased competition and affordable services and devices. Mobile-cellular telephony continues to replace fixed-line services, the latter still being dominated by the incumbent operator in many developing countries (International Telecommunications Union, 2012).

Penetration rates have risen significantly in a number of developed and developing countries alike. The United Kingdom, Estonia and Austria, where mobile-broadband penetration was already at quite high levels in 2010, attained penetration rates of 62, 42 and 43 per cent by end 2011, respectively. In developing countries such as Azerbaijan, Ghana and Saudi Arabia, mobile-broadband penetration was below 10 per cent in 2010, but took off in 2011, climbing to 22, 23 and 40 per cent, respectively (International Telecommunications Union, 2012).

In Kenya, market information is provided through SMS so that smallholders have access to daily agricultural commodity prices, extension messages and opportunities to sell or bid through text messages and/or voicemail; there are other rural-based market information points which are linked through an electronic information system that allows farmers to link with buyers in different urban centres (Muriithi et al., 2009; Davis & Addom, 2010).

The Technical Centre for Agricultural and Rural Cooperation (2006) and Jenson, Myers and Southwood (2004) have shown that farmers with access to market information in Mozambique obtain higher farm prices through the Mozambique Agricultural Marketing Service (SIMA). SIMA collects and disseminates nation-wide and provincial data on market prices, product processing and availability through a variety of media including text messages, email, Internet, national and rural radios, television and newspapers.

In Senegal, Manobi provides access to price data on various crops collected from different markets across the country. Manobi personnel use mobile phones to send the price data to the Manobi database using the Wireless Application Protocol (WAP). Farmers use their mobile phones to query the database (International Telecommunications Union, 2012). Services provided by Esoko in Ghana include placement of buy/sell orders by farmers and traders. Esoko has a network of agents that collect price information on about 20 agricultural commodities in 30 markets in the country. They have a system for providing price information to farmers and others on a subscription basis (Martiz, 2011).

Other experiences from Ghana show how mobile phones can be used by cocoa farmers to obtain production and marketing information. A pilot programme called Cocolink, launched by the Ghana Cocoa Board, provides cocoa farmers with useful information about improving farming practices, farm safety, crop disease prevention, post-harvest production, and crop marketing. In this programme farmers receive information and specific answers to questions at no charge through voice and SMS messages in the local language or English (Martiz, 2011).

Scott *et al.* (2004) reported that at present, it is social reasons that drive phone use amongst the poor. ‘Chatting’ and ‘keeping in touch’ constitutes the most common use of phones. Perhaps the most important impact of phone use is an enhanced sense of well-being. It saves time, makes business more dynamic and improves financial management, all of which tend to improve household income and reduce risk.

Furthermore, other uses of mobile phones are what have come to be known locally as ‘flashing’ or ‘beeping’. This is the practice of dialing another user’s number and letting it ring but hanging up before the call is answered, with the aim of prompting that person – for example, a more prosperous relative – to call back (Souter *et al.*, 2005). Donner (2005) documents the widespread phenomenon of ‘beeping’ in Uganda. The most common signals identified by Donner (2005) are to request the recipient to call back, to convey a ‘pre-negotiated instrumental message’ such as ‘pick me up now’ or to simply convey that the beeper is thinking of the recipient. This system ensures communication without

speaking or typing a single word. More importantly, it costs nothing to the beeper. One of the ‘rules of beeping’ according to Donner (2005) is ‘the rich guy pays’.

A mobile phone nominally belongs to a single person, but it is often informally shared between several people in the community due to a strong culture of sharing communication tools (Lopez, 2000). The developed world model of personal ownership of a phone is not relevant, or indeed appropriate, to the developing world. For according to James (2005), the ‘Northern’ model of an individually owned phone purchased by its one user may not apply in the global south where there has been a long history of shared ownership and access models in relation to ICTs. This gives way to a multiplier effect, as the impact of a single phone is spread out across several individuals, or even an entire community (Coyle, 2005). Sinha (2005) reported of the wide sharing of mobile phones in many parts of the developing world where mobile phone handsets are shared with family and friends free of charge in most cases. Commercial sharing of mobile phones is practiced in many parts of Africa through the use of mobile phone kiosks. In Kenya, while most people cannot afford a cell phone, this had not prevented thousands of poor villagers from transforming their friends and families into walking communication models. This set up is deeply rooted in the traditional African communal mode of living (Wachira, 2003).

There are concerns that the available evidence on the status of mobile phone adoption particularly in Africa does not provide sufficient analysis of the deployment. James and Versteeg (2007) cited by Duncombe and Boateng (2009), argued that there are no clear

distinctions between mobile phone subscribers, owners, users, those who benefit from usage, and those who have access to the mobile telephony.

In Kenya, mobile telephony was used for delivery of animal health services which has reduced transactions costs and increased efficiency of animal care (Kithuka, et al., 2007). The system works with a community animal health worker, who purchases a veterinary drug kit and mobile phone at subsidized price. Animal Health Assistants and Veterinarians working with the project also receive mobile phones. The phone system allows the animal health care providers to update one another, share information, and conduct referrals. In Ghana, mobile phones are used to manage existing and embedded social networks, the complex family, business or social connections that constitute resources and obligations (Slater & Kwami, 2005).

In Kenya, the inception of M-Pesa in 2007 dramatically changed the money transfer market. M-Pesa (M stands for “mobile” and Pesa is the Swahili for money) is the most widely adopted mobile phone-based financial service in the world launched by Safaricom, the dominant mobile network operator in Kenya. It has grown exponentially to reach 14 million registered users by April 2011 since its launching (CFSP, 2012). M-Pesa allows users to exchange cash for “e-float” on their phones, to send e-float to other cellular phone users, and to exchange e-float back to cash (Mbiti & Weil, 2011).

The combination of widespread cellular communication and the ability to transfer money instantly, securely, and inexpensively are together leading to enormous changes in the

organization of economic activity, family relations, risk management and mitigation, among other things. A decade ago, family members in different parts of Kenya had a very limited scope of communicating with relatives in distant parts of the country, and they faced even greater difficulties in sending or receiving remittances. Now, in many cases, appeals for assistance and the availability of resources can be communicated, and money can be transferred almost instantaneously. Among the changes observers have noted are changes in the nature, pattern and impact of remittances (Mbiti & Weil, 2011).

Morawczynski and Pickens (2009) observed that M-Pesa users sent smaller but more frequent remittances, which resulted in overall larger remittances to rural areas. They also observed that urban migrants using M-Pesa visited their rural homes less frequently, potentially weakening the social ties between migrants and their home communities. Researchers have also noted the potential of M-Pesa to affect savings. Morawczynski and Pickens (2009) noted that users often keep a balance on their M-Pesa accounts, thereby using the system as a rudimentary bank account despite the fact that the system does not provide interest. In addition, Vaughan (2007) notes that some individuals stored money in M-Pesa due to safety considerations, especially when travelling across the country. Using ethnographic methods in three communities, Plyler, Hass and Nagarajan (2010) argued that M-Pesa has enabled small businesses to expand and grow and has also increased the circulation of money in these communities. M-Pesa could empower certain household members, particularly women, who have traditionally had less bargaining power. Remittances received via M-Pesa are less visible than those transmitted by traditional means, and could put recipients in a position to keep more of the funds they receive. This,

in turn, given evidence that spending patterns of women and men differ, suggests that M-Pesa could have real effects on the allocation of household spending as well as patterns of saving – all of which would impact economic development (CFSP, 2012).

3.7.2 Access to and use of radio in poverty alleviation

Radio is the most accessible type of ICT in the rural areas of the developing world. Its accessibility has been attributed to its effectiveness as a communication medium for populations characterized with low literacy levels, low income, and lack of access to other forms of media.

Radio plays a significant role in the transfer of information in African countries because the spoken word of radio broadcasts helps where literacy rates are low (Hambly Odame and Atibila, 2003; CTA, 2006). In Sub-Saharan Africa, radio is often the only mass medium available in rural areas and most households have access to a receiver (Girard, 2003). Radio can reach communities at the end of the development road – people who live in areas without phones or electricity. Radio reaches people who cannot read or write. Even in very poor communities, radio penetration is vast. It is estimated that there are over 800 million radios in sub-Saharan Africa (Sullivan, 2011).

The liberalization of the airwaves began in most developing countries including Ghana in the early 1990s. This made way for the development of privately-owned and commercially-run FM stations. This was as a result of the introduction of democratic governance with its attendant freedom of speech and association with support from the

international donor community. With respect to the number of radio stations in Ghana, this has increased over a five-year period from 127 in 2003 to 190 in 2008. However, only 146 radio stations are operational country-wide as of 2008 (National Communications Authority, 2012). There has been significant growth in terms of numbers and reach of broadcasting services in Ghana in the last decade, but most of these radio stations are, however, located in the urban centres.

The results from the AudienceScapes 2009 Survey in Ghana indicate that radio is the most widely accessible and the most widely used source of news and information for Ghanaians. Ninety percent of respondents said they had listened to the radio in the last week, and virtually all of those respondents (96 percent) also said they use the radio to get news and information on at least a weekly basis, as opposed to just listening for entertainment. The survey results show radio broadcasts are also widely trusted as news and information sources, suggesting that overall, radio is a favorable conduit for delivering development information in Ghana, at least on a national scale (AudienceScapes 2009).

A study undertaken by Bowen (2010) in 2009 of 2051 people in Ghana aged 15+ indicated that 89 percent of the respondents in urban areas owned radio sets with 84 percent in the rural areas with radio set. With respect to the number of radio stations in Ghana, this has increased over a five-year period from 127 in 2003 to 190 in 2008 (NCA, 2009). However, only 146 radio stations were operational country-wide as of 2008. There has been significant growth in terms of numbers and reach of broadcasting services in Ghana in the last decade. Most of these radio stations are, however, located in the urban centres.

Another study of fifteen hill villages in Nepal found radios in every village, with farmers listening to them while working in their fields (Harris, 2004), and still another survey of 21,000 farmers enrolled in radio-backed farm forums in Zambia found that 90 percent found programmes relevant and more than 50 percent credited the programmes and forums with increasing their crop yields (Dodds, 1999; cited in Harris, 2004). Kituyi-Kwake and Adigun (2008) also found out in Kenya that an average of 37.8 percent of their 200 female study population used television sets, in contrast to 74.4 percent who were using radios, and only 12.8 percent of them using mobile phones.

A study conducted by Nguo *et. al.* (2005) which used focus group discussion at Apac community radio in Northern Uganda revealed that radio was the preferred means and the most viable mode of communicating agricultural information to the community members. Radio ownership was high with 74 percent of the 402 respondents who owned radio and 75 percent of the community members who listened to radio.

Natural Resource Management is another area where ICTs contributed to as was the case for a community radio in Obane rural community in the Dangme East district of Ghana. The Radio Ada followed participatory approaches in the production of broadcasts where listeners determine the content that is put on air and take turns in producing broadcasts in villages. It took four years of broadcast in mobilizing people to dredge a clogged 10 km long river which was neglected for 40 years, providing once again the chance to channel water to the irrigation canals of riverside farms (Larweh, 2006).

3.7.3 Access to and use of television in poverty alleviation

Although television services are growing steadily in Africa, it is not used widely especially in the rural areas. A BBC World Service Trust study in 2006 indicated that the penetration of TV had an enormous range from two percent in Somalia and the DRC to 76 percent in Mozambique. In Ghana, television broadcasting services are found mostly in the urban centres. In a household survey in 2009, it was found that 76 percent of the urban centres respondents owned a television set as against 46 percent of the respondents in rural areas (Bowen, 2010). Lack of electricity in most rural areas might account for the disparity in the television ownership in Ghana. According to the National Communication Authority, 47 television stations had received authorization to operate but only 19 are operational as of 2008 (National Communication Authority, 2012).

Although less widely used than radio, television was available in the households of more than half of Ghanaians surveyed, in the 2009 AudienceScapes Survey in Ghana while another 20 percent of respondents said they watched at a location other than their own household. Even for Ghanaians with televisions at home, the data suggests a limited selection of channels available to them: virtually all respondents with a TV at home received their signal only through an antenna (on the TV or roof, or outside a window) and said they receive between 1 and 6 channels. Rural residents in the survey were less likely than urban residents to have a TV in their own home at all and less likely to be among the few with more than a handful of channels (AudienceScapes, 2009a).

The physical availability or otherwise of an ICT device is only a fraction of the problem relating to ICT access and use, as Alampey (2006) cited by Olatokun (2009) argued that social and economic factors such as age, gender, income levels, and educational backgrounds are major determinants of how people are able to use ICTs. Interplay of these factors, coupled with the physical access of the devices determines how people are able to approach the world with “courage and freedom”, and eke a decent livelihood for themselves (Sen, 1999) cited by Olatokun (2009).

Geldof (2011) argues that there exists a gender digital divide in which rural women are the most disadvantaged with respect to the access of ICT devices. Ninety-two percent of the male participants in her study had operated a radio themselves, whereas only seventy-eight percent of the female participants had operated one. She also gathered that the rural male participants of the study were 89 percent, 90 percent and 98 percent familiar with mobile phones, television and radio respectively, whereas their female counterparts were 78 percent, 74 percent and 87 percent familiar with the devices respectively (Geldof, 2011). The restricted use of ICT tools and services indicate that the primary users of public access ICT services are “young, male, relatively well-educated, of relatively higher socio-economic status, not physically disabled, and have usually had prior access to the Internet at some other location”, and student groups are among major users of ICT (Sey & Fellows, 2009).

From a similar perspective, Kituyi-Kwake and Adigun (2008) reported in their Kenyan study that ICTs were used by women for satisfying educational information needs on

coursework and research topics, student services, and career guidance; as well as information regarding health, business/enterprise, agricultural practices, and social welfare. A review of the literature on the theme by Sey and Fellows (2009) revealed that information and communication tools and services mostly in developing countries were used for personal and social needs, while marginally used for political, economic, and other uses. The technologies were personally used for doing homework and developing computer skills and entertainment, while socially used for communicating with friends and family (Sey & Fellows, 2009).

Those who need ICT the most as an enabling technology (the poor), are not having the needed access (the phenomenon generally called the digital divide), especially in developing countries. Some reasons that have been attributed to this phenomenon include affordability challenges; a perception that public access venues are appropriate places for highly educated people; and the failure of public access ICT venues to make their service relevant to the community (Sey & Fellows, 2009; Geldof, 2011).

3.8 ICT Access and Use - Detrimental Effects and Constraints

ICTs have the potential to improve the welfare of the poor by providing opportunities to increase social capital; improve availability of market information, better access to health and educational facilities and efficient and effective governance. Indeed, there are tremendous benefits in the use of ICTs both for individuals, organizations and nations. However, in spite of these benefits there are a number of factors that are detrimental to the use of ICTs and thereby may increase people's vulnerabilities. ICT users also face

constraints which hamper their effective use of the ICTs. The detrimental effects and constraints faced by the use of ICTs are discussed in the next two sections.

3.8.1 ICT access and use – detrimental effects

Advances in ICTs have brought with them detrimental effects ranging from health hazards to social, economic, and cultural issues. Excessive use of mobile phones and the presence of the accompanying transmitters for example, have been associated with health risks such as brain tumours, headache, blood pressure, infertility and fatigue (Cox, 2003). Agarwal *et al.* (2008), in an observational study to investigate the effect of cell phone use on semen quality found that the use of cell phones decrease the semen quality in men by decreasing the sperm count, motility, viability, and normal morphology.

In a similar study to determine the effect of cellular phones on the fertility of males subjected to marital infertility therapy, Wdowiak and Wiktor (2007) found that an increase in the percentage of sperm cells of abnormal morphology was associated with the duration of the exposure to the waves emitted by the GSM phones. This suggests that although the evidence of health hazards is at most indirect, it cannot be entirely dismissed. Apart from adding to people's vulnerabilities, these possible hazards can make people develop some fear of using the technologies. Television has been criticized because of its power to influence viewers, for keeping the viewers passive for several hours, reinforcing aggressive tendencies, reducing the extent of interaction in families, being injurious to the eye and causing obstructions of the normal cognitive development (Zuberi, 1992).

There are also the environmental effects of ICTs. The physical existence of the ICT devices, such as the mobile phones, television and radio sets, have very serious environmental impacts (Forge *et al.*, 2009; cited by Ciocoiu (2011)). These devices are normally manufactured from plastic sources which may be unable to decay after very long periods. If proper disposal mechanisms are not put in place, they could hinder the development efforts of communities. Forge *et al.* (2009) cited by Ciocoiu (2011) observed other negative effects of ICTs on the environment as those that come from the manufacturing process and their use; where there are concerns of enormous energy consumption, and environmental pollution emanating from the production process.

3.8.2 ICT access and use - constraints

In spite of the many benefits of ICTs, some factors have been cited as constraining their effective access and usage by individuals, households and communities. These factors include income, age, education, location and gender (Obayelu and Ogunlade, 2006). In a survey of Grameen phone users in Bangladesh, Bayes *et al.* (1999) cited in Pigato (2001), found that 32 percent of 662 respondents reported that high costs were a problem. In the same manner, Chandrasekhar and Ghosh (2001) reported that the Warana project, which connected and computerized a cluster of 70 villages, is estimated to have cost US\$ 600,000. To replicate the experiment across India's 550,000 villages could cost as much as US\$ 4.7 billion, which amounts to around 12.5 percent of India's gross domestic product (GDP) between 1998 and 1999.

Estuar (2003) found that students in private schools in the Philippines, who tend to be richer, had owned cell phones for a longer time and were the more frequent users of the cost-incurring services of the cell phones than their counterparts in public schools. In general, high cost of services is the very reason that continues to inhibit the uptake of other forms of ICT services and their usage by consumers throughout Africa. In line with this, Gillwald and Stock (2008) used a contingent valuation technique to understand the willingness and ability of individuals to pay for mobile services in 17 countries in Africa. The results confirmed that income is the main adoption barrier.

Education, which is a human capital, is another cited factor influencing access and usage of ICTs. Generally, individuals with higher levels of education have a better position of effectively using ICTs. In Bangladesh, the Grameen Village Phone required operators to be literate or to at least have children who can read and write (Richardson *et al.*, 2000). It has also been shown that younger people are more motivated and more likely to use most types of ICTs than their older colleagues. Niles and Hanson (2003) and Pigato (2001) agreed that people's spatial situation provides them a context in which they access and use ICTs. In this respect, as a result of the rural-urban divide, people in urban areas tend to have greater access and use of ICTs than those in the rural areas.

Some commentators also hold the view that access to ICTs largely depends on education, income, and wealth and that the so-called digital divide is only a part of a much broader development divide. Limited education, inappropriate language skills or lack of resources could prevent disadvantaged segments of the population from accessing ICTs, ultimately

exacerbating information gaps and increasing income inequality between and within countries. It is often argued that developing countries have other, more pressing investment priorities, such as food, safe water, education, and public health, and that devoting limited resources to ICTs must be justified on the basis of its opportunity costs relative to other development agendas.

Dumas (2002), Sey and Fellows (2009), and Obayelu and Ogunlade (2006) reported gender differences with respect to the use of many types of ICTs, with men having more opportunities than women. Women in developing countries in particular face difficulties in using ICTs, as they tend to be poorer, facing greater social constraints, and are less likely to be educated or literate than men. Geldof (2011) supports the gender centered view of ICT constraints in her studies of Ethiopia and Malawi, when she identified some mutually influencing gender constraints on ICT access and use, namely domestic responsibilities and time limitations; geographic dependency and mobility; socio-cultural norms; gendered content; and education.

According to Geldof (2011), women have less time to engage with ICTs than men due to the social division of labour. Also, the lives of women tend to be more geographically restricted to the direct environment of their homes, either because of their domestic responsibilities or because of other social influences that restrict women's movement outside the home, particularly in rural areas. Many societies, especially in developing countries have developed stereotypes for ICTs such as mobile phones, television and radio sets. Participants in Geldof's (2011) study expressed the view that women who did not

comply with these gender stereotypes risked being ostracized. Her study further discovered that the nature of the available ICT content was more appealing to men than to women, and disparity in education levels between the genders made using these technologies difficult.

Electricity is a major driver of ICT services. Haddad and Jurich (2002) observe that on average, poor countries consume 5 percent of the energy consumed by wealthy countries. Considering this, any deficiency in the supply of electricity hinders efforts at promoting information and communications technology adoption and use. Farrell (2007) confirmed this with a study in Uganda that identified about 98 percent of rural and 60 percent of urban households as having no access to the commodity. In Tanzania, Busagala and Ringo (2013) report that e-policing has not been totally successful because of a lack/unreliable supply of electricity. They contend that access to electric power stood at 38.9 percent and 1.8 percent of the entire population for urban and rural areas respectively.

Hearn *et al.* (2004) critiqued ICT initiatives on the basis of four main reasons. They observed that most ICT initiatives fail because they are largely ICT supply-driven. Instead of giving the initiatives socio-cultural and environmental consideration, such projects concentrate on distributing the physical hardware, ignoring the possible impediments and opportunities. Another critique of most ICT initiatives is that they do not take into account the dynamics of the global ICT industry. These dynamics include the variables that influence the degree of disparity in digital divide in a community such as gender, age, education, income and interest level (Hearn *et al.*, 2004). It is noted then that the supply alone is inadequate, but a concerted effort to address these challenges as well.

Hearn *et al.* (2004) also indicated that most ICT initiatives for poverty alleviation are simply over-optimistic. Measuring the impact of ICTs is not an easy task (Wagner *et al.*, 2005), and this makes it difficult for ICT project developers to make realistic estimations of the possible impacts on the target community. Finally, the content of the ICT tools that are intended to promote sustainable development among the people are rather overlooked. Most of the Mobile phones (and sometimes television and radio), used in poverty alleviation programmes have very few (if any) content developed for the contextual need of the target communities. They are supplied with foreign content that might be used for training purpose, and later becomes redundant (Hearn *et al.*, 2004).

Pigato (2001) extends the issue of content, which is a major ICT challenge for developing countries, to “trust, confidence and security”. She indicated that the poor favours and trusts information sources close to them and those that are applicable to their existing knowledge base. For this group of people, the most valued sources of information are friends, family, and business networks; which are mostly in contrast with ICT-mediated information often lacking proximity and the element of trust, confidence and security that is gained through business networking and personal contacts (Pigato, 2001).

From Kituyi-Kwake and Adigun’s (2008) study in Kenya various elements were identified as hindrances to ICT access and use by the women rural folks, and were categorized into six fold hindrances, namely unaffordable ICT services (32.0%); distance of ICT services from (potential) users (19.0%); computer illiteracy (16.0%); unavailable time for ICT access and use (13.5%); cultural taboos (11.5%); and poor nature of transportation

infrastructure to enhance ICT access (8.0%). The final point buttresses the point made by Hudson (2001; cited in Adeya, 2002) and many other development theorists that ICTs alone are not enough to alleviate poverty, but that, investments in these technologies must be in tandem with other economic and social infrastructure. The respondents advised therefore that efforts must be directed at making ICT services affordable (31.5%); available (24.0%); accessible (14.0%); and ICT investments in their communities must be made together with other economic and social infrastructure such as electricity, and ICT centres (15.0%) (Kituyi-Kwake & Adigun, 2008).

In Wresch's (1996) view, there are four information problems frequently faced by the poor: geographic isolation, lack of communication channels, language problems, and lack of computer systems. Two of these are directly ICT related constraints, given the crucial role of communication channels and computer systems. In the case of geographic isolation, the key message is that electronic links are used to supplement face-to-face contact, not to replace it. Many poor suffer from lack of communication beyond their local confines. Take the telephone, for example, it is the main medium used for communication, but there are many places where telephone lines do not exist. Where there are telephone lines, information follows (Wresch, 1996).

Obayelu and Ogunlade (2006) argue that developing countries are specifically challenged with respect to ICT deployment. Lack of access to and unstable supply of electricity are among the biggest constraints in this regard. Over 75 percent of rural Nigerians as at 2006 were without power for lighting purposes, let alone for ICT use. This condition is

exacerbated by an inadequate supply of technical support services, and poor information evaluation and application skills which is a result of low educational levels (Obayelu & Ogunlade, 2006). These sentiments are shared by developing countries in general (Adeya, 2002).

A survey undertaken by McNamara (2008) in three districts in Tanzania found out those challenges for effective utilization to ICT was resistance from users because of culture, traditions and economic hardship which restrict people from using ICTs. The rural community believes that ICTs have brought some negative impact to society, including distortion of culture and an increase in violence and crime.

A survey research undertaken by Samuel *et al.* (2005) on socio-economic impact of mobile communications concluded that lack of electricity was a potential barrier to the uptake of mobile phones and other technologies and that respondents who had access to electricity are more likely to own a mobile phone and those without electricity are more likely to borrow someone else's.

3.9 Importance of ICT Use in Poverty Alleviation

In the 21st Century, Information and Communication Technologies (ICTs) are seen to be instrumental in the development of countries, particularly those in the developing world (Sey & Fellows, 2009). As did the enabling technologies of the past, ICTs will allow nations to achieve development goals faster and more efficiently. ICTs enable development in at least three key ways. First, they enhance access to and creation and sharing of

knowledge. Second, ICTs effectively speed up the production process and facilitate financial transactions throughout the economy while reducing costs. Third, ICTs connect individuals, groups, enterprises, communities and governments faster and more cost-effectively (Lallana, 2004).

Empirical literature on the linkages between ICTs, livelihoods and poverty in the developing world is still relatively new due to the recent nature of ICTs. Souter *et al.* (2005) argued that with the exception of occasional international reports, the view that prevailed within development agencies up to the mid-1990s was that ICTs have relatively little role to play in socio-economic development. Despite the general consensus on the potentials of ICTs, available literature presents divergent views on the link between ICTs, livelihoods and poverty.

The supporters of this view argue that by means of ICTs, developing countries can leapfrog several stages in their development activities (Nulens, 2003; World Bank, 1998). But according to Heeks and Kenny (2002), ICTs have little value and they would cause harm to the developing world. They argued that the harmful effects of the technologies far outweigh any benefits to be derived from the technologies.

Towards the centre of this continuum are those who see ICTs as an essential part of socio-economic development, but who also see it as creating socio-economic disparities (Heeks and Kenny, 2002). Such middle arguments put emphasis on the appropriation of the technology and content development, with Martin and McKeown (2003) cited by Harris

(2004) suggesting that the application of ICTs alone is not sufficient to address poverty problems of rural areas without adherence to principles of integrated rural development. To them, investments in ICTs must be done with, at least, the minimal infrastructural development in transport, education, health, and social and cultural facilities in order to reap the optimal benefits of the technology for rural development.

There is evidence, however, that ICTs can play a role in some aspects of poverty and livelihoods issues, namely: empowerment, community development, networking, social inclusion and social cohesion, income generation and business enhancement, improved agricultural practices, information flow and ease of communication, economic development, education, health, culture and governance (Duncombe, 2006; Mascarenhas, 2010; Asenso-Okyere & Mekonnen, 2011). These issues are therefore discussed in the following sections with respect to the use of ICTs.

3.9.1 ICT use and empowerment of people

ICT empowers people, as it allows information to be transferred across distances without face-to-face contacts, cutting down on costs. Where e-government applications have been used, people can access government services and at the same time spend less time meeting their obligations to government (Ssewanyana, 2007).

Al-hassan, Andani and Abdul-Malik (2011) conducted a study on the contribution of Simli Radio to the livelihood improvement of the people in the Tolon-Kumbungu and Savelugu-Nanton Districts of the Northern Region of Ghana. A multi-stage sampling technique was

used to select 12 communities for the study. Data were gathered on the use of broadcasting as an educational tool, the promotion of traditional culture, communication and information sharing, entertainment and income promotion. The study established that Simli Radio has worked to improve awareness and knowledge of solutions to community development problems ranging from culture, rural development, education, hygiene and sanitation, agriculture to local governance. The station has been an appropriate medium that has facilitated an interface between duty bearers and rights holders. It has promoted small and medium enterprise development by creating market opportunities for Small and Medium Enterprise (SME) operators and consequently improved sales and incomes (Al-hassan, Andani & Abdul-Malik, 2011).

Myrh and Nordström (2006) conducted a study on livelihood changes enabled by mobile phones, using Tanzanian fishermen as a case study. The study showed that increased access to information enabled by mobile phones brought positive effects to all livelihoods indicators. Mobile phone use empowered the fishermen, both through increased bargaining power and increased control over external events. Mobile phones gave the fishermen the possibility to take measures to decrease the risks they are exposed to, such as emergencies at sea. The negative effects of the use of mobile phones were found to be negligible. The study concluded that the positive effects of mobile phones to livelihoods indicators is not exclusive to fishermen but other groups that had earlier been excluded from the communication system.

3.9.2 ICT use, community development, social cohesion and social inclusion

Ramirez (2000) conducted an investigation into the harnessing of ICTs for community development in three rural and remote communities in Canada. The study was a qualitative research that used grounded theory, participatory action research and case study as the research design. The study found out that ICTs were transforming the networks that people in rural and remote communities can belong to and, in so doing, they provided a means of reducing social isolation. The present study used both the quantitative and qualitative methods to collect data from heads of households unlike that of Ramirez (2000) which used the qualitative method.

Ferlander and Duncan (2006) used a case study design with both quantitative and qualitative data collection methods to examine two community initiatives designed to encourage digital and social inclusion in disadvantaged areas in Sweden. The results of the study indicated that the provision of home access to the Internet largely failed to achieve its goals and concluded that access, skills and motivation are prerequisites for a digitally inclusive society. The present study explored access to and use of ICTs on poverty alleviation whilst that of Ferlander and Duncan (2006) was limited to the issue of access of ICTs.

A survey research undertaken by Samuel, Shah and Hadingham (2005) on socio-economic impact of mobile communications on households, rural communities and businesses in South Africa, Tanzania and Egypt revealed a very high awareness of the potential to use mobile phones for communication and very high perceived accessibility, even in very poor

rural communities. Furthermore, the impacts of using mobile phones according to Samuel, Shah and Hadingham (2005) were social in nature while others concerned employment or business. It included greater contact and improved relationships with family and friends. This was one of the most significant benefits identified by the survey. The present study explored the use of mobile phones, radio and television in poverty alleviation at the household level using the case study approach while the work of Samuel, Shah and Hadingham (2005) was on the socio-economic impact of mobile communications on households, rural communities and small businesses.

A 2005 study by Goodman (2005) explored the link between mobile phone ownership and use and social capital in rural South Africa and Tanzania. The results from the two studies showed a high degree of sharing mobile phones, suggesting that the devices are a social amenity as well as a communication tool. The study also found out that there are some links between social capital and mobile phone ownership and use in rural communities in South Africa and Tanzania. It was concluded that within the parameters of the two surveys, mobiles were facilitating participation in social networks, helping to maintain both strong and weak links, including participation in community group activity. Unlike Goodman's (2005) study which was limited to the link between mobile phones and social capital, the present study explored the link between mobile phones, radio and television and social capital, financial capital, physical capital and human capital.

Mobile phones have a great potential to facilitate social networks, which in turn contributes to better quality of life. They are seen as a means to decrease the feeling of isolation and

enable social inclusion. Bayes, Braun and Akhter (1999) cited in Pigato (2001), reported on how telecommunication users sustain social cohesion in Bangladesh where many families have members working abroad. Another important role of ICTs in rural livelihoods is in the area of entertainment. According to Alemna and Sam (2006) different forms of entertainment can now reach rural villages through the diffusion of ICTs such as radio, video and television broadcasting. They reported that although most rural people in Ghana lack electricity, they receive transmission by using dry cell batteries for their radio and car batteries for the television sets. As a result, such entertainment options have not only improved the quality of life for rural people, but have also reduced their isolation and cultural distance from urban areas.

3.9.3 ICT use, income generation and business enhancement

A study undertaken by Ulrich (2004) on poverty reduction through access to information and communication technologies in five rural areas of China through questionnaire administration revealed that respondents with higher levels of income tended to find information centres more useful and placed a higher financial value on the services and visited the centres more frequently.

Another survey undertaken by McNamara (2008) in three districts in Tanzania found out that ICTs commonly used by the rural poor in the selected districts were radio, mobile phones and television and that the ICTs contributed by improving rural livelihoods through improved business (17%), increased access to education (3%), ease of communication (50%) and increased access to key information (30%).

It has been noted that income generation can be obtained from ICTs through the sale of goods and services, and indirectly through time and money saving as a result of better communication via mobile telephony. A study carried out in South Africa and Tanzania indicated that two thirds of the respondents in Tanzania reported savings in travel time and cost cutting. 62 percent of the respondents in South Africa reported increasing their income as a result of the mobile phones (International Telecommunications Union (ITU, 2006).

There is increasing evidence from the literature that mobile phones enable people to send and receive money. A study conducted by McNamara (2008) reported that remittances, which form an important component of rural incomes in developing countries, have been greatly facilitated through mobile communications. Technological developments and business innovations are making mobile phones strategic tools for boosting business development, thus moving away from being a tool for only social communication (Frempong, 2009). Frempong argues further that mobile phone has moved from being a status symbol to become a versatile technology important for socio-economic activities. In effect, it is now a strategic business tool to bolster competitiveness among businesses, especially the MSEs for wealth creation and poverty reduction.

The findings of a study in Morogoro Region, Tanzania by Sife, Kiondo and Lyimo-Macha (2010) indicated that mobile phones had significantly changed the way rural businesses are being conducted. It was revealed that nearly three quarters (72.6%) of the respondents reported that their business activities were positively affected in that instead of travelling to

either Morogoro town or 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 Mikimu towns. The findings therefore suggest that mobile phones are improving business activities by helping rural traders to find better market and price information, make advance arrangements, as well as save time and money by avoiding unnecessary travel (Sife, Kiondo & Lyimo-Macha., 2010).

A report of the role of ICTs on poverty reduction among Micro and Small Entrepreneurs in urban Njombe and Makambako in Tanzania by Mascarenhas (2010) showed that ICTs especially the mobile phone have become an important component of the business strategy. This is shown by the fact that the mobile was used for a number of business dealings. It was still used mostly for getting and giving information but also for following up debts and loans, buying and selling and keeping track of business without personal visits. In the process the use of the mobiles was saving time and money through reducing the number of days spent on travelling. In several of the business premises, the mobile phone number was displayed so that the owner could be easily contacted even after the business was shut. The report concluded that the mobile has changed the way that MSE's carry out their business.

3.9.4 ICT use and improved agricultural practices

Agriculture is the main source of livelihood for most people in the rural areas of the developing world. As a result of the dependency on rain-fed agriculture, lack of access road, poor processing infrastructure, high costs of inputs, low participation of farmers in decision making and the weak research, extension, farmer liaison, the full contribution of

agriculture to economic growth and poverty alleviation has not been realized. ICTs have been reported to enhance the delivery of useful agricultural information to rural farmers.

In a study on the use of radio and television as sources of agricultural information among poultry farmers in Nigeria, Oyegbami and Fabusoro (2003) found a significant relationship between farmers' level of production and the level of radio and television use. With increased agricultural programmes and information on poultry management, they established increased use of radio and television for overall development of agriculture and food security.

Fafchamps and Minten (2011) studied the benefits that Indian farmers derive from SMS-based markets, weather and crop advisory information. Using a controlled randomized experiment in 100 villages of Maharashtra, they did not find statistically significant effect of treatment on the price received by farmers, on crop losses resulting from rainstorms, or on the likelihood of changing crop varieties and cultivation practices. On the other hand, using micro-level survey data, Jensen (2007) examined the effects of mobile phones on market performance and welfare effects in south Indian fisheries sector. Contrary to the results of Fafchamps and Minten (2011), Jensen (2007) found that the adoption of mobile phones by fishermen and wholesalers was associated with a dramatic reduction in price dispersion, the complete elimination of waste, and a near-perfect adherence to the Law of One Price.

Similarly, Raj *et al.* (2011) conducted action research in Nagapattinam district in the state of Tamil Nadu, India using intervention of mobile technology (SMS and interactive voice response system) and individual web pages. Through this action research, a system was designed, developed and implemented at the farm level to find out whether providing customized crop cultivation and nutrient management practices to farmers could improve livelihoods. The study showed that introduction of ICT led to change in cultivation practices among the intervention farmers and some significant reduction in cost of cultivation. As a result, net income of the intervention farmers was 15.2 percent higher than that of the control group; and, spending of intervention farmers on seeds, nursery, nutrient management, and weeding was significantly less than that of control farmers. The intervention group was able to reduce costs by using recommended quantities of seeds and inputs, and realizing better market prices as they had information available on the inputs (Raj *et al.*, 2011).

Adeya (2002) reviewed some ICT programmes that had been targeted at farmers, particularly rural women farmers. An example is cited from India where ICTs were used to disseminate information on agronomic practices and farming methods, to information on how to access and use new technologies, or market news and agricultural commodity prices, information on weather predictions and rainfall patterns, recommended crops for the season as well as information on meetings and workshops on relevant issues (Adeya, 2002).

Chowdhury (2000) asserted that ICTs do not have any more to do with poverty and food security in the developing countries than rain dances have to do with rain. He noted that many sceptics have not seen the role of ICTs in efforts intended to alleviate poverty and bring food security to developing countries. The author acknowledged that the problem of poverty alleviation is complex. Efficient production systems and physical infrastructure are a few of the necessities.

ICTs can also enable farmers to participate in advocacy and cooperative activities. In Chad, radio was used to stop intentionally lit bush fires that were traditionally used to clear agricultural land for planting. Radio broadcasts were used to encourage villagers to voice their opinions and propose solutions to the problem. Within one year, the bush fires were reduced by 90 percent and 22 villages had active bush fire control committees that protected 10,000 hectares of forest (UNDP, 2001).

A study by Sife, Kiondo and Lyimo-Macha (2010) showed that mobile phones contribute to market information for agriculture and livestock produce as it enhanced the ability of the respondents to directly discuss prices with buyers and cross check prices for their produce instead of relying on middlemen or a few buyers. The findings suggest that mobile usage enables rural farmers to access better markets and prices for their produce and were able to overcome the problem of being cheated by middlemen.

Svensson and Yanagizawa (2008) studied the impact of agricultural price radio broadcast on the spread of market information in Uganda. Exploiting the variation across space

between households with and without access to a radio, they found evidence suggesting that better informed farmers managed to bargain for higher farm gate prices on their surplus production.

A UNDP (2000) report cited by Adeya (2002) gives an example from India on how information and communication technologies have been used in poverty eradication especially in connection with the needs of women farmers. These range from information concerning agronomic practices and farming methods, to information on how to access and use new technologies, or market news and agricultural commodity prices.

3.9.5 ICT use, information flow and ease of communication

Radio plays the most significant role of any communication technology in the transfer of information in African countries since spoken word on broadcast radio is the principal means of information transfer where literacy rates are low (CTA, 2006).

ICTs can help in improving information flows, reducing search costs and generally contributing to market efficiency. Eggleston, Jensen, and Zeckhauser (2002) cited by Abraham (2007), show that the addition of basic telephony services in rural China reduces price dispersion and the purchase prices of various commodities. Hirschmann (1967; Abraham, 2007) noticed that a credit market for coffee had developed in Ethiopia after the installation of a long-distance telephone network. A set of studies of the Grameen Phone Project in Bangladesh suggested that nearly half of all telephone calls made using the Grameen network were for economic purposes such as discussing market prices,

employment opportunities and remittances (Richardson, Ramirez, & Haq ((2000); Pigato (2001)).

The relationship between ICTs and poverty does not come out clearly in most literature sources. Pigato (2001) focused on this relationship with empirical evidence from sub-Saharan Africa (SSA) and South Asia. Two objectives of the paper were first to examine patterns of utilization, ownership and affordability of ICTs within countries in SSA and South Asia, and secondly, to suggest ways through which information and ICTs can best be used in poverty alleviation strategies. The data sources for this undertaking included: Demographic and Health Surveys (DHS) from 26 low income SSA and South Asian countries during 1991-99; two surveys of poor urban and rural households in Nepal and India; two surveys of small and medium enterprises (SMEs) in Tanzania and Botswana; and existing case studies of applications of ICTs in rural areas from both SSA and South Asia.

Pigato (2001) found that SSA and South Asia have the lowest ICT access and within countries there is urban/rural and rich/poor divide. Moreover, there is an unmet demand for information. He pointed out those private sector initiatives are most successful while those led by governments for rural development have mixed results while the externally funded initiatives have numerous drawbacks. The paper advocated the need for an integrated framework to develop appropriate policies of access and diffusion of ICTs within developing countries, but evidence showed that technology is not a goal in itself. Instead, it is a means for achieving development goals (Pigato, 2001).

According to Samiullah and Rao (2000) there are those who sincerely believe that ICTs have the potential to combat rural and urban poverty and foster sustainable development. However, this can only be achieved if ICTs are appropriately deployed and made to address the differential needs of urban and rural people. They argued that successful ICT interventions can only be achieved if there is an enabling environment, the participation of the private sector and NGOs, the free flow of information, access by women, and capacity building. They challenged governments to address the issue of the digital-divide by first ensuring that there is synergy in projects regardless of sponsorship background (Samiullah & Rao, 2000).

Hudson (1984), Wresch (1996) and Heeks (1999) believed that ICTs are simply a channel for information exchange and dissemination. Hence, the principal focus should be directed at ‘information’ *per se*. However, the researchers argued that information exchange and dissemination are both critical. For this reason, one is not more important than the other. The availability of information sources for the poor is an area that has been addressed for years. Despite this interest, even when information is available, on many occasions, the poor do not get access to it either due to poor infrastructure, ignorance or illiteracy.

3.9.6 ICT use and economic development

In the view of Mutula (2008), economic development is increasingly being tied to the breadth and depth of digital gaps within and between nations. Countries with low digital gaps are more developed (developed countries) than countries with high digital gaps (developing countries). Sein and Harindranath (2004), in their model analyzing the role of

information and communications technology (ICT) in national development, tried to understand how ICT affects national development. They pointed out that ICT can be broken down into four aspects with regard to development, namely ICT as: commodity; supporting development activity; driver of the economy; and directed at specific development projects. On the other hand, the World Society on the Information Society (2003) noted that the digital revolution fired by the engines of information and communication technologies had fundamentally brought new ways of creating knowledge, educating people and disseminating information, conducting economic and business practices, running government, engaging politically, providing speedy delivery of humanitarian aid and healthcare, and improving living standards for millions of people around the world, among others.

Hardy (1980) cited by Abraham (2007), attempted to examine the effect of the telephone on economic development. He found that GDP is higher and growth faster in countries with advanced telecommunication networks, though there is a clear problem of reverse causality. Norton (1992) tried to control for reverse causality and arrived at the same conclusion as Hardy.

In the early 1990s, Alleman *et al.* (2002) cited by Abraham (2007), posited that inadequate ICT infrastructure would hamper economic growth. Saunders, Warford, and Wellenius (1994) also cited by Abraham (2007) found that investments in telecommunications generated internal rates of return of about 20 percent. Yet, Bedi (1999) cited by Abraham (2007), suggested that a minimum threshold of ICT density was required in order for these

technologies to exert an influence on growth. Furthermore, he added that firm-level studies indicated that there might be substantial time lags between ICT investments and their positive effects.

Madden and Savage (1998) cited by Abraham (2007) analyzed the mechanism by which ICTs might have positive effects on economic development. They suggested that information flows play a critical role in the functioning of markets and that telecommunications are a powerful tool of information transfer. Building on their own previous work, Röller and Waverman's (2001) cited by Abraham (2007) on analysis of OECD countries revealed that about one third of economic growth could be attributed to investments in ICTs. The network externalities associated with ICTs implied that positive growth effects might be subjected to achieving a critical mass of ICT infrastructure.

In a study, Waverman, Meschi, and Fuss (2005) cited by Abraham (2007) comprehensively examined the impact of mobile telephony on economic growth in Africa. Using data from 92 high-income and low-income countries from 1980 to 2003, they tested whether the introduction and rollout of mobile phones added to growth. They found that mobile telephony has a positive and significant impact on economic growth, and this impact may be twice as large in developing countries compared to developed countries. Furthermore, looking at the specific examples of the Philippines and Indonesia, they found that all else being equal, the Philippines (a penetration rate of 27 percent in growth of as much as 1 percent) higher than Indonesia (a penetration rate of 8.7 percent in 2003) owing solely to the greater diffusion of mobile telephones, were this gap in mobile penetration to be

sustained for some time. A developing country which had an average of 10 more mobile phones per 100 population between 1996 and 2003 would have enjoyed per capita GDP growth that was 0.59 percent higher than an otherwise identical country. They also investigated demand elasticities in developing countries and found elasticities to be significantly greater than 1. That is, demand increases much more than in proportion to either increases in income or reductions in price (Abraham, 2007).

Braga (1998) built a case that concluded that countries that are better positioned to thrive in the new economy are those that can rely on: widespread access to communication networks; the existence of an educated labour-force and consumers; and the availability of institutions that promote knowledge creation and dissemination. This may suggest that developing countries are at a disadvantage in comparison to developed countries. Similar sentiments are shared by Mansell & Wehn (1998) cited by Pigato (2001). Brown (2001) argued that ICTs are simply tools. Significantly, no single tool can solve a global problem, such as, poverty, which has such complex and multiple causes. The author gave examples of where ICTs can play a significant role such as in the creation of jobs and in the reduction of distance. However, the author pointed out that it would be preferable if the labour-force were educated in this information age.

Similarly, Hudson (1984) examined the role of telecommunications in rural development. While it seems obvious that telecommunications contribute to the efficient operation and productive growth of an economy, telecommunications may be a cause, a consequence, and a manifestation of development. Kenny *et al.* (2000) conducted an empirical study where

they argued that econometric studies have found increasing evidence of a causal link between telecommunications development and economic development; however, most evidence springs from the high returns on investment in the telecommunications sector. Some studies have extended these correlations to other indicators, such as social development, cost savings for industry, and increased transport efficiency.

Seventeen years after her first paper, Hudson (2001) wrote generally on the same topic and argued that if information is critical to development, then ICTs, as a means of sharing information, are not simply a connection between people, but a link in the chain of the development process itself. ICTs can contribute to socio-economic development, but investments in them alone are not enough for development to occur. Consequently, ICTs should complement other infrastructure required for development such as clean water supply, transportation and electrification (Hudson, 2001).

3.9.7 ICT use in education

The importance of ICTs and education is a topic that runs across all thematic areas on ICTs and development. With respect to gender studies, the view is that men are more likely to have the income to purchase the ICTs and have a slightly higher level of education, which predisposes them to trying new technologies (Rathgeber, 2000). The general argument is that an illiterate or poorly educated people cannot wholly absorb ICTs. In addition, many argue that ICTs should be introduced into school curriculum so that children learn how to use these technologies from an early age (Adeya, 2002).

ICTs have the potential to penetrate under-serviced areas and enhance education through distance learning, facilitate development of relevant local content and faster delivery of information on technical assistance and basic human needs such as food, agriculture, health and water. Farmers can also interact with other farmers, their families, neighbours, suppliers, customers and intermediaries and this is a way of educating rural communities (Munyua, 2000).

An ILO (2001) report dealt with the widening digital divide and how markets will be affected by the new technologies. The report noted that ICT is merely a tool, and would not substitute for genuine development. However, ICT offers tools that may accelerate development. One of the most important avenues is literacy and education, which are vital for reaping the advantages of this era, and there must be lifelong learning from schools to the work environment (ILO, 2001).

There are a lot of avenues in which ICTs can be harnessed to improve accessibility, efficiency and quality of education. In the area of distance education, radio and television has been used as the means of reaching the students and also those in the rural areas. According to Chandar and Sharma (2003), the Indira Ghandi National Open University was allocated 40 FM radio stations to broadcast educational programmes for the benefit of students and the general public in India.

A study by De Moura *et al.* (1999) in Mexico reported that over 700,000 secondary school students in remote villages had access to the *Telesecundaria* programme which provided televised classes and a comprehensive curriculum through closed circuit television, satellite

transmissions and teleconferencing between students and teachers. These were very beneficial as there were smaller student-to-teacher ratios.

3.9.8 ICT use in health

An issue that is destroying developing countries largely due to poverty is that of HIV and AIDS. Driscoll's (2001) review cited in Adeya (2002), looked at the role of ICTs in addressing the challenge of HIV and AIDS. ICTs are seen as a potential tool in the global response to the pandemic because they offer the feasibility, at relatively low cost, of providing access to information and knowledge for those working on the problem and for those who are suffering from the disease or its effects. It is argued that there are many ways in which ICTs can be used to achieve desirable health outcomes including facilitating remote consultation, diagnosis, treatment, epidemic response, and medical administration. Radio and television have had a long history of facilitating the dissemination of public health messages and disease prevention (Adeya, 2002).

Omona and Ikoja-Odongo (2006) reported of a study which assessed the application of information and communication technologies (ICT) in health information access and dissemination in Uganda. A thematic analysis highlighted the current state of ICT applications, the extent of applications, the roles played and problems faced. The paper further explored areas where it is used most, cost of accessing information, user profile, ICT literacy, quality of services and telemedicine in the country. It concluded that a number of challenges must be addressed if the full benefit of the use and application of ICT in health information access and dissemination is to be realized in Uganda, and drew the

attention of all the stakeholders in the health sector to the need to support and promote ICT as the most effective tool for health information access and dissemination.

3.9.9 ICT use and effect on culture and governance

In the view of Gaiani (2008), ICTs have also played an important role in preserving and identifying threatened or marginalized cultural artefacts and traditions. Mitter (1998) as cited by Adeya (2002) argues that ICTs need a holistic evaluation in order to establish its appropriateness. She believes that in an ideal world, universal access to information would create a global information society, but since knowledge will hardly be global, the mode of interpretation will depend on the culture or tradition of people and societies.

Ryckeghem (1995) and Hasan and Dista (1999) are in agreement that cultural beliefs are a hindrance to the adoption of ICTs in many countries. Ryckeghem (1995) provided a framework for understanding the ways in which information technology and culture influences each other. Ryckeghem (1995) found that culture provides the condition for interpreting the utility of information technology. Using the qualitative methodology, Hasan and Dista (1999) compared the relationships between culture and adoption of IT in West Africa and the Middle East and argued that despite its importance to the success of IT projects, culture was difficult to isolate, define and measure.

In the view of Munyua (2000), sound decision making is dependent upon availability of comprehensive, timely and up-to-date information. Food security problems facing developing countries demonstrate the need for informed researchers, planners, policy

makers, development workers and farmers. Information is also needed to facilitate the development and implementation of food security policies. E-mail and the Internet could be used to transmit information to and from rural inaccessible areas (Munyua, 2000).

Gaiani (2008) reports that ICTs offer unprecedented information storage capacity, increase in processing power and speed, coupled with dramatic reductions in costs. ICTs can facilitate the improvement of existing information management processes by improving the easy access, transparency, accountability, efficiency, speed of delivery and providing new information sharing opportunities through affordability, availability and ease of use. ICTs can help address good governance concerns of greater administrative efficiency by improving existing formal information systems operated by local government and development agencies and also facilitate improved cataloguing, storing and sharing of locally relevant information (Gaiani, 2008).

Ningo (1999) asks how ICTs can assist African countries in the process of good governance for bad governance has accelerated poverty in many countries. The primary challenge lies in the re-examination and re-building of the processes of governance. ICTs can only play an important secondary role once a system of good governance is in place. There is, however, a widespread belief that, if properly used, ICTs can assist in achieving good governance (Ningo, 1999).

3.10 ICT Use and Poverty Alleviation in Ghana

A study undertaken by Kwapong (2008) on an empirical study of information and communication technology for empowerment of rural women in Ghana established that there is a relationship between ICTs and empowerment of rural women. ICTs are applicable to all sectors of development for women, most especially education, livelihoods, healthcare and government which are directly linked to poverty alleviation. The study used results from a survey of 1000 households from the ten regions in Ghana to assess rural female household heads' willingness to pay for alternative ICT use in the delivery of information to them. The results of the study leads to a need to set rural empowerment policies and programmes within the broader poverty reduction policies of the government and also within the attainment of the Millennium Development Goals (MDGs) (Kwapong, 2008).

The results of Kwapong's (2008) study suggest that the attainment of the MDGs would boost ICT use in delivering information to rural households since income was found to be consistently statistically significant in explaining rural women's willingness to pay for information. Considering the context of the relationship between incomes and ICT use to empower rural women, the key issue is for policy and programme planners to better understand the dynamics in the enterprises of rural women and to recognize shifts in economic activity that may be counter to the historical pattern of economic activity which is agriculture oriented and design programmes that will respond adequately to such shifts. By so doing rural women will be in a good position to utilize the full potential of ICT

which will in turn improve their productivity/income and facilitate their empowerment (Kwapong, 2008).

A survey by Sey (2007) on mobile phones and the pursuit of sustainable livelihoods revealed that mobile phones play an important role in helping people gain some economic and social sustainability at the individual level. This is with respect to Ghanaians in a range of occupations from banker to farmer to the unemployed. Another study by Sey (2008) on mobile communication and development in Ghana concluded that the role of micro-entrepreneurial intermediaries such as payphone operators has been significant in making mobile telephony more accessible to people with limited income. However, the flow of innovations has had the result of undercutting the livelihood of these intermediaries. It is suggested that from the perspective of poverty reduction, the major long-term benefits of mobile telephony are more likely to be derived from its use as a livelihood resource (that is, as a communication tool for all activities) than from its use as a source of livelihood (that is, as a direct means of generating revenue) (Sey, 2008).

A survey on the use of mobile phones for micro and small business development in Ghana by Frempong, Essegbey, and Tetteh (2007) revealed that there was an overwhelming agreement among almost all the respondents (100) about the catalytic role mobile telephones play in business development. The survey results also showed that the respondents had fewer problems with mobile telephones as an enabler of economic activities. In a study by Sampong, Egyir and Osei-Asare (2007) on assessing rural women food producers capacity to adopt modern ICTs in the Mfantseman District of Ghana, the

regression results showed that the few (6) mobile phone users had a higher income generating capacity. The implication is that rural women food producers need interventions that would improve their capacity to use modern ICTs. This would improve information seeking capacity and increase access to credit and other resources needed for enhanced production (Sampong, Egyir & Osei-Asare, 2007).

Al-hassan, Andani and Abdul-Malik (2011) conducted a study on the contribution of Simli Radio to the livelihood improvement of the people in the Tolon-Kumbungu and Savelugu-Nanton Districts of the Northern Region of Ghana. A multi-stage sampling technique was used to select 12 communities for the study. Data were gathered on the use of broadcasting as an educational tool, the promotion of traditional culture, communication and information sharing, entertainment and income promotion. The study established that Simli Radio has worked to improve awareness and knowledge of solutions to community development problems ranging from culture, rural development, education, hygiene and sanitation, agriculture to local governance. The station has been an appropriate medium that has facilitated an interface between duty bearers and rights holders. It has promoted small and medium enterprise development by creating market opportunities for Small and Medium Enterprise (SME) operators and consequently improved sales and incomes (Al-hassan, Andani, & Abdul-Malik, 2011).

In concluding this section, it must be pointed out that these works lead the researcher to do further investigation on the use of ICTs in poverty alleviation in that the previous works touch on aspects of poverty alleviation like the role of ICTs on empowerment, income

generation, business development. The previous studies, though not comprehensive enough provide evidence that ICTs have a role to play in poverty alleviation, hence the need to undertake this study to fill the research gap as indicated earlier on.

3.11 ICT Use in Rural Communication and Information Exchange

Information plays an important role in almost every human activity. Its values in the development process have been a topic of extensive discussion. Information dissemination and accessibility have reduced the world to a global village. Africa, like the rest of the world, is experiencing change in all aspects of life: from basic cultural values to technology, which has changed not only the mode of communication, but the concept of time. In Africa, there are different methods of providing information for the people. These are the traditional African methods and the foreign or organizational methods which are technology-oriented (Etebu, 2009).

In Africa, information is viewed as a vital resource for uplift and development of the people both in rural and urban dwellings. Boon (1992) and Camble (1994) as cited by Etebu (2009) note that an absence of information may impede development. Traditional indicators are still widely used as modes of forecasting and land use management. The indicators are mostly local and are well understood in communities (Okoola, 1996) as cited by Etebu (2009). These traditional indicators include: plants, birds, insects (bees, butterfly, red ants, termites), stars, hill shadows, moon, winds (direction, strength, and time of starting and ending), clouds (position and movement), lightning (location and pattern), springs and swamps, cowries, and so on (Etebu, 2009).

Apart from the traditional indicators, there are other ways in which information is provided. Most notable is the oral communication pattern. In almost all rural communities, town criers and their activities are noticeable. They use wooden or metal gongs or drums to stir up the people and deliver their messages orally (Meyer, 2005). Another means of oral provision of information is holding meetings. Most villages and towns have squares where the people meet to discuss issues and make decisions. Through this means the leaders provide information for their well being and development. The African rural population is mostly illiterate, and they get information this way at no cost. This oral exchange of information indicates that rural dwellers may be able to relate to information exchanged in the way they are accustomed to (Meyer, 2005). The oral form of communication in Africa is described as informal.

Outside the oral tradition, information is medium dependent and must be packaged in order to be used. The receivers of the information must know how to use that particular format, or the information will be inaccessible and useless (Meyer, 2005). Colonialists introduced print and non-print (books, newspapers, radio, television and other sound system) media as means of communicating with or informing the populace. Foth and Hearn (2007) are of the view that any new technology that is introduced into an established pattern of information and communication flows may be adapted to these flows or disrupt them. It is, however, argued by Souter *et al.* (2005) that communication behavior is relatively slow to change as people tend to stick with information sources and communication channels that they know and trust. They continued that the process by which new communication technologies become trusted is often gradual unless these channels are more reliable or meet information

needs that have previously been poorly met (Souter *et al.*, 2005). For this reason, there is the need to study how information is communicated and exchanged in rural areas in view of the availability of the ICTs.

3.12 Summary

This chapter reviewed the literature related to the use of mobile phones, radio and television in poverty alleviation. It was based on themes relating to the objectives and the research questions of the study. The review started with a discussion of the literature on the evolution of poverty and the changing dimensions of poverty. Various definitions of poverty were provided including the operational definition that the study adopted. Issues relating to poverty alleviation were addressed and programmes aimed at reducing poverty are highlighted. The review points out that poverty alleviation is now a global agenda and various programmes have been introduced by governmental as well as non-governmental organizations and development partners to alleviate. Various approaches adopted to alleviate poverty from agricultural development to decentralization and until recently the use of ICTs are discussed.

A review was also made on ICTs in relation to their penetration and growth rates nationally and globally. This was then followed by an overview of access and use patterns of mobile phones, radio and television in rural communities. The extent to which access to and use of ICTs play a role in poverty alleviation was also discussed. It was noticed that ICTs are used for a variety of activities and is used by both gender and the young and the elderly. In spite of all the contributions that ICTs make to socio-economic development, it was found

to have detrimental effects and a number of constraints that affect its access and use. Previous research on ICTs and poverty alleviation in Ghana and the issue of ICTs in rural communication and information exchange are discussed.

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CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

This chapter discusses the methodology that was used for the study. It explains the reasons for choosing the study areas; provides a profile for the study areas in terms of geographic location, administrative set up, demographic characteristics, as well as the major socio-economic activities and information and communication technology. It also explains the methods and procedures used for the study, data analysis and an explanation of why they were selected for the study. It presents the methods used to gather data and why they were used, explains the research design and the methods for analyzing the data. It also discusses validity and reliability issues applied to the study and ethical considerations. Problems encountered with respect to the data collection are also discussed.

4.2 The Study Area

The researcher divided the country into two sectors, namely: the northern sector (Upper East Region, Upper West Region, Northern Region, Brong-Ahafo Region and Ashanti Region) and the southern sector (Eastern Region, Volta Region, Greater Accra Region, Central Region and Western Region). The southern sector was chosen for the study. The Central Region being one of the poorest regions of the country (apart from the three northern regions, namely: Northern Region, Upper East Region and Upper West Region) was purposively selected to be the study region for a study on poverty alleviation. The researcher then selected purposively the Effutu Municipal Assembly and Awutu Senya District of the Central Region of Ghana as the study districts (**See Figures 4.1 and 4.2**).

The reason for selecting these study districts were the following: no previous study on the use of ICTs (mobile phone, radio and television) for poverty alleviation had been undertaken as yet in the two districts and also the fact that all the ICTs under study could be found in the selected areas. Furthermore, the two districts were contiguous and could therefore be reached easily.

From a preliminary investigation, it was gathered that there was ample data available from the District Assembly records on socio-economic data and the observations made during the reconnaissance survey to indicate the poverty status of the study areas which also informed the choice of the two areas for the study. The study areas were also easily accessible to the researcher who was resident in Accra which is an hours' drive to the study areas. Cost considerations were also taken into account in choosing the study areas. It was found to be more cost-effective to conduct the study in the chosen areas. In terms of language, the researcher understands the Akan language which was widely spoken in the study areas so communicating with the respondents was easy. With respect to socio-economic activities, the areas were found to be endowed with many economic activities. The researcher therefore concluded that ICTs for poverty alleviation could be measured through these economic activities. It was for these reasons that the two districts were chosen for the study.

4.2.1 Profile of Effutu Municipal Assembly

The Effutu Municipal Assembly (**see Figure 4.1**) was established in 2007 by LI 1860. It has one Constituency, seventeen (17) Electoral areas, twenty-six (26) Unit Committees,

forty-three (43) Polling stations and until the creation of the Municipal Assembly, it had one (1) Urban Council. However, in the year 2010, the Electoral Commission of Ghana revised the electoral areas from Seventeen (17) to Eighteen (18) with the splitting of the Nsuekyer electoral area into two. Winneba is the capital of Effutu Municipal Assembly (Government of Ghana, 2013a).

The Effutu Municipal Assembly is one of the 212 metropolitan, municipal and district assemblies (MMDAs) in Ghana and one of the 19 MMDAs in the Central Region. It was carved from the then Awutu- Effutu-Senya-District Assembly and it covers a total land area of about 64 square kilometers. It is about 60 kilometers from Accra, the capital of the Republic of Ghana and about 40 minutes travelling time from the regional capital. It is located between latitudes 5°16' and 20.18"N and longitudes 0°32' and 48.32"W of the eastern part of Central Region (Government of Ghana, 2013a). The Municipality is sandwiched by Gomoa East District Assembly at the northern and the eastern parts and Gomoa West on its western flanks. The southern flank is the Gulf of Guinea.

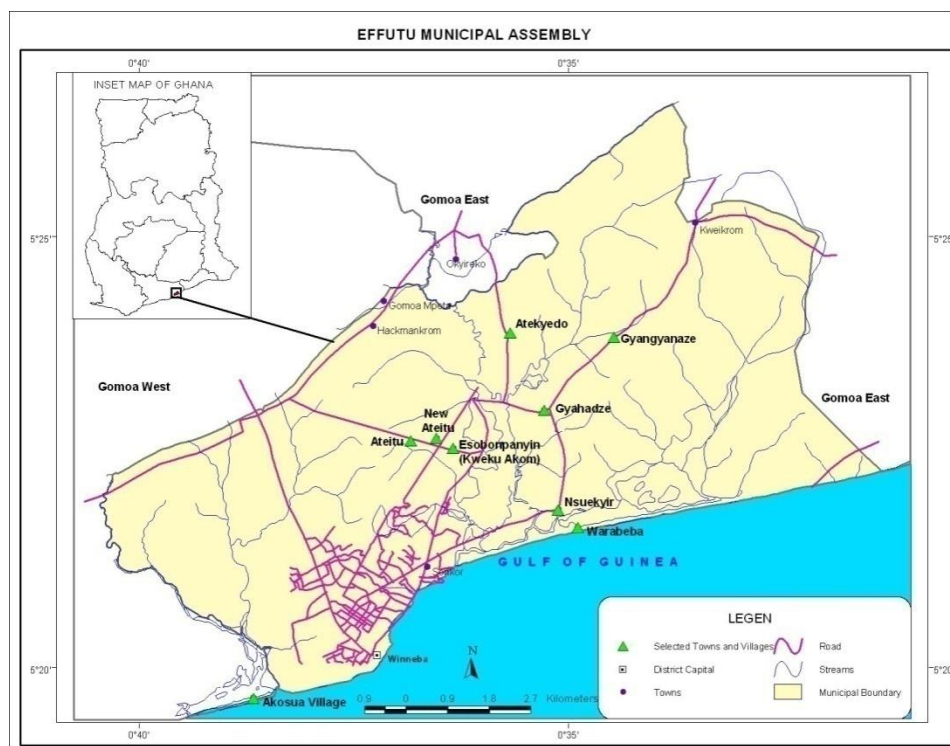


Figure 4.1: Effutu Municipal Assembly
Source: Thematic Mapping Division, CSIR-INSTI, 2013

The Effutu Municipality lies within the dry-equatorial climatic zone characterized by low rainfall and long dry season of five months. The annual rainfall ranges from 400 millimeters to 500 millimeters. Mean temperature ranges from 22 degrees Celsius to 28 degrees Celsius. The vegetation is that of the coastal savannah grassland which is suitable for vegetable cultivation or dry season irrigation farming. The soils in the Municipality are largely clay with high salinity hence its suitability for salt production and pottery/roofing tiles production. The water bodies that drain through the Municipality have the potential to be exploited when dammed for extensive vegetable cultivation and aquaculture during the dry season. These, when exploited would provide employment opportunities for the people in the area and has the potential to reduce poverty in the settler communities along the river (Government of Ghana, 2013a).

In 2010, the Municipality had a population of 68,597 which was made up of 32,795 males; representing 48 percent and 35,802 females representing 52 percent. In 2000, the Municipality had a population of 46,574 made up of 21,346 (45.83%) males and 25,508 (54.77%) females. The urban population in the Municipality constitutes 83.6 percent with 16.4 percent residing in rural communities. The average household size of the Municipality is 4.1 in the urban settlement and 5 in the rural communities. From 1984 to 2000 the growth rate for the Municipality was 2.2 percent. Winneba with a population of 40,017 is the only urban settlement. Other big settlements in the Municipality are Sankor, Gyangyenadze, Gyahadze, Nsuekyir, Ateitu, Osubonpanyin and Warabeba. There is approximately 100 kilometers of road network in the Municipality but only about 30 percent have been tarred; the remaining 70 percent are not tarred with some portions in a terrible state. Road expansion and alternative routes i.e. the eastern and western corridors need to be mapped out for construction (Government of Ghana, 2013a).

The major economic activities in the Municipality are fishing, wholesale/retail trade, services, manufacturing, salt mining (white gold), crop farming and agro-processing. Fishing/farming and related work is the leading economic activities and they employ about 45.5 percent of the working population in the Municipality. These are followed by services and salt mining along the coast of Winneba and Warabeba. The fishing industry is very prominent in the coastal communities of Winneba, Akosua Village and Warabeba. This sector employs 10.5 percent of the working population (Government of Ghana, 2013a).

The main source of income of household in the Municipality is derived from salary (36.4%), business/trading (18.8%) and farm products (15.2%) of the total household income. The average annual income for the Municipal households was GH¢94,218.00 (\$47,109) with an annual average income per person of Gh¢ 2.43 (\$1.22). With an average household size of five, the average monthly income is Gh¢0.20 (10 cents) per capita. A total of 57.4 percent of the population earn less than GH¢200 (\$100) per annum. With an average annual income per person of GH¢198.48 (\$99.24) and daily income per person of GH¢0.55 (0.275 cents), this falls short of the projected \$1 (GH¢2.00) income per day per person. This is an indication of the high poverty level of the people in the Municipality (Government of Ghana, 2013a).

The Municipality is provided with reliable and continuous supply of electricity from VRA and ECG sub-station at Ansaful near Winneba Junction. Winneba and its environs are provided with water from Ghana Water Company system whose source is the river Ayensu. The plant was built in 1922 to serve a population of 5,000 and was rehabilitated in 2000 to produce over three million (3.6 million) gallons of water per day. Currently the Plant is producing 1.6 million gallons of water per day as a result of some challenges facing the plant. This caters for the water needs of the people in the Municipality except Gyangyenadze, Atekyedo and Warabeba which are yet to be connected to the service (Government of Ghana, 2013a).

4.2.2 Profile of Awutu Senya District

Just like the Effutu Municipal Assembly, the Awutu Senya District is one of the 212 metropolitan, municipal and district assemblies (MMDAs) in Ghana and one of the 19 MMDAs in the Central Region. Covering an area of 511.75 km, the Awutu Senya District (see **Figure 4.2**) is situated between latitudes 5°20'N and 5°42'N and longitudes 0°25'W and 0°37'W at the eastern part of the Central Region of Ghana. It shares borders with the Ga South District (in the Greater Accra Region) to the east; Effutu Municipal and the Gulf of Guinea to the south; the West Akim District to the north; Birim South to the north-west, Agona West Municipal to the west, and the Gomoa East separating the southern portions of the district from the main land (Government of Ghana, 2013b).

The district experiences a five-month dry season starting from November to March during which period the dry North-East Trade winds blow across the area. The dry season is followed by a seven-month rainy season which starts from April to October during which the moist south-west monsoon blow across the area. The rainfall figures of the district are quite low (40cm-50cm) along the coast but are higher towards the inland with the mean annual rainfall ranging between 50cm and 70cm. The mean annual minimum and maximum temperatures of 22°C and 28°C coupled with the rainfall pattern favour the cultivation of many crops such as pineapples, cassava, plantain, maize, yam, pawpaw, cocoa and oil palm, particularly, in the semi-deciduous forest areas. The coastal savannah is suitable for the cultivation of vegetables such as tomatoes, okra, pepper, cabbage, garden eggs, onions, etc. The high temperatures and dry conditions along the coast also favour salt mining from the ocean (Government of Ghana, 2013b).

AWUTU-SENYA DISTRICT

LEGEND

- Selected Towns and Villages
- District Capital
- Town
- Road
- Stream
- District Boundary

Inset Map of Ghana

Map Labels:

- West Akim
- Nyankar
- Nyankar Kwaa
- Abashin
- Osimpe
- Awetoband
- Orapo
- Grada
- Fianko
- Okwabena
- Bogobee
- Oragator
- Nii Sackey Addyman
- Adawetwa
- Gyelebadua
- Totokor
- Bentum
- Bowuanum
- Kwesi Kuma
- Obrakylire
- Manikron Nkwanta
- Bontrase
- Bosomabena
- Gomoa East
- Agona East Municipality
- Ga South Municipal
- Dorankrom (Kasoa)
- Awutu Breku
- Akoto

Scale: 0 to 6 Kilometers

Coordinates: 0°40' to 0°25' Longitude, 5°30' to 5°45' Latitude

In the year 2000, the Awutu Senya District had a total population of 124,028 living in 233 settlements. Currently, the total urban population is estimated at 210,949 persons and is found in seven communities namely: Kasoa, Senya Beraku, Bawjiase, Awutu Beraku, Bontrase, Dokutseko and Kpormetey. The population of the district is dense along the major roads where most of the fairly large communities are located. About 50 percent of

the district's population is found along these corridors and are concentrated in a few large communities. As a result of population influx, communities such as Kasoa, Akuffo Krodua, Kpormotey, Obodakaba and Dokutsekope are growing at annual rates of 16.21 percent, 17.57 percent, 19.10 percent, 20.57 percent and 23.62 percent respectively. The average household size of the district is 5 indicating an improvement over the 1984 Census figure. This shows that there has been a significant reduction in the household size (Government of Ghana, 2013b).

The main economic activities in the district include agriculture (fishing and farming) wholesale/retail trade, agro-processing, informal sector service and commerce. Agriculture and its related activities are the leading economic ventures and employs about 45.5 percent of the working population in the district. The fishing industry is also very prominent in Senya, a coastal community in the district; this sector employs a large proportion of the working population in Senya. Inland fishing is yet to receive the needed attention since there is growing demand for fresh water fish especially Tilapia. The northern portion of the district is suitable for pineapple and vegetable production. There are large and medium scale farmers who produce pineapple for export. Bawjiase is noted for its cassava cultivation, hence the Ayensu Starch Factory. Cocoa is also cultivated in the Bawjiase area and beyond (Government of Ghana, 2013b).

Information and Communication Technology (ICT) can be said to be a determining factor for accelerated development. There is therefore a determined effort to establish an effective communication system in the district. Telecommunication systems exist in the entire

district. Awutu Beraku, the district capital is yet to be connected directly with fixed line facilities but most communities including Senya, Awutu, Bawjiase and Kasoa are on mobile networks phones. MTN, Kasapa, Tigo, Vodaphone, and Airtel mobile networks have wide coverage in the District. Kasoa is the only community with some fixed line facilities in the district and broadband Internet services provided by private internet-cafes. There is a private Frequency Modulation (FM) station located at Kasoa called Pink FM. However, the district is covered by many other radio and television stations transmitting mainly from Accra (Government of Ghana, 2013b).

4.3 Research Design and its Justification

The study employed the case study research design with both quantitative and qualitative data collection methods, with the quantitative method being the dominant. With respect to the type of data to be collected, research designs can be categorized as qualitative, quantitative or mixed methods.

The use of both paradigms in this research was carefully designed, so as to minimize the expense, the time consumption and the length of the entire exercise (Creswell, 2003). The study adopted the dominant-less-dominant model (Creswell, 2003), in this case the quantitative paradigm was more dominant. The combined methods research was important for the study as it helped to fit together the insights provided by quantitative and qualitative research in answering the research questions. The combined methods were also used for triangulation purposes.

4.3.1 Case study design

In line with the research objectives, the study used the case study research design which according to Soy (1997) excels at bringing an understanding of complex issues or objects and can extend experience or add strength to what is already known through previous research. The exponents of the case study design often favour qualitative methods such as participant observation and unstructured interviewing, because these methods are viewed as particularly helpful in the generation of an intensive, detailed examination of a case. However, case studies are frequently sites for the employment of both quantitative and qualitative research (Bryman, 2004). The study was undertaken based on the combined paradigm approach which is supported by Rowley (2002), who indicated that case study research uses multiple data sources and can be based on any mix of quantitative and qualitative approaches. Case studies can therefore be both qualitative and quantitative as affirmed by Denzin and Lincoln (2005) and Pickard (2007).

The case study design was considered appropriate for this study because it gave the researcher an opportunity to gather in-depth data of the cases and the communities in which the ICT tools were used to alleviate poverty. In this study, the cases were the ICT tools and the communities in which the tools were used to alleviate poverty. The study investigated how and for what purposes ICTs are used in alleviating poverty and impacting on the livelihoods of the people in the study areas.

On the use of theory in case study approaches, Willig (2001) stated that the role of theory in case study is two-fold. Case studies can be designed to test an existing theory or they

can constitute the starting point for the generation of a new theory. In the first instance a case study can be preceded by an initial theory, which directs the researcher's attention to what is to be examined, within the framework of the study (Yin, 1994). A case study has implications for theory development or generation of a new theory (Willig, 2001). When used to generate a new theory, case studies can facilitate conceptual refinement of emerging theoretical formulations or they can lead to the discovery of new insight and interpretations (Willig, 2001). Therefore case studies can facilitate theory building. The detailed exploration of a particular case can generate insight into social processes which, in turn, give rise to theoretical formulation.

4.3.2 Qualitative research methods

Qualitative research is a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem. Those who engage in this form of inquiry support a way of looking at research that honours an inductive style, a focus on individual meaning, and the importance of rendering the complexity of a situation (Creswell, 2009).

With respect to the assumptions, purposes and methods of the two research approaches or paradigms, they also differ. The major concern of the qualitative paradigm is to understand the world as it is and see the world as an emergent social process (Denzin & Lincoln, 2005). The approach can use an interpretative, constructivist or naturalistic approach (Creswell, 1994). On the ontological issues of what is real, qualitative researchers believe that the only reality is that constructed by the individual involved in the research situation. Thus multiple realities exist in any situation (Creswell, 1994). As regards epistemological

issues with respect to the relationship of the researcher to what is researched, the qualitative researcher holds a non-positivist epistemology and is of the view that the researcher should interact with that being researched (Creswell, 1994).

4.3.3 Quantitative research methods

Quantitative research is a means of testing objective theories by examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analyzed using statistical procedures (Creswell, 2009). Like qualitative researchers, those who engage in this form of inquiry have assumptions about testing theories deductively, building in protections against bias, controlling for alternative explanations, and being able to generalize and replicate the findings. Furthermore, while qualitative researchers believe that rich descriptions of the social world are valuable, quantitative researchers are normally less concerned with such details (Denzin & Lincoln, 2005).

In contrast, the quantitative research paradigm can be normative, traditional, experimental, or empiricist (Oliver, 2004). Quantitative researchers approach their subject matter from an objectivist point of view and seek to provide essentially rational explanations on the assumption that social interactions form an integrated set of relationships best understood by inductive procedures (Creswell, 1994). On the ontological issues, quantitative researchers view reality as objective and independent of the researcher (Creswell, 1994). With respect to the epistemological issues, quantitative researchers hold a positivist

epistemology and believe that the researcher should remain distant and independent from what is being researched (Creswell, 1994).

The ontological and epistemological positions of the two research paradigms in turn influence the choice of the methodology and the data collection methods employed in a research project. This is because research exists in a logical continuum starting with ontology and epistemology and ending with instrumentation and data collection (Cohen *et al.*, 2000). Therefore a positivist epistemology mainly implies the use of survey methods and questionnaires for data collection (Creswell, 1994). The non-positivist epistemology implies the use of methods such as ethnography, grounded theory, participant observation, documentary methods, fieldworks and the use of an unstructured interview for data collection (Denzin & Lincoln, 2005).

With respect to the study, the theories were applied by the researcher to interact with the respondents, namely: the heads of households in order to solicit for information to answer the research questions. Through interactive activities using questionnaire, focus group discussions, interviews and observations, and the use of journal articles, research reports and books, a rich source of data was obtained to answer the research questions. Throughout the period of data collection, the researcher was distant, objective and remained independent from the respondents.

4.3.4 The Study population

With respect to the objectives and the purpose of the study, the population was made up of all households in the study area which had at least one of the ICTs (mobile phone, radio or television) studied. Furthermore, opinion leaders in the studied villages, and ICT service providers in the two districts were included. In effect, heads of households who had one of the studied ICTs, some selected persons knowledgeable in ICTs and some opinion leaders in the studied villages constituted the study population.

4.3.5 Methods of selecting the study sample

The study used both probability and non-probability sampling. A multistage sampling technique was used to draw the study sample. In multistage sampling, more than one successive sample is taken before the sampling units are selected. In view of this, both probability and non-probability sampling techniques were used to draw the sampling. The reason for selecting this technique was that, it is suitable for drawing a study sample when the population is large and scattered over a wide geographical area, where there is no adequate list of individuals (sampling frame), and the study is constrained in time and finance (Fowler, 1993; Krishnaswami, 2002). The study sample was drawn in stages as follows:

- a. Selection of study districts - Two districts (Awutu/Senya and Effutu) were purposively selected out of the 19 MMDAs of the Central Region after the researcher had done a reconnaissance survey of all the 19 MMDAs that constitute the Central Region. In undertaking the reconnaissance survey to select the study districts, the researcher looked out for districts with mobile phone, radio and

television coverage. It was also observed that the selected districts fit into the poverty profile for which the study was to be undertaken. Within the time frame of the study, it was found that they were manageable in terms of geographical location, accessibility and reach by the researcher. It was for these reasons that Awutu/Senya District and Effutu Municipal Assembly were selected for the study.

- b. Selection of study sub-districts - All the rural sub-districts in the study districts were selected for the purpose of this study because first of all they were predominantly agro-based economies with most of the people being farmers. Moreover, the reconnaissance survey indicated that no previous studies had been conducted in these areas involving the use of ICTs. Also communities that had mobile telephone coverage and television services were purposively selected in the study. It was assumed that since radio had a wider coverage, all the rural districts would have access to radio network.
- c. Sampling of the study villages - The sampling frame of the study villages in both districts was compiled with the assistance of the Statistical Officer of the Effutu Municipal Assembly. He was the Statistical Officer for the then Awutu-Effutu-Senya District until it was split into two (Awutu-Senya District and Effutu Municipal) so he had considerable knowledge of the villages in the two districts under study. The sampling frame of the villages was compiled based on the following criteria:
 - mobile telephone services – availability of mobile services of at least twelve months in the village was selected as a result of the erratic nature of such services.

- television services – households and commercial outlets that had televisions were selected for the study in the study villages that had a reasonable proportion of television sets.

In order to ensure a good geographical coverage for the study, the identified villages were stratified based on their administrative sub-districts. A village was then selected randomly from each sub-district for the study. A total of eighteen villages were selected for the study made up of nine villages from the Awutu-Senya District and nine from the Effutu Municipal. Consultations with the District Statistical Officer for Effutu Municipal, the Assembly members and some opinion leaders, it was realized that most of the study villages had almost the same number of people. It was at a time when the Population and Housing Census 2010 had been undertaken but the results had not been published. In view of that a proportional representation was used so twenty five households per study village were selected making a total of 450 households for the study. Table 4.1 presents the district, villages and the number of households targeted per village.

Table 4.1: Districts, Villages and Number of Households targeted

District	Village	Number of households
Effutu Municipal	Atietu	25
	Atekyedo	25
	Akosua Village	25
	Ekroful	25
	Esubonpanyin	25
	Gyahadze	25
	Gyangyanadze	25
	Nsuekyir	25
	Warabeba	25
Awutu-Senya District	Bentum/Ayiresu	25
	Bewuanum	25
	Bontrase	25
	Bosomabena	25
	Fianko	25
	Kwesi Kuma	25
	Obrakyire	25
	Okwabena	25
	Tete-Okro	25
Total		450

Source: Survey data, 2012

Sampling and selection of households - The sampling units for the questionnaire-based study were those that had at least one of the studied ICTs (mobile phone, radio, television) and respondents were the heads of the households. Households were selected as sampling units because in the rural areas, most livelihood assets including mobile phone, radio and television tend to be owned at the household level. The use of these assets to poverty reduction and sustainable livelihoods could therefore be determined at the household level instead of the individual level. The heads of the households were selected for the survey because very often they make decisions with respect to the access and use of these assets at the household level. Households were selected as sampling units because in rural settings, most livelihood assets tend to be owned at household level. This study adopted a gender neutral definition which considers household head as either a male or female adult person

who usually resides in the household and is recognized by other household members as the household head. He/she is generally the person who has economic and social responsibility for the household and all relationships are defined with reference to the head (GSS, 2012).

- a. Selection of key informants - Some key people within the community, namely the ICT personnel in the District Assembly, the Statistical Officers, some extension agents and opinion leaders were purposively selected as key informants and interviewed subsequently. The choice of these persons was based on the fact that they have adequate information about the topic and also have at least one of the studied ICTs (mobile phone, radio and television).
- b. Selection of focus group participants – 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 at least one of the studied ICTs (mobile phones, radio and television). This ensured a degree of homogeneity among the participants.

4.4 The Sample Size

The sample size for the study was determined based on a number of considerations. The issue of homogeneity of the study population was taken into consideration since the population for the study was made up of households with one of the studied ICTs. They were therefore considered as being homogenous. Due to the unavailability of sampling frame in advance, the sample size was chosen based on financial resources, time frame, and

population with access to at least one of the studied ICTs, the geographical distribution of the villages and the households. This then led to the number of households and the participants for the focus group discussions. Eighteen villages from the two districts were selected for the study. In each of the villages, 25 households were selected at random. This worked out to 450 households. Participants for the FGD and the KII were purposively selected in each of the eighteen villages. For the FGD, a minimum of 5 and a maximum of 10 persons were purposively selected. A minimum of 90 and a maximum of 180 people were earmarked to take part in the FGD. With respect to the KII, a minimum of one and a maximum of five people were purposively selected. It was expected that a minimum of 18 and a maximum of 36 people will be interviewed. In effect, a minimum of 558 and a maximum of 666 people were to be involved in the study.

However, in the actual study fourteen villages were used instead of the estimated eighteen villages. This was as a result of the fact that in some of the villages, namely: Atekyedo, Ekroful, Bosomabena and Tete-Okro, most households did not have at least one of the studied ICTs. The decision was taken by the researcher to use the villages close to these, namely: Atietu and Akosua Village in Effutu Municipal and Fianko and Okwabena in the Awutu-Senya District. This resulted in increasing the number of households from the original 25. On the average about 29 households per village was surveyed bringing the total households surveyed to 412. This is presented by table 4.2.

Table 4.2: Distribution of respondents by study villages

Town/Village	Household interviewed	%
Ateitu	29	7.0
Akosua Village	28	6.8
Esubonpanyin	26	6.3
Gyahadze	26	6.3
Gyangyanadze	26	6.3
Nsuekyir	27	6.6
Warabeba	26	6.3
Bentum/Ayiresu	32	7.8
Bewuanum	33	8.0
Bontrase	34	8.3
Fianko	32	7.8
Kwesi Kuma	30	7.3
Obrakyire	30	7.3
Okwabena	33	8.0
Total	412	100.0
Average	29.4	

Source: Survey data, 2012

Data from the households were collected from both male and female heads of households. This was the case as the study made the assumption that assets at the household level were owned by the head and he or she is in a better position to speak to the issue at the household level. Ten FGDs were carried out with an average of 5 participants. Eleven key informants were interviewed for the study. This was made up of an average of one informant per village.

4.5 Methods of Data Collection

For the purposes of this study, both secondary and primary data were collected. Secondary data is information which has been collected and assembled for purposes other than the solution of the problem at hand. These are usually historical and do not require access to

respondents. But primary data is first-hand information that is directly collected by the researcher from their original sources and assembled specifically for the research project at hand (Zikmund, 2003).

Data collection was undertaken at the household level. This was to provide in-depth understanding on how information and communication technologies had been used to alleviate poverty in rural communities in the Central Region of Ghana. A structured questionnaire was administered to household heads by the field assistants.

4.5.1 Secondary data collection

As part of the process of understanding the general problem and its context, the relevant professional and scholarly literature was reviewed and synthesized. This method was used to identify, locate, and synthesize completed research reports, articles, books and other materials that were of relevance to the research problem. Using this method revealed that earlier investigations did not delve into length, hence uncovering methodologies that were used successfully or otherwise by other studies. It enabled the researcher to have a better understanding of the theoretical implications of the research work, assisted with planning for primary data collection, helped in defining the study population and the selection of the sample for the primary data collection. Journal articles, research reports and books were consulted for the study. This method was inexpensive because data was already available and also permitted the examination of past trends.

4.5.2 Primary data collection

In this study, primary data was collected using questionnaire, focus group discussion and key informant interview (KII). These are tools that had been tried and tested in various studies concerning poverty reduction and sustainable livelihoods; and they are most appropriate for the purposes of this study, especially for covering depth.

4.5.2.1 Questionnaire

A questionnaire refers to a written set of questions with fixed wording, a sequence of presentations and more or less a precise indication of how to answer each question. It is a data collection technique in which each respondent is asked to give answers to the same set of questions in a predetermined order (Bless & Higson-Smith, 1995). This instrument can be administered in a number of ways, namely: through the post, self-administered to the respondent, through telephone, over skype or asked by the researcher in the respondent's home or place of work.

The questionnaire was used in this study to obtain valid and reliable information to test specific assumptions, the theoretical framework validated and research questions answered. Other reasons for using this technique of data collection were to collect within a short period of time information from a scattered population. Consistent and uniform responses were received from the respondents as they answered the same set of questions thereby aiding in data analysis and presentation. This technique also reduced the potential for error and increased the response rate.

The study used a questionnaire as the dominant research instrument to collect data for the study to gather quantitative data. It was made up of both closed-ended and open-ended questions. With respect to the closed-ended questions, the respondents were required in some cases to choose one item from several alternatives and in other cases to choose as many responses as are applicable. They were also required to provide responses which in their opinion were applicable to that particular question but were not provided by the researcher. This came under the heading, 'others please specify'. This was to ensure that all possible alternatives were taken into consideration in answering that particular question. The closed-ended questions were used in some instances to enable the respondents to provide additional information in order to have a better understanding of the issue. Closed-ended questions were used because they provided greater uniformity of responses, easy to code and analyze. The open-ended questions were used to enable the respondents clarify their responses and make additional comments and contributions to the study without being limited to predetermined set of responses. The questionnaire was categorized in thematic areas, namely: socio-demography, access and use patterns of ICTs, contribution of ICTs to sustainable livelihoods and poverty alleviation, the negative effects of ICTs, factors limiting access and use of ICTs.

The questionnaire was structured in such a way as to provide responses to the research questions that the study sought to answer. The questions were carefully worded to ensure that the respondents understood them and for the research assistants to be able to explain them. The language used was therefore simple, clear, and unambiguous and the questions were also not too long and unwieldy.

It was therefore structured under various sections. This was made up of: section a: household demographic characteristics; section b: economic status; section c: social exclusion and vulnerability; section d: access to and use of ICTs; section e: influence of ICTs on rural communication and information exchange; section f: perceived role of ICTs in poverty alleviation; section g: constraints and detrimental effects of using ICTs. These sections sought to answer the research questions of the study.

The questionnaire used was designed by the researcher, thereby making room for better translation of research questions to comprehensively answer questions to be responded to; since he played the central role of a liaison between research questions and respondents (who serve as sources of information), and has better understanding of the requirements to answer the research questions. This notwithstanding, the questionnaire was reviewed by the supervisors, other colleagues of the researcher and the research assistants before pre-testing took place, and subsequently actual data collection. This was to ensure that possible errors were eliminated and the questionnaire was simple and easy to understand thereby providing the desired responses.

4.5.2.2 Focus Group Discussion

According to Kumar (1987), Focus Group Discussion is a rapid assessment, semi-structured data gathering method in which a purposively selected set of participants gather to discuss issues and concerns based on a list of key themes drawn up by the researcher/facilitator. It is a qualitative research technique originally developed to give marketing researchers a better understanding of the data collected from quantitative consumer surveys.

This method of data collection has a number of advantages, namely: it gives the respondents some level of freedom to express their views; it provides an opportunity to obtain more and specific information. However, too much freedom for respondents to express their opinions may skew the discussion away from the specific issues being discussed and also the fact that some of the participants may dominate the discussions. These issues, notwithstanding, FGD is a means of gathering information in a timely manner and also to learn at first hand from the respondents. It also provided a synergy between the qualitative and quantitative data and also to obtain more information from the participants to complement that of the questionnaire study.

Participants of FGDs have characteristics that are common and of interest to the research being undertaken. In this study, the FGD participants were purposively selected from those who took part in the questionnaire study and who in the opinion of the researcher could speak to the issue of ICTs and poverty and provide further insights to assist in addressing the research questions. Some of the common characteristics were the age of the respondents, educational background and number of years in the use of the studied ICTs. This ensured a degree of homogeneity among the participants.

One FGD discussion was planned for each of the eighteen villages in the two districts to complement the data obtained from the questionnaire and other secondary sources. The guide was based on the main themes of the study and was to find out how the ICTs under study had influenced the livelihoods of the respondents and other people that they were aware of, whose livelihoods have changed as a result of the ICTs. They were further asked

how the use of the ICTs had been detrimental or the constraints involved in using them and how the constraints can be overcome. The final question sought to find out any suggestions that they could make to ensure that ICTs improved their livelihoods. (The interview guide is attached as Appendix 3).

One observation that was made was to the effect that the female participants made very useful contributions contrary to the beliefs held that women were unlikely to express their opinions in the presence of their male counterparts, especially in the rural setting. Two methods of recording, that is, tape recording and notes taking were used to capture as much information as possible.

4.5.2.3 Key Informant Interview

Key informant interviews were conducted to obtain additional information from people knowledgeable in the subject area of the study. The original idea was to interview one or two people in each of the studied villages. This was not possible as those identified did not show up at the last minute. A few of them, namely: ICT personnel, statistician, extension agents and some opinion leaders were interviewed. The study was not affected in any way as those the researcher spoke to were very knowledgeable in the subject area and the trends of the study villages. The contribution of the key informants therefore enriched the study.

It was guided by a number of questions which sought to find out from the respondents their experience with the ICTs under study and how beneficial they had been to them and other community members, how detrimental it had been, constraints faced and suggestions for

improving their livelihoods using the ICTs. (The interview guide is attached as Appendix 2).

4.5.3 Administration of data collection instruments

For this study, the questionnaire was administered in the respondents' home or place of work. This mode of administering the questionnaire was chosen because of the rural nature of the respondents and the fact that literacy rates are low and the respondents may not be able to read and write. The questionnaire was presented to each respondent in the same way as possible so as to minimize the influence of the researcher. Babbie (1990) summarizes numerous advantages of administering the questionnaire verbally by stating that "... the presence of the interviewer generally decreases the number of 'don't know' and 'no answers'; ... interviewers can also provide a guard against confusing questionnaire items... thereby obtaining relevant responses; ... finally, the interviewer can observe as well as ask questions". The questionnaire was translated into the language that the respondents understood before it was administered verbally by the researcher or his assistants.

With respect to the focus group discussion and the key informant interview, they were undertaken in an informal and interactive manner with the assistance of a discussion guide. The key informant interview was conducted with one respondent at a time and in a very relaxed and conversational manner even though the discussion followed a discussion guide. The location for the interview was either at the respondents' home or at an agreed place in the village.

As regards the focus group discussion, it was also undertaken in a very interactive manner in the local language in order to allow for participation by all respondents. Most of the discussions were done at the local school after closure and usually started with an ice breaker with the researcher and his assistants introducing themselves and indicating to the respondents the reasons for the study and why they were selected to participate. They were then informed that the researcher and his assistants value the knowledge they have and that is the reason for choosing them for an in-depth discussion of the issues at stake and that they should feel free to express their views which will be used for the study only. A few pleasantries were shared with the respondents to make them relaxed and to feel appreciated before the discussions were opened. The researcher moderated the sessions and ensured that no one person dominated the discussions. All the participants were encouraged to express their opinions which were either written in long hand or tape recorded. Each FGD was made up of an average of five persons and though small but diverse enough to allow all the participants to express their views in a very diversified manner.

4.5.4 Response rate

In discussing response rates in survey research, Babbie (1992) notes that overall response rate is one guide to the representativeness of the sample respondents. He was of the view that a response rate of at least 50% is adequate for analysis and reporting. A response rate of 60% is good while a response rate of 70% is very good. The study achieved a response rate of 91.6% for the household survey. This is computed as follows:

$$\begin{aligned}\text{Response Rate} &= \frac{\text{Actual Household Sample} \times 100}{\text{Estimated Household Sample}} \\ &= \frac{412 \times 100}{450} \\ &= 91.6\%\end{aligned}$$

This high response rate may be attributed to the fact that there was a lot of involvement of the opinion leaders of the villages who assisted in the random selection of the households and also due to the direct questionnaire administration.

With respect to the participants for the FGD and the KII, there were fifty participants involved in the FGD and eleven KII. Not all the planned FGD discussions could be carried out as previously arranged meetings were cancelled at the last minute as a result of the unavailability of the participants. Eleven FGD discussions were therefore undertaken instead of the planned eighteen. In terms of number of participants, the minimum of five participants originally envisaged could not be obtained in most cases. This brought the number of respondents to four hundred and seventy three instead of the estimated five hundred and fifty eight respondents. These difficulties, notwithstanding, the few people who took part in the discussions provided additional information to enrich the study.

4.6 Procedure for Data Collection

Before proceeding to collect data for the study, the researcher selected research assistants and trained them on how to collect the data. These are detailed below.

4.6.1 Training of Enumerators

In order to carry out field data collection 5 Field Officers, 1 Data Entry and Analysis Specialist and Monitoring Team were identified for training on Friday, November 18, 2011.

The Assistants were taken through the following as part of their training programme:

- Objectives and background of the study;
- Community and household entry techniques;
- Explanation of each question in the questionnaire; and
- Household selection process

This was a very intensive training exercise which sharpened the data collection skills of the research assistants.

4.6.2 Pre-testing of the Questionnaire

After the training exercise, the questionnaire was pre-tested in Abokobi, a community in Adentan Municipality of the Greater Accra Region which had similar characteristics as the districts studied. There was a final session with enumerators to discuss the issues that came up during the pre-testing exercise. The team acted upon the comments and improved upon how questions had been framed based on the results of the pre-testing exercise. Other issues relating to the wording and the interpretation of questionnaire were discussed. The field activities began on Monday, November 21, 2011.

According to Casley and Kumar (1988), in order to identify weaknesses, ambiguities and omissions before it is finalized for the survey itself, questionnaires have to be pre-tested. Pre-testing involves trying out the research instruments on a few respondents under similar conditions, whereby respondents' reactions to the instruments are observed. The

questionnaire for the study as indicated already was pre-tested on 20 purposively selected heads of households in Abokobi, a farming community in the Adentan Municipal of the Greater Accra region which had similar characteristics as the two studied districts. This exercise served as a trial run and enabled the researcher to identify the potential problems to be encountered on the field during actual data collection. Although this implied extra effort and cost, it enabled the researcher to revise the methods and logistics (time, finances, personnel and equipment) of data collection before the actual fieldwork.

The pre-testing also permitted the determination of whether the data collection tools to be used were capable of gathering appropriate and adequate information. It also gave an indication on how to increase the response rate by the method of administration. Pre-testing also enabled the researcher to determine whether the questions followed a logical pattern, were clear enough and devoid of any ambiguities; and whether or not there were repetitions of some questions judged from the responses provided. Finally, the pre-testing provided an indication of whether the space reserved for the open-ended questions was adequate or not and it also served to enhance the validity and reliability of the questionnaire as a data collection instrument.

4.7 Methods of Data Analysis

After the field data collection, the data was coded and fed into the computer with the Statistical Package for the Social Sciences (SPSS) software version 21. The data was then ‘cleaned’ for analysis. This approach ensured that the data collected was organized in a systematic manner to facilitate data analysis. The data analysis highlighted the emerging

trends on the selected variables such as household demographic characteristics, economic status, social exclusion and vulnerability, access to and use of ICTs, influence of ICTs on rural communication and information exchange, use of ICTs in poverty alleviation, and constraints and detrimental effects of using ICTs.

Quantitative data was analyzed using the latest version (v.21) of the Statistical Package for Social Sciences (SPSS), and 2010 version of Microsoft Office Excel. Descriptive statistics including frequencies and percentages were computed and used to summarize data into an understandable and meaningful manner. The research results obtained were presented in a very simple and non-technical form by using percentage and frequency tables, and charts. Inferential statistics was not left out, as meaning was necessary from the study that was conducted. Various tools for inferring meaning, including measures of central tendency (mostly the mean and standard deviation), and chi-square evaluations were made in order to appreciate the deeper implications of the results and to confirm the results which the percentages were not be able to bring out clearly.

Analysing qualitative data typically involves immersing oneself in the data to become familiar with it, then looking for patterns and themes, searching for various relationships between the data that help the researchers to understand what they have, then visually displaying the information and writing it up (Kawulich, 2004).

With respect to the qualitative data for the study, the deductive approach in analysing qualitative data was used. Before analysing the data collected, the researcher translated the recorded interviews through focus group discussions directly from the local language

(Fante) to the English language. This was done manually. There was further refinement of the translated interviews to ensure the grammatical correctness of the sentences. The researcher then read through the scripts thoroughly to have a better understanding of the data to be analysed. Having understood the data, the next step involved the organization and reorganization of the data into various categories to reflect the research questions and the thematic areas of the study. This procedure also assisted in the identification of the relationships among the various categories and the identification of recurring and related themes. In effect, like items were put together to facilitate data analysis to answer the research questions. The researcher then identified and explained the core meaning of the data thereby facilitating the researchers' understanding of the conceptual framework generated through the coding process. This procedure also meant organizing and connecting emerging themes and sub-themes to get the bigger picture. Steps were taken to ensure that the interpretation of the data was credible and trustworthy for presentation of the report. In reporting the results using the qualitative data, direct quotes and anecdotes were used in some instances, the range of issues which were discussed were presented in line with the thematic areas of the research and also to complement the results from the quantitative data.

4.8 Data Quality Control

The quality of data collected is one important concern in any research endeavour because poor quality data can affect the findings. Researchers are therefore concerned about the quality of data collected for research. This is because there are some factors which are beyond the control of the researcher and can affect data quality. There was, therefore, the

need to make conscious efforts to reduce the errors in data collection. The study therefore took the necessary steps to ensure that data collected was of the highest quality. Some of the steps taken included: review of the data collection instruments by the supervisors and colleague researchers, the training of the research assistants, the pre-testing of the data collection instruments, data cleaning to ensure good quality data before data entry for analysis, determining the validity and reliability of the data collection instruments and the employment of triangulation methods.

4.9 Reliability and Validity of the Measurements

The study was a case study research which used both quantitative and qualitative methods. The most prevalent method used in the study was the quantitative design. The two most important and fundamental characteristics of any measurement procedure are reliability and validity. The issue of reliability and validity of the study were undertaken taking into consideration how they are used in both quantitative and qualitative designs.

The reliability of the data collection instruments were tested through the pre-testing exercise, checking the data collected for consistency and emerging trends and data cleaning before data analysis. The questions were also grouped under the same theme to ensure the responses provided were accurate and not contradictory.

With respect to validity, this was assessed in terms of content validity, face validity, criterion validity, and construct validity. Content validity pertains to the degree to which the instrument fully assesses or measures the construct of interest. For example, this study explored the use of ICTs in poverty alleviation. The questions asked fully represented the

issues under discussion. The development of the data collection instruments were reviewed by the supervisors and colleagues of the researcher to ensure that they were readable, simple to understand, very clear and comprehensive enough to answer the objectives and research questions. Face validity is a component of content validity and is established when an individual reviewing the instrument concludes that it measures the characteristic or trait of interest.

For this study, the wording in the data collection instruments were assessed to ensure that they were indeed measuring what they were designed to measure. Criterion-related validity is a measure of how well one instrument stacks up against another instrument (Litwin, 1995). The criterion validity was assessed by comparing the instruments of measurement to those used by Souter *et al.* (2005) and Sife (2010) which had many items in common. Construct validity is the degree to which an instrument measures the trait or theoretical construct that it is intended to measure. For example, if one were to develop an instrument to measure intelligence that does indeed measure IQ, then this test is construct validity. Construct validity is very much an ongoing process as one refines a theory, if necessary, in order to make predictions about test scores in various settings and situations. This was done in the study by linking the items in the measuring instrument to the theoretical components of the research.

4.10 Triangulation

According to Cohen, Manion and Morrison (2000), triangulation is the use of one or more methods of data collection in the study of some aspect of human behavior. Combining

research methods in collecting data offers the promise of getting a ‘complete’ picture, in a way that a single method cannot achieve (Ngulube, 2005). The motive for the use of triangulation by researchers are that the more agreement there is from different data sources on a particular issue, the more reliable the interpretation of the data is. This view is supported by Patton (2002) who advocated the use of triangulation by indicating “triangulation strengthens a study by combining methods. This can mean using several kinds of methods or data, including both quantitative and qualitative approaches”. For these reasons the study used the case study design which provided a mechanism for combining different data collection instruments, namely: questionnaire, FGD and KII.

4.11 Ethical Considerations in the Research

According to Payne and Payne (2004), ethical considerations represent a moral stance that involves conducting research to achieve not just high professional standards of technical procedures, but also respect and protection for the people actively consenting to be studied. During World War II, at infamous concentration camps such as Auschwitz, SS doctors carried out the most heinous “medical” experiments on captive men, women, and children. The experiments included deliberate breaking of bones until no healing was possible, sterilization of women without anaesthesia, and use of twin children, one of whom served as “control” while the other was subjected to various atrocities. As these examples so starkly remind us, ethical guidelines and principles for conducting research with human participants (and nonhuman ones as well) are clearly needed (Payne & Payne, 2004).

With these issues in mind, the research took steps to ensure that it followed some ethical considerations, namely: institutional approval, informed consent of the human subjects and confidentiality, reporting results and plagiarism, and objectivity in research reporting. Before the study started institutional approval was sought from the Department of Information Studies, University of Ghana through research proposal presentation at a Departmental Seminar. Prior to the Departmental Seminar, three supervisors had gone through the work and certified that it met the University's ethical standards. The proposal included a description of the purpose and nature of the study, how the participants would be selected and what would be expected of them, and what they would be told to expect in the study.

Secondly, the consent of the respondents was sought before the administration of the study instruments. They agreed to participate in the study after they were told about the general nature of the study as well as about any potential harm or risk that the study may cause. The questions were therefore carefully worded in order not to cause any disaffection or embarrassment to the respondents. They were assured of confidentiality, and that the opinions they expressed would not be divulged to anyone and they would remain anonymous. Additionally, they were informed about the coding of the data to protect their identity in order to alleviate concerns about privacy and confidentiality. They were informed that the results of the study would be used for academic purposes only and had been approved by the University of Ghana. They were also free to decline participation and should they agree to participate may withdraw from the study at any time without penalty. In addition, they were offered the opportunity to receive a summary report about the results

and conclusions of the study, if they so desired. The participants were also told what they can expect to occur and what is expected of them as participants.

Reporting of the research results was done strictly in accordance with the ethical principle of not falsifying or fabricating data in order to achieve some desired results. The study reported as accurately as possible the findings from the questionnaire survey and as honestly as possible the results of the focus group discussion and the key informant interviews. No attempt was made to misinterpret the views expressed by the respondents. By so doing, the study promoted truth and avoided error. Literature used from other professional colleagues was referenced appropriately to avoid plagiarism. Appropriate credit was therefore given to the work of other researchers through citations.

Objectivity in research reporting was also given an important consideration in the study. The personal opinions and biases of the researcher did not get in the way of the research. The findings from the respondents were presented as objectively as possible. The results presented were reported by the respondents and the interview responses were presented in the right context as put forward by the respondents. The study therefore ensured mutual respect and fairness to the respondents and the professional colleagues whose works were used.

4.12 Summary

This chapter describes the two study areas, namely: the Effutu Municipal and Awutu Senya district and provides justification for the use and adoption of the areas for the study. The

case study design with a combination of both quantitative and qualitative methods of data collection with the quantitative as the dominant method was used for the study. The study population was made up of all households in the study area with at least one of the studied ICTs (mobile phone, radio and television). At the household level, the head of the household was selected as the respondent. Opinion leaders, extension agents and ICT service providers were also included in the study population. A multi-stage sampling technique was used to draw the study sample. Both primary and secondary methods of data collection were adopted, namely: literature sources, questionnaire, focus group discussion and key informant interviews.

Enumerators were trained to collect the data and the questionnaire was pre-tested before the questionnaire administration. The SPSS version 21 and the 2010 version of Microsoft Excel were used to analyse the data collected. Necessary steps were taken to ensure that data collected were of the highest quality, reliable and valid. Furthermore, the highest ethical standards were taken into consideration and the results reported as objectively as possible.

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CHAPTER FIVE

BACKGROUND OF RESPONDENTS

5.1 Introduction

The results and discussions of the study as presented in this chapter represent only those who use at least one of the ICTs (mobile phone, radio and television) in the study areas. The chapter presents and discusses respondents' personal characteristics as gender, age, education, religion, ethnicity and occupation. It also discusses household characteristics of respondents, respondents' socio-economic status and issues of social exclusion and vulnerability.

5.2 Respondents' Characteristics

As part of the poverty profiling of the respondents, the study sought to find out about the respondents' characteristics. It provided information on the suitability of the choice of respondents who fit into the definition of poverty which was the main focus of the study. The respondents' characteristics therefore gave the study a firm grounding to take off.

5.2.1 Personal characteristics of respondents

This section of the study presents the respondents' data in terms of gender, age, educational background, ethnicity, religion and occupation. The gender and age of respondents are presented by table 5.1. These provide the personal characteristics of the respondents and are expected to have an influence on ICT access and use of the respondents. As shown by the results of the study, about 51 percent of the respondents were males and 49 percent were females. The ratio of male: female for the study was almost 1: 1. This is an

interesting result as most studies involving heads of household have more male-headed households than female especially in rural communities. This study was expected to follow a similar pattern but the result proves otherwise. This may be due to the fact that the study adopted the gender neutral definition of head of household and also as a result of respondents being randomly selected.

Table 5.1: Personal characteristics of respondents – gender and age

Personal Characteristics		Household Survey		FGD		KII	
		Frequency	Percent	Frequency	Percent	Frequency	Percent
Gender	Male	209	50.7	33	64.7	9	81.8
	Female	203	49.3	18	35.3	2	18.2
Total		412	100.0	51	100.0	11	100.0
Age	20 - 29	142	34.5	14	27.5	1	9.1
	30 - 39	112	27.2	20	39.2	4	36.4
	40 - 49	74	18.0	15	29.4	5	45.4
	50 - 59	41	10.0	1	1.9	1	9.1
	>60	43	10.4	1	1.9	0	0
Total		412	100.0	51	100.0	11	100.0
Minimum Age	20			24			
Maximum Age	84			75			
Mean Age	39.1						
Standard Deviation	14.5						

Source: Survey data, 2012

In spite of the slight dominance of male-headed households, the result showed that female-headed households of the study were higher than the national average of 34.7 percent (GSS, 2012).

Respondents were required to indicate their actual ages in years. This was then categorized into five 10-year groups for ease of analysis, although the 2010 Population and Housing

Census categorized them into 5-year groups. As shown by table 5.1, thirty five percent of the respondents were between the ages of 20 and 29 years, followed by respondents aged 30 to 39 years (27%), and 18 percent between ages 40 to 49 years. Table 5.1 further shows that a tenth of the respondents were over 60 years of age. The strategy adopted to focus the respondents on heads of households resulted in a mean age of 39 years, with a minimum age of 20 years and a maximum age of 84 years. The mean age of 39.1 years was higher than the national average age of 24 years with a standard deviation of 14.5. The study showed that majority (80%) of the respondents were below the age of 50 and therefore may be economically active. At the national level, those below the age of 50 years constitute 87.8% (GSS, 2012). This finding is therefore consistent with what prevails at the national level. They are therefore capable of undertaking a range of livelihoods activities and are more likely to adopt new technologies because the population is young. According to Souter *et al.* (2005) the status of head of household is particularly important in the context of livelihoods analysis, and is therefore more appropriate than age in maximizing the sample's statistical value.

Gender and age are variables that have been reported to influence ICT development across various countries. Women produce more than half of the world's food requirement, yet they are disadvantaged and lack the basic skills required to harness the benefits of ICTs (Raji, Ayoade & Usoro, 2006). A study conducted by Selwyn, Gorard and Furlong (2003) also show that the aged/older adults also use ICTs, but they constitute the minority of an entire population, directly following the young (21-40 years) and the active (41-60 years).

ICT using older adults were found to use the technologies mainly for word processing, keeping in contact with others, and generally learning how to use computers.

The respondents were required to indicate their educational background. This is presented by table 5.2.

Table 5.2: Educational level of respondents

Education (N=412)	Household respondents	Percentage	FGD	Percentage
No Formal education	135	32.8	2	11.8
Attended Literacy classes	4	1.0	-	-
Less than Primary School	35	8.5	3	17.6
Primary school	56	13.6	-	-
JSS	153	37.1	10	58.8
SSS	24	5.8	2	11.8
Tertiary education	5	1.2	-	-
Total	412	100.0	17	100.0

Source: Survey data, 2012

With respect to the educational background as shown by table 5.2, respondents were required to indicate whether or not they had formal education. About 67 percent of the respondents indicated that they had formal education with the rest (33%) reporting that they had no formal education. This result is higher than the national average which indicated that 23.4 percent of the population aged 3 years and older had never been to school (GSS, 2012). It was, however, lower than what was reported by the 2010 Population and Housing Census Report in which the proportion of the population which had never attended school in the rural area was 33.1 percent. The majority of the respondents (37%) who had formal education indicated that their highest level of education was completion of Junior Secondary School (JSS). This is lower than the national average in which those who had

attended school in the past showed that 53.7 percent of them have Middle or JHS/JSS as their highest level of education while a smaller proportion (12.1%) had attended SSS/SHS. A very small proportion of the respondents (1%) had completed tertiary education and about 6 percent of them completing secondary school. As regards the participants for the FGD and the KII majority of them (59%) had completed JSS. This result seems to suggest that those with higher education do not stay in the rural areas. This may be due to the fact that job opportunities and other conditions that make life comfortable or worth living are virtually absent in the rural areas. However, this in no way will affect the use of the ICTs under study because the use of mobile phones, radio and television require only functional literacy in the English language. Since the majority of the respondents had completed JSS, it could be concluded that they can use the ICTs under study effectively.

With respect to the poverty profiling, the religion, ethnicity and occupation of the respondents were required. According to Hunt (2002) citing Weber (1921, 1922) and Feagin (1975) noted that although an expanding social scientific literature on “stratification beliefs” has developed over the past three decades, the research typically has not focused on relationships between religion and beliefs and the causes of poverty and other inequalities. This neglect is curious, given the central place of religion in offering theodicy – explanations for the way social life distributes social rewards and shapes life chances. Further, this neglect occurs despite suggestive evidence that religion – particularly as it intersects with race/ethnicity – may be an important determinant of how people think about the subject of poverty. It is for these reasons that the religion and ethnicity are considered

of importance in poverty profiling in this study. Table 5.3 presents a summary of the results.

Table 5.3: Religion and ethnicity of respondents

Personal Characteristics (N=412)		Household Survey	
		Frequency	Percentage
Religion	Christianity	387	94.0
	Islam	17	4.1
	Traditional	8	1.9
Total		412	100.0
Ethnicity	Awutu (Bereku)	117	28.4
	Effutu	44	10.7
	Ewe	35	8.5
	Fante	189	45.9
	Ga	27	6.5
Total		412	100.0

Source: Survey data, 2012

In table 5.3 it is shown that 94 percent of the respondents were Christians and 4 percent reported that they belonged to the Islamic religion. A small proportion of the respondents (2%) belonged to the African Traditional religion. This is to be expected as the southern part of the country is inhabited by mostly Christians with the northern regions inhabited by Moslems. As reported by the 2010 Population and Housing Census (GSS, 2012), 71.2 percent of the population profess the Christian faith, followed by Islam (17.6%). Only a small proportion of the population either adhere to traditional religion (5.2%) or are not affiliated to any religion (5.3%). In terms of ethnicity, majority of the respondents (40%) indicated that they were Fantes, 28 percent were Awutus and 11 percent were Effutus. The study also showed that the study area was inhabited by Ewes (9%) and Gas (6%). The predominance of Fantes, Awutus and Effutus is not surprising as the Central Region generally is inhabited by Fantes and people of the Guan ethnic group of which Awutus and Effutus are part. Furthermore, Akans are the predominant ethnic group in Ghana (47.5%),

followed by the Mole Dagbani (16.6%), the Ewe (13.9%) and Ga-Dangme (7.4%). The Mande forms the smallest ethnic group (1.1%) in Ghana (GSS, 2012).

The respondents were required to indicate their occupations. The results are summarized in table 5.4.

Table 5.4: Occupation of respondents

Occupation (N=412)	Frequency	Percentage
Animal Farming	26	6.3
Crop Farming	151	36.7
Agricultural Trading	14	3.4
Trading	79	19.2
Teaching	19	4.6
Civil Servant	10	2.4
Retired Civil Servant	4	0.9
Artisan	86	20.9
Fishing	10	2.4
Fishmonger	13	3.2
Total	412	100.0

Source: Survey data, 2012

A number of occupations were provided by the respondents and these were categorized into ten occupations for ease of analysis. As to be expected from rural economies in Africa generally and Ghana in particular, a high percentage of the respondents were crop farmers (37%), followed by artisans (21%) and traders (19%). The artisans comprised hairdressers and beauticians, carpenters, masons and blacksmiths. Those who were classified as agricultural traders were those who sell agricultural implements like hoes and cutlasses, pesticides and other agricultural chemicals.

5.2.2 Household characteristics of respondents

The household head was defined as a male or female member of the household recognized as such by the other household members. The head of household is generally the person who has economic and social responsibility for the household. All relationships are defined with reference to the head (GSS, 2012). In view of this, both male and female heads of household were interviewed. A total of two hundred and nine male and two hundred and three female heads of households were interviewed. The female heads were either single mothers, divorced women or widowed.

Respondents were also required to indicate the number of people who regularly lived in the house (not short time visitors). This information was required to determine the average household size in the study area. The results of the distribution of household size are presented in table 5.5.

Table 5.5: Household size

Household size (N=412)	Frequency	Percentage
Less than 3members	140	34.0
4-7 members	230	55.8
8-11members	41	10.0
Above 11members	1	0.2
Total	412	100.0
Mean = 4.5		
Standard Deviation = 2.2		

Source: Survey data, 2012

Results of the study indicated that the mean household size was 4.5 which was slightly higher than the national average of 4.4 (GSS, 2012), with a standard deviation of 2.2. The standard deviation shows the homogeneity of the households. It can be seen from table 5.5

that 89.8 percent of the respondents indicated a household size of between 3 and 7 members which was considered small in the opinion of the researcher as the impression had been that rural households are usually large. This is explained by the fact that because those in the rural areas are mostly farmers as revealed by the study, they require a large labour force to assist on farm activities. Where labour costs are high, household or family labour is largely applied. Only one household indicated a large size of above 11 members.

The study further probed to find out how many of the household members depended on the head for financial support and how many of them supported the head either in cash or in kind. The details of results are presented in tables 5.6-5.8.

Table 5.6: Dependence on head of household for financial support

Extent of dependence (N=412)	Frequency	Percentage
Less than 2	212	51.5
3-5	159	38.6
6-8	39	9.5
9-11	2	0.4
Total	412	100.0
Mean = 2.7		
Standard Deviation = 2.1		

Source: Survey data, 2012

From table 5.6, it is shown that in the study area, about 52 percent of respondents supported less than 2 people financially in their household. A total of 159 respondents representing 39 percent supported between 3 to 5 household members financially. In total all the respondents supported their households financially. The mean was 2.7 with a standard deviation of 2.1. This result gives an indication of the vital role that the household head plays in supporting other people who live in the house. It also has implications on the

income of the respondents who may not have enough after spending so much on members of the household to have funds to purchase phone cards for instance.

Table 5.7 below presents results which showed that some members of the household also contributed financially to support the head of the household.

Table 5.7: Household members supporting head of household financially

Household member support (N=412)	Frequency	Percentage
None	194	47.1
At most 1 person	172	41.7
At most 2 persons	32	7.8
More than 2 persons	14	3.4
Total	412	100.0
Mean =0.7		
Standard Deviation=1.0		

Source: Survey data, 2012

About 41 percent indicated that one member supported him/her financially. Almost half (47.1%) of the respondents reported that they were not supported by any members of the household. With a mean of 0.7 and a standard deviation of 1.0, this indicated that there was little or no support financially by household members to the head of household, an indication that the majority of the heads of household did not depend on the household members for financial support. This suggests that when the head cannot provide for the house financially, he/she may have to take a loan to support the household since members cannot support the head.

The study probed further to find out if apart from financial support, the head of household received support in kind from household members. The results are shown below in table 5.8.

Table 5.8: Household members supporting head of household in kind

Household member support	Frequency (N=412)	Percentage
0	251	60.9
1	112	27.2
2	28	6.8
Above 2	21	5.1
Total	412	100.0
Mean = 0.67		
Standard Deviation = 1.29		

Source: Survey data, 2012

It is shown that slightly higher than a quarter of the respondents (27%) received support from one member of the household in kind. Only 5 percent of the heads of household received support in kind from more than two members of the household. Further analysis provided a mean of 0.67 and a standard deviation of 1.29, an indication that most of the heads of household did not depend on household members in kind. This result is consistent and confirms an earlier finding (Table 5.6) which indicated that heads of household did not depend on members of the household for financial support.

Respondents were required to indicate whether or not any family member lived in other towns in Ghana or abroad. A total of 281 respondents (68%) had family members who lived outside the community with less than a fifth of the respondents (18%) having immediate family members who live abroad. In line with this the study tried to find out the

level of support. Table 5.9 below presents the results of dependence on support from relatives who live outside the community.

Table 5.9: Dependence on relatives living in other communities

Degree of dependence	Frequency (N=412)	Percentage
Not at all	240	58.3
Slight	86	20.9
Moderate	55	13.3
High	31	7.5
Total	412	100.0
Mean = 1.7		
Standard Deviation = 0.9		

Source: Survey data, 2012

It is shown that very few households (8%) depended highly on the relatives who lived in other communities. The majority of the respondents (58%) did not depend at all on any relative living in other communities. This gives an indication that a greater majority of the heads of household may be financially sound. This is confirmed by a mean of 1.7 and a standard deviation of 0.9. What this result suggests is that the respondents are capable of accessing and using ICT tools on their own without depending on anybody. Furthermore, the study required respondents to indicate the type of material support they receive from family members who live elsewhere. This is shown by figure 5.1 below.

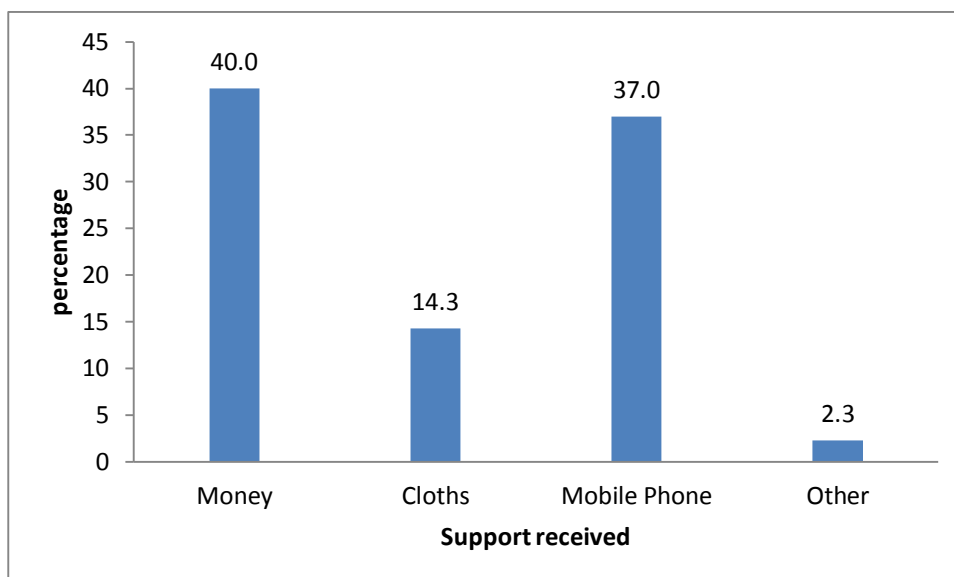


Figure 5.1: Type of support received from family members living elsewhere
Source: Survey data, 2012

For those respondents who reported depending on relatives who live elsewhere for material support, figure 5.1 indicated that they mostly receive money (40%) and provision of mobile phone (37%).

5.2.3 Respondents' characteristics - socio-economic status

The study assessed a number of household assets and activities through multiple choice questions in order to understand the socio-economic status of the households so that the respondents are placed in the proper category of poor or poor-poor. Data collected on the household assets and activities included: principal sources of income, annual income level, type of accommodation, quality of housing, utilities, livestock, ICT and non-ICT tools and ownership of means of transport.

As part of reporting on the socio-economic status of the respondents, they were required to indicate up to three principal sources of income in order of importance. The results are presented below in table 5.10.

Table 5.10: Principal sources of income

Source of Income	Number of Respondents (N=412)			Percentage		
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
Crop Farming	151	75	6	36.7	35.0	40.0
Sale of services (Artisan)	86	32	3	20.9	15.0	20.0
Trading	69	69	0	16.7	32.2	0.0
Animal Farming	36	19	3	8.7	8.9	20.0
Salary	29	0	1	7.0	0.0	6.7
Sale of Fish	23	11	2	5.7	5.1	13.3
Agricultural Trading	14	8	0	3.4	3.7	0.0
Pension	4	0	0	0.9	0.0	0.0
Total	412	214	15	100.0	99.9	100.0

Source: Survey data, 2012

The information presented by table 5.10 indicated the principal sources of household income of the respondents. Crop farming was the principal source of income for the respondents as it was ranked highest for primary, secondary as well as tertiary source of income. Sale of services by artisans with respect to beauticians, dress makers, carpenters, masons and blacksmiths was the next most important source of income of the households.

Respondents were further required to indicate their approximate annual income in 2010. The data obtained was categorized into five groups and shown in table 5.11 below.

Table 5.11: Annual income

Annual Income Range (GH¢)	Number of Respondents (N=412)	Percentage
Less than 500	124	30.1
Between 501 - 1000	119	28.9
Between 1001 - 1500	64	15.3
Between 1500 - 2000	38	9.2
Above 2000	67	16.3
Total	412	100.0

Source: Survey data, 2012

The minimum annual income was GH¢20 (\$10) with a maximum annual income of GH¢7500 (\$3750). It was realized that the crop farmers were subsistence farmers and therefore produced for their household consumption and sold the surplus. Thus, the income earned was dependent on the amount of yield and proportion sold per farming season. It was realized that during bumper harvest, the respondents were able to sell more of their produce after making provision for consumption. The result therefore reinforced the view that most rural people sustain their livelihoods through subsistence farming. For this and other reasons indicated earlier, the study used the households' income earning activities instead of actual income earned to find out the use of ICTs in livelihoods and poverty alleviation.

In furtherance of the study finding out more about the socio-economic status of the respondents, a number of household assets and livelihoods activities were assessed through multiple choice questions. These included type of accommodation, quality of housing, access to utilities such as water and electricity, ICT and non-ICT assets. The results are presented by tables 5.12-5.14. The type of household assets with respect to type of accommodation and quality of housing is presented by table 5.12 below.

Table 5.12: Household assets – type of accommodation and quality of housing

Household assets	Frequency	Percentage
Type of accommodation		
Personal ownership	261	63.3
Rental	59	14.3
Rent free/squatting	92	22.3
Total	412	99.9
Quality of housing	Frequency	Percentage
Cement walled with corrugated roof	215	52.2
Mud/Brick walled with corrugated roof	151	36.7
Wooden walled with corrugated roof	6	1.5
Mud/brick walled with thatched roof	20	4.9
Wooden walled with thatched roof	18	4.4
Other	2	0.5
Total	412	100.0

Source: Survey data, 2012

The results on the type of accommodation and quality of housing as presented in table 5.12 showed that 63 percent had their own accommodation. About 22 percent of them do not own accommodation yet do not pay any rent. This category of the respondents is made up of male and female respondents who are either staying in a family house or residing in the house of their spouses. About 14 percent of the respondents indicated that they were in rented premises.

With regard to quality of housing, 52 percent and 37 percent of the respondents indicated that their houses are made of cement with corrugated roof and mud/brick with corrugated roof respectively. The quality of housing indicates that though they are poor, the quality of housing is good for a rural community. The study made further analysis of household assets with respect to utilities and the results are shown in table 5.13 below.

Table 5.13: Household assets – utilities

Electricity	Frequency	Percentage
Yes	240	58.3
No	172	41.7
Source of Water		
River/Stream	126	30.6
Well	31	7.5
Borehole	95	23.1
Pipe borne water	158	38.3
Other sources	2	0.5

Source: Survey data, 2012

With respect to table 5.13, about 58 percent of respondents had access to electricity with 41 percent of them no access to electricity. With respect to sources of water, 38 percent of the respondents had access to pipe borne water though majority of that is obtained outside the household. A third (31%) of the households used river/stream as their source of water, and 23 percent of the households reported the use of borehole as their source of water. A number of reasons have been adduced, principally the taste of pipe borne water not being good and also the fact that they have to pay for the pipe borne water. The result indicates that many can use ICTs because of the availability of electricity in most households. With respect to the pipe borne water in more than a third of the households, this can be used to diversify their economic activities into agro-processing as more than a third of the respondents are crop farmers. This calls for intervention at the governmental level to assist in improving livelihoods and well-being of the people. Further analysis was made on respondents' background data with respect to ICT and non-ICT assets. The results are shown by table 5.14 below.

Table 5.14: Respondents' data – ICT assets and non-ICT assets

Assets	Frequency (N=412)	Percentage
ICT Assets		
Computer	14	3.4
Fixed telephone line	4	1.0
Mobile phone	296	71.8
Radio	260	63.1
Television	154	37.4
Non-ICT Assets		
Bicycle	213	51.7
Canoe	24	5.8
Car	71	17.2
Clothes/Dumas	259	62.9
Fridge	163	39.5
Jewellery	149	36.4
Land owned	129	31.3
Motorcycle	24	5.8
Savings account	347	84.2

Source: Survey data, 2012

The study further sought to find out the ICT and non-ICT ownership of assets of the respondents as part of the poverty profiling of the respondents. As indicated in table 5.14, 72 percent of the respondents owned mobile phones, 63 percent had radio, and 37 percent owned television. Only a few of the respondents owned computers and fixed telephone lines. With respect to ownership of non-ICT assets, 63 percent of the respondents reported ownership of clothes/Dumas, 36 percent owned jewellery and 31 percent owned land. These assets are considered very important as in times of difficulties they could be sold to raise income. Fifty two percent of the respondents owned bicycles and this facilitates their means of transport as it is used to transport goods and humans in the villages. It serves as reducing money spent on transport and also serves as status symbols in rural communities. Three hundred and forty seven (84%) of the total had a savings account. This is an indication that in spite of their low levels of income they are able to make savings for the

future. About a third of the respondents (31.3%) owned land which could be used as collateral for bank loans or sold in difficult financial times.

5.3 Social Exclusion and Vulnerability

The issue of social exclusion and vulnerability are critical to poverty in that people's livelihoods and the wider availability of assets are fundamentally affected by critical trends as well as by shocks and seasonality over which they have limited or no control. The inherent fragility of poor people's livelihoods makes them unable to cope with stresses, whether predictable or not. It also makes them less able to manipulate or influence their environment to reduce those stresses; as a result they become increasingly vulnerable. Social exclusion matters because it denies some people the same rights and opportunities as are afforded to others in their society. Simply because of whom they are, certain groups cannot fulfil their potential, nor can they participate equally in society (DfID, 2005). For this reason, the study sought to find out how vulnerable the respondents were by asking a series of questions which included membership of groups or associations, means of communication of the group, and whether or not they or any member of their household have experienced shocks such as major illness or death in the family, drought, flood, theft, or loss in business during the two years prior to the study.

Respondents were required to indicate whether or not they belong to a group. One hundred and twenty (29%) of the total reported belonging to a group with a great majority of them (71%) not belonging to any group. As a follow-up to this question, those who belonged to

a group were further required to indicate the type of group they belonged to. This is presented in table 5.15 below.

Table 5.15: Type of group membership of respondents

Type of group	Frequency (N=120)	Percentage
Saving and Loan Company	11	9.2
Bank	9	7.5
Farmer-Based Organization	26	21.7
Community-Based Organization	40	33.3
Other	34	28.3
Total	120	100.0

Source: Survey data, 2012

Table 5.15 shows that a third of the respondents (33%) belong to a community-based organization, while a little over a fifth (22%) belongs to a farmer-based organization. Over a quarter (28%) of the respondents belong to “other” groups namely, church-based organizations and other friendship societies.

Respondents were then required to indicate the size of the group they belonged to. This is presented in table 5.16 below.

Table 5.16: Size of group membership of respondents

Size of group	Frequency (N=120)	Percentage
Less than 10	47	39.2
11-20	27	22.5
21-30	28	23.3
31-40	6	5.0
>40	12	10.0
Total	120	100.0

Source: Survey data, 2012

It is shown by table 5.16 that the respondents generally belonged to a small group which is an indication of the closeness of the group and interaction among them thereby not being socially excluded. A total of 47 (39.2%) respondents reported belonging to a group with less than 10 people. Only 12 (10.0%) respondents belong to a group with over 40 people. This result is an indication that the respondents have had opportunities to participate in sharing experience, information and interact with other people and are therefore not socially excluded.

The study sought to find out the role respondents played in the groups they belonged to. This is shown by table 5.17 below.

Table 5.17: Role of respondents in a group

Position	Frequency (N=120)	Percentage
Executive member	33	27.5
Active member	75	62.5
Passive member	12	10.0
Total	120	100.0

Source: Survey data, 2012

Majority of the respondents (90%) were either executive members or active members of the group they belonged to. They made significant contribution to the group and interacted very well with one another taking away boredom, discussing issues pertaining to their individual well-being and the community at large.

Furthermore, the respondents were required to state the purpose of the group they belong to. The purpose(s) of the group they belong to have been summarized as follows: assists members on good agronomic practices, provision of training for members on good

customer care/service, mobilization of resources to assist the community, to assist in the stoppage of child labour and child trafficking, facilitate the acquisition of loans and agricultural inputs for the members, spread the good news through music, and provision of assistance to members in times of need through cash and kind.

With regard to the means of communication among group members, 86 of the respondents reported communicating through face-to-face interaction, while 16 of them do so through mobile phone. In terms of communication of the group with their customers, 12 of them do so through face-to-face interaction with 3 communicating through mobile phones.

5.3.1 Experience of ill-health and disasters by respondents

The study also sought to find out how vulnerable the respondents were by asking them to indicate if they had experienced any ill-health or disaster in the last two years. The results are shown by table 5.18 below.

Table 5.18: Responses on ill-health and disasters by respondents

Experience of Ill-health/Disasters	Yes (%)	No (%)
Malaria	276 (67)	136 (33)
Guinea worm	1 (0.2)	411 (99.8)
Bilharzias	1 (0.2)	411 (99.8)
Cholera	6 (1.5)	406 (98.5)
Death in the Family	61 (14.8)	351 (85.2)
Drought	4 (1.0)	408 (99.0)
Flooding	55 (13.3)	357 (86.7)
Fire Outbreak	5 (1.2)	407 (98.8)
Theft	54 (13.1)	358 (86.9)
Loss in Business/Job	48 (11.7)	364 (88.3)

Source: Survey data, 2012

Table 5.18 shows that majority of the respondents had not experienced any major ill-health situation or disaster in the past two years. However, 276 respondents representing 67 percent of the total have had malaria in the past two years. Malaria continues to be a major health problem in many developing countries and it is not surprising that they are facing this situation in the study areas. Theft suffered by the respondents was reported by 54 (13%) of the respondents. For a rural area in Ghana, this appears to be on the high side as such areas are said to be safe compared to the urban areas. Slightly above a tenth of the respondents (12%) had lost their business/job in the last two years. This may be a burden on the household as household incomes are generally low in the study areas. Based on the findings from table 5.18, it can be suggested that the respondents were less vulnerable to ill-health and disasters. As a follow-up, the respondents were asked if any member of the household had experienced any ill-health or disaster in the past two years. The result is shown by table 5.19 below.

Table 5.19: Responses on ill-health and disasters by members of household

Experience of Ill-health/Disasters	Frequency (N=412)	
	Yes (%)	No (%)
Malaria	284 (68.9)	128 (31.1)
Guinea worm	0 (0.0)	412 (100.0)
Bilharzias	3 (0.7)	409 (99.3)
Cholera	9 (2.2)	403 (97.8)
Death in the Family	110 (26.7)	302 (73.3)
Drought	3 (0.7)	409 (99.3)
Flooding	27 (6.6)	385 (93.4)
Fire Outbreak	4 (1.0)	408 (99.0)
Theft	23 (5.6)	389 (94.4)
Loss in Business/Job	23 (5.6)	389 (94.4)

Source: Survey data, 2012

In the case of members of the household experiencing ill-health or disaster in the past two years, slightly above a quarter of the respondents (26.7%) had experienced death in the family. This seems to be on the high side. Majority of the respondents as shown by table 5.19 had not been vulnerable to ill-health or disaster in the past two years. What this suggests is that the respondents are very healthy and can go about their economic activities without let or hindrance to generate income. Not facing any disaster in the past two years also suggests that they might not have spent additional resources to ameliorate the ill-effects of the disaster.

5.4 Summary

The personal as well as the socio-economic characteristics of the respondents are presented in this chapter. The ratio of male: female was almost 1:1 with more than a third of the respondents (35%) aged between 20-29 years. About a third of the respondents (33%) had no formal education and majority of those who had formal education (37%) completed Junior Secondary School. The study revealed that there were more Fantes (46%) in the study area than any other ethnic group with Christianity (94%) as the dominant religion.

The mean household size of 4.5 was higher than the national average of 4.4. Only a few of the respondents (8%) depend highly on relatives who lived outside the community for financial support. More than a third of the respondents were crop farmers and their principal source of income was through crop farming. About a third of the respondents earn less than Gh¢500.00 (\$250) per annum. With respect to accommodation and quality of housing, about two thirds of the respondents are owner-occupiers with 52 percent of the

houses cement walled with corrugated roof. More than half of the respondents (58%) had access to electricity with 38 percent of them with access to pipe borne water.

With regard to ICT and non-ICT assets, majority of them (72%) had mobile phones, 63 percent with radio and 37 percent had television with a sizeable number of them reporting having clothing, bicycles, canoes and jewellery. More than a quarter of the respondents (29%) belonged to a social group an indication that they are not socially excluded with a majority of them being active members. Majority of the respondents had not experienced any ill-health situation in the past two years; however, malaria fever is a major health-related issue in the study area.

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CHAPTER SIX

ACCESS TO AND USE OF ICTS IN TWO SELECTED DISTRICTS

6.1 Introduction

This chapter presents detailed information from the fieldwork on responses obtained in answer to the first research question, namely: how are people in the two rural districts of the Central Region of Ghana accessing and using mobile phones, radio and television? Detailed discussions of the results were undertaken with empirical evidence. The objective for asking this question was to find out how households in rural economies make use of ICTs with respect to their livelihoods and poverty reduction activities. A number of questions were asked in order to fully address the research question mentioned above. This chapter is arranged as follows: ownership of ICTs, the main means of communicating and accessing information, the type of ICTs they or any member of their family owned, how they access and use ICTs, preference for mobile phone service providers and reasons for owning multiple SIM cards. The intention for asking these questions was to find out about access and use patterns of ICTs by respondents at the household level and not the extent of access and use of the ICTs.

6.2 Ownership of ICTs, Means of Communication and Receiving Information

In order to ensure sufficient availability of data for the study and to have a good understanding of the use of ICTs in livelihoods and poverty reduction, the respondents for the study were chosen based on those who own and use one or more of the ICTs being studied. This was done in order to obtain sufficient data for the study. The ownership of the ICT was validated by asking them to indicate the type and number of ICTs being

studied that they own. Table 6.1 below presents data on the type of ICTs owned by the respondents.

Table 6.1: Ownership of ICTs

Type of ICT	Frequency (412)	Percentage
Mobile Phone	297	72.1
Radio	260	63.1
Television	154	37.4

Source: Survey data, 2012

The survey results indicated that the majority of the respondents (72%) owned mobile phones. A further breakdown of the number of mobile phones owned indicated that about 8 percent of them owned two or more mobile phones. About 63 percent of the respondents owned radio, with 4 percent of them owning two or more radios. With regard to television, 37 percent of the respondents owned television, with 2 percent of them with two or more televisions. Television lags behind mobile phone and radio due to its relatively high cost as revealed by the KII and the FGD. The participants were of the view that even a second hand television cost more than a mobile phone or a battery operated radio. They also noted that a number of people can congregate at either a friend or relative's house or at a drinking bar to watch television so there is no need to buy one taken into consideration their meager income. This therefore accounts for the low ownership of television.

Duncombe (2012) citing several reviewers (De Silva, 2008; Donner, 2009; Munyua, 2008) indicated that there is widespread application of mobile phones in support of livelihoods in rural and less developed regions of developing countries. Little wonder ownership of mobile phones exceeds that of radio and television in Ghana. This result contradicts the

GLSS5 Report (2008) which indicated that nationally, ownership of radio was 49.9 percent, TV (33.3%) and mobile phone (19.7%). It must, however, be noted that the GLSS5 study was conducted from September 2005 to September 2006 and a lot of developments have taken place in the ICT sector for the dynamics to change in favour of mobile phone, for as noted by Duncombe (2012), one of the most significant development trends in the past decade had been the explosive growth of the mobile phone. Mobile cellular technologies have enabled even the poorest countries to extend telecommunication network coverage to the mass of their populations including the rural poor. Given the multi-functionality of mobile phones which in some cases can be used as a radio, it is not surprising that mobile phone ownership is more than that of radio and television. However, in a similar study in the Morogoro region of Tanzania, Sife (2009) reported that a greater majority of the respondents (93.9%) owned radio sets, with more than a fifth (21%) owning two or more radio sets. A significant number of the respondents (80%) had mobile phones and more than a quarter (25.8%) had two or more mobile phones.

Analysis was also made of the ownership of ICTs in terms of gender. It was noticed that in all cases, males owned more of the ICTs being studied than their female counterparts. At the FGD, it became clear that some females may own the ICT but to keep the dignity of their husbands will report that it belongs to the man. Out of 297 respondents who stated they owned mobile phones, 170 (57.2%) were males and 127 (42.8%) were females. With respect to radio, 163 (62.7%) were owned by males and 97 (37.3%) by females. In terms of ownership of television, 97 (63%) males and 57 (37%) females owned television sets. According to Sorenson (2002), with the significant growth in access to and usage of ICTs,

most particularly mobile phones, the relative difference between men and women is diminishing. Zainudeen *et al.* (2008) conducted studies on mobile phone usage at the bottom of the income pyramid in Asia and concluded that, while there is gender divide in access to ICTs in Pakistan and India, there is less of a divide in Sri Lanka, and none in the Philippines and Thailand, where mobiles are most pervasive. The Zainudeen *et al.* (2008) study supports the view that there is a link between the magnitude of the gender divide and overall penetration levels. They assert that ‘the gender divide, as with the digital divide, has been found to be especially large in low income countries, where ICT penetration levels are also low’. It is intuitive, they argue, that as income and development improve, overall penetration levels increase. As income increases, households will be able to afford more phones, providing more women with access. Chabossou *et al.* (2008) have already shown that higher personal income results in higher probability of having a mobile phone.

The study also compared the ownership of ICTs at the district level to find out if there were any significant differences between them statistically. This is presented by table 6.2 below.

Table 6.2: ICT ownership by district

Type of ICT	District	Frequency	Percentage	χ^2	P-Value
Mobile phone	Awutu-Senya	156	52.5	0.519	0.491
	Effutu	141	47.5		
	Total	297	100.0		
Radio	Awutu-Senya	145	55.8	2.098	0.148
	Effutu	115	44.2		
	Total	260	100.0		
Television	Awutu-Senya	73	47.4	2.510	0.113
	Effutu	81	52.6		
	Total	154	100.0		

Source: Survey data, 2012

The survey results as provided by table 6.2 indicate that there were no significant differences in ICT ownership in the two districts under study as revealed by the chi-square and the probability value test even though respondents in the Awutu-Senya district owned mobile phone (156) and radio (145) than their counterparts in the Effutu Municipal (mobile phone (141) and radio (115)). Statistically this result was not significant for further analysis to be undertaken. Mobile phone was the most dominant ICT in both study areas.

Further to the analysis of the ownership of ICTs, respondents were asked if any member of their household owned any of the ICTs under study. Table 6.3 below shows the results which indicated that the majority (244) of them owned mobile phones, followed by radio

(137) and television (88) in that order. The trend of ownership is similar to that of the respondents themselves where mobile phones ranked first and television ranked third.

Table 6.3: Ownership of ICTs by household members

Type of ICT	Frequency (N=412)	Percentage	Rank
Mobile Phone	244	59.2	1
Radio	137	33.3	2
Television	88	21.4	3

Source: Survey data, 2012

In order to establish which of the ICTs under study were the main means of communication and receiving information, respondents were further requested to indicate three main means/ways that they and other members of their household use frequently for communicating and receiving information. The study further required the respondents to indicate their means of communicating and receiving information. This is presented by table 6.4 below.

Table 6.4: Means of communication and receiving information

Means of Communication	Number of Respondents (N=412)			Percentage			Rank
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary	
Face-to-face	285	52	22	69.2	14.8	8.0	1
Mobile phone	117	140	53	28.4	39.8	19.3	2
Radio	4	131	118	1.0	37.2	42.9	3
Television	3	19	46	0.7	5.4	16.7	4
Other	2	3	15	0.5	0.9	5.5	5
Internet service	1	1	0	0.2	0.3	0.0	6
Postal service/ letters	0	6	21	0.0	1.6	7.6	7
Total	412	352	275	100.0	100.0	100.0	

Source: Survey data, 2012

The responses as shown by table 6.4 above show that majority of them ranked face-to-face (69%), mobile phone (28.4%), and radio (1.0%) in that order as their primary means of

communicating and receiving information. This supports the view of Boateng *et al.* (2009) citing Obijiofor (1998) that socio-culturally, rural communities in developing countries, especially those in Africa, are more acclimatized to traditional modes of communication such as face-to-face talk in market places, churches, town unions from which they receive immediate feedback and trust. These communication channels are unlikely to be perfectly replaced by new ones such as those enabled by ICTs. Television was considered a main source of information by only 0.7 percent of the respondents. Interestingly, postal service/letters was not considered as a primary source for communicating and receiving information. This is due to the fact that the study area being rural has no post office facilities coupled with the slow nature of the delivery of letters. It is attributed to the global trend where people use other means, for example through the mobile phone and Internet to communicate because these are faster means of communicating. The following were ranked as the secondary means of communicating and receiving information: mobile phone (34%), radio (32%), and face-to-face (13%). The third ranked means of communicating and receiving information was: radio (29%), mobile phone (13%), and television (11%). From the results, it is clear that respondents prefer face-to-face communication, followed by mobile phone and radio as their three top most preferred means of communicating and receiving information. This means in spite of the benefits of technology, respondents continue to use face-to-face communication as the main means of communication and receiving information. According to Souter *et al.* (2005) the radio and mobile telephone, with their greater emphasis on oral communication, are similar in many ways to face-to-face communication, which is still a major channel for communication. The extent to

which information is communicated by oral or by written means may have significant impact on the pace and nature of adoption of new ICTs.

Duncombe (2012) citing Donner (2006) and Duncombe and Heeks (2002) reports that research suggests that the poor get their most valued market information via word of mouth, and the diffusion of mobile phones is playing a key role in extending these organic informal networks. Furthermore, Duncombe (2012) asserts that in this way passive diffusion is increasing the efficiency of underlying market-related information processes. This is demonstrated by studies from the field of information economics that show conclusively how the use of phones within local markets by producers and traders leads to a higher degree of market participation, as well as reduced search costs and a lessening in price dispersion (Mutu & Yamano, 2009; Aker, 2008; Jensen, 2007).

6.3 Access to and Use of Mobile Phones

In order to address research question 1, namely: how are people in the two rural districts of the Central Region of Ghana accessing and using mobile phones, radio and television, the respondents were required to answer a number of questions on: when they first acquired a mobile phone, how many SIM cards they used, how they use the mobile phone in order of priority, the cost per week in (Ghana Cedis) on using mobile phones, their preference of mobile phone service providers, and the level of network coverage in the community.

6.3.1 Acquisition of mobile phone

Respondents were required to provide responses to when they first acquired mobile phone. The intention for asking this question was to find out how effective their access and use of mobile phone was. The study assumed that the issues of acquisition, availability and quality of mobile phone service are necessary pre-conditions for effective use of mobile phones. This means the respondents should first of all acquire the mobile handset or have access to it and should subscribe to a mobile phone service provider whose services should be of high quality in order to have effective use of the mobile phone.

The respondents were asked when they first acquired mobile phone in the household. This question was asked to find out how long they had had access to and use of a mobile phone. The researcher assumed that having used the mobile phone for a considerable period of time, respondents will be in a better position to provide useful information about the quality of service provided by the mobile phone service providers. It was also to ensure that they were in a position to answer the subsequent questions on how much they spent on mobile phones and the role mobile phones play in poverty alleviation.

The survey results as indicated below by figure 6.1, reveals that 80.4 percent of the respondents acquired the phone two or more years ago, with 19.6 percent acquiring their mobile phone last year. According to a three-country study conducted by Souter *et al.* (2005) in India, Mozambique and Tanzania, telephone ownership is growing rapidly and is highly valued. At least 44 percent of those with telephone in each county had acquired it within the last year of the study. The result is an indication that most of the respondents

had used the mobile phone for a considerable period of time and are more likely to be in a position to answer further questions pertaining to their preferred mobile phone service providers, the quality and reliability of network connection and their expenditure on mobile phone especially airtime costs per week. This result further suggests how empowered respondents are as they can use the mobile phone for a variety of activities which will result in social and economic empowerment.

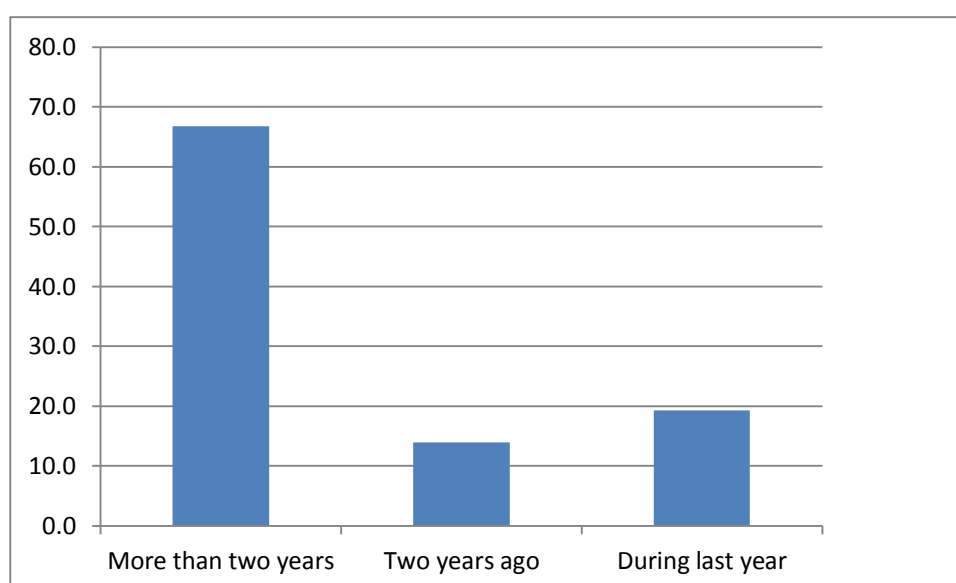


Figure 6.1: Number of years of mobile phone in usage
Source: Survey data, 2012

6.3.2 Mobile phone service providers

This section of the chapter attempts to find out the number of mobile phone service providers that are available in the study area which is rural. At the time of carrying out the survey from December 2011 to March 2012, there were five mobile phone service providers in Ghana, namely: Airtel, Expresso, MTN, TiGo and Vodafone. Although Glo Mobile had been licensed in 2008 by the National Communication Authority (NCA) to operate in the country, they were not operational at the time of the study, so were not

included. The respondents were therefore required to indicate which of the five operational service providers were accessible and they used. This was to know whether being a rural area mobile services are available and if so to find out from them the quality of the service. The information provided will lead to the introduction of mobile services and a policy intervention in improving the ICT infrastructure. Availability of a mobile service provider has a direct link to poverty alleviation as the services provided may lead to social and economic empowerment.

Table 6.5 below indicates the number of respondents who use the respective mobile service providers in the study area. This question was responded to by two hundred and ninety one respondents.

Table 6.5: Use of particular mobile phone service provider

Mobile Phone Service Provider	Number of Respondents (N=291)	Percentage
MTN	213	73.2
TiGo	41	14.1
Airtel	22	7.6
Vodafone	14	4.8
Expresso	1	0.3
Total	291	100.0

Source: Survey data, 2012

Majority of the respondents (213) representing 73 percent of the total use the services of MTN. This was followed by TiGo which was used by 41 respondents representing 14 percent. The result is not surprising as MTN is the leading service provider in terms of market share with over 10 million users (NCA, 2012). However, what is surprising about this result is that Vodafone Mobile which is ranked second in terms of market share of over

4 million users was a distant fourth with only 4.8 percent of market share in the study area. A number of reasons may be adduced for this situation, chiefly among them is the issue of network connection not being reliable in the study area. This was confirmed during the FGD where participants reported of the erratic nature of Vodafone services in the study area. They further complained that there is a hidden cost which is unknown to subscribers in that if one purchases airtime of GH¢2 and below, some amount is deducted. However, those who purchase airtime of GH¢5 and above receive a 100 percent bonus. In their view, since they cannot afford the GH¢5 airtime at a go, they prefer to use MTN. Hence, the increased number of MTN subscribers in the study area.

6.3.3 Quality of mobile service/network connection

The quality of the mobile service coverage in the study area was considered generally to be good as majority of them (between 51-83%) indicated moderate to very good network in their response. This is illustrated by table 6.6 below. What this suggests is that they do not have to move out of their houses or work places to a distant location to use their mobile phones. This is a good indicator of quality of service in the study area. It may therefore be concluded that mobile phone service is generally good in the study area and could therefore encourage usage of the service.

Table 6.6: Quality of mobile service/network connection

Mobile service provider	No network	Very weak network	Weak network	Moderate network	Good network	Very good network	Percentage
Vodafone	1.7	6.9	8.6	17.3	51.7	13.8	100.0
Airtel	3.0	0	30.3	27.3	36.4	3.0	100.0
Expresso	0	0	0	100.0	0	0	100.0
MTN	0	2.9	21.4	37.5	19.1	19.1	100.0
Tigo	1.2	14.3	33.4	39.3	5.9	5.9	100.0

Source: Survey data, 2012: N=291

With respect to the quality of service provided by the mobile service providers, it was noted that Vodafone had the best service connection as 83 percent of the respondents reported moderate to very good mobile service quality. It is, therefore, surprising that most of the respondents use the service of MTN more than that of Vodafone. Seventy six percent of the respondents reported moderate to very good quality of service by MTN. This is an indication that there are other factors such as pricing, good customer relations that respondents take into consideration in using a particular mobile service provider apart from quality of service. Almost half (49%) of the respondents reported either no network or very weak network quality of service provided by TiGo. With the generally good quality of service, it is expected that more people will use the mobile phone for a number of activities that will inure to improvement in their livelihoods and well-being.

6.3.4 SIM cards ownership

As a follow-up to the question on mobile phone service providers that respondents use, those who owned mobile phones were further asked to indicate the number of SIM cards they owned. As indicated below by figure 6.2, one hundred and three respondents reported that they owned two or more mobile phones.

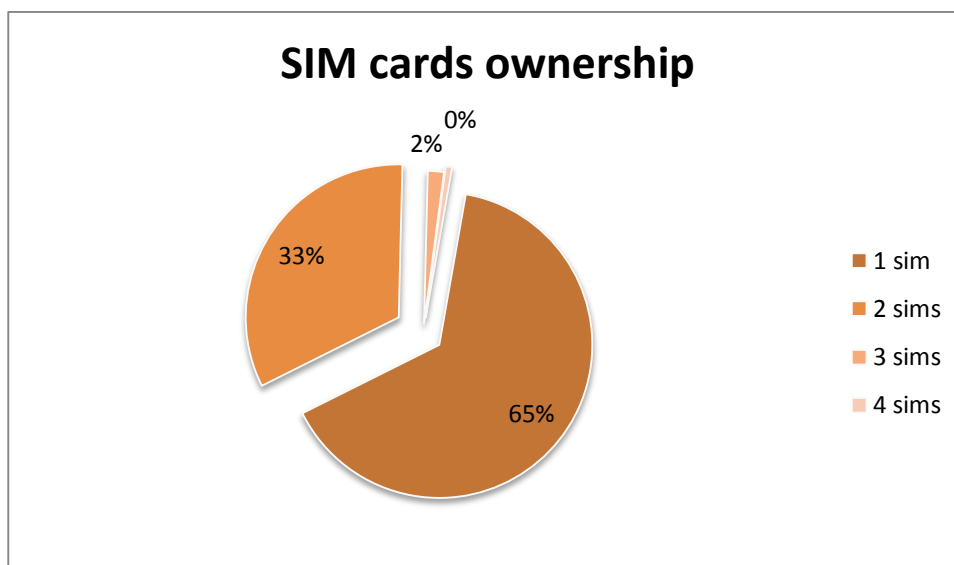


Figure 6.2: SIM cards ownership
Source: Survey data, 2012

Out of this number, 96 of them representing 93 percent of the total respondents to this question had two SIM cards. Five (5%) respondents owned three SIM cards and two (2%) owned four SIM cards. In the course of the study, it was noticed that majority of those who owned two or more SIM cards possessed mobile phones that had the facility for two SIM cards. The others had only one mobile phone but multiple SIM cards which they interchanged to use.

As a follow-up to the number of SIM cards they owned, respondents were requested to provide reasons for owning more than one SIM card. Various reasons were provided by the respondents for using multiple SIM cards. As shown by table 6.7 below, 61 respondents representing 59 percent of the total owned more than one SIM card to be able to communicate when one network is down.

Table 6.7: Multiple ownership of SIM cards - reasons

Reasons	Number of Respondents (N=103)	Percentage
Lower call rates of service provider	9	8.7
To be able to communicate at places where usual network has no service	23	22.3
To be able to communicate when one network is down	61	59.2
To benefit from promotions	22	21.4
To save cost on network to network	50	48.6

Source: Survey data, 2012

This was followed by 50 (49%) respondents who owned more than one SIM card to save cost on network to network. The reason given for this result was that call rates within networks are lower than across networks. In order to save cost, respondents would rather use the same network to communicate rather than a different network or service provider. That is the reason for saving cost within networks but not necessarily to benefit from lower call rates of service provider. It is therefore not surprising that very few respondents (9%) indicated owning more than one SIM card because of lower call rates of service provider. This suggests that lower call rates by service providers do not necessarily entice people to use the services of a mobile phone service provider.

Again, the results bring to the fore the issue of the reliability of the services provided by the mobile service providers. Users are aware that network connectivity will be down for some time so in order to stay connected, they had to use the services of another service provider. This accounts for why almost 50 percent of the respondents would rather have an additional SIM card and communicate with friends and relations in the same network instead of across networks. The FGD participants confirmed that mobile phones are now ‘a

part of them' and they cannot do without it for a day. A reason for double SIM card to stay connected when one network is down.

6.3.5 Purpose for using mobile phone among respondents

The study was designed to find out from the respondents what they mostly used a mobile phone for. They were required to provide their responses in order of priority. This was basically to find out about the purpose for which they use a mobile phone which was different from how they use a mobile phone. The 'how' for using a phone was interpreted by the researcher to mean the application of the mobile phone features. They were provided with nine options to choose from. The results of the survey are presented by figure 6.3 below.

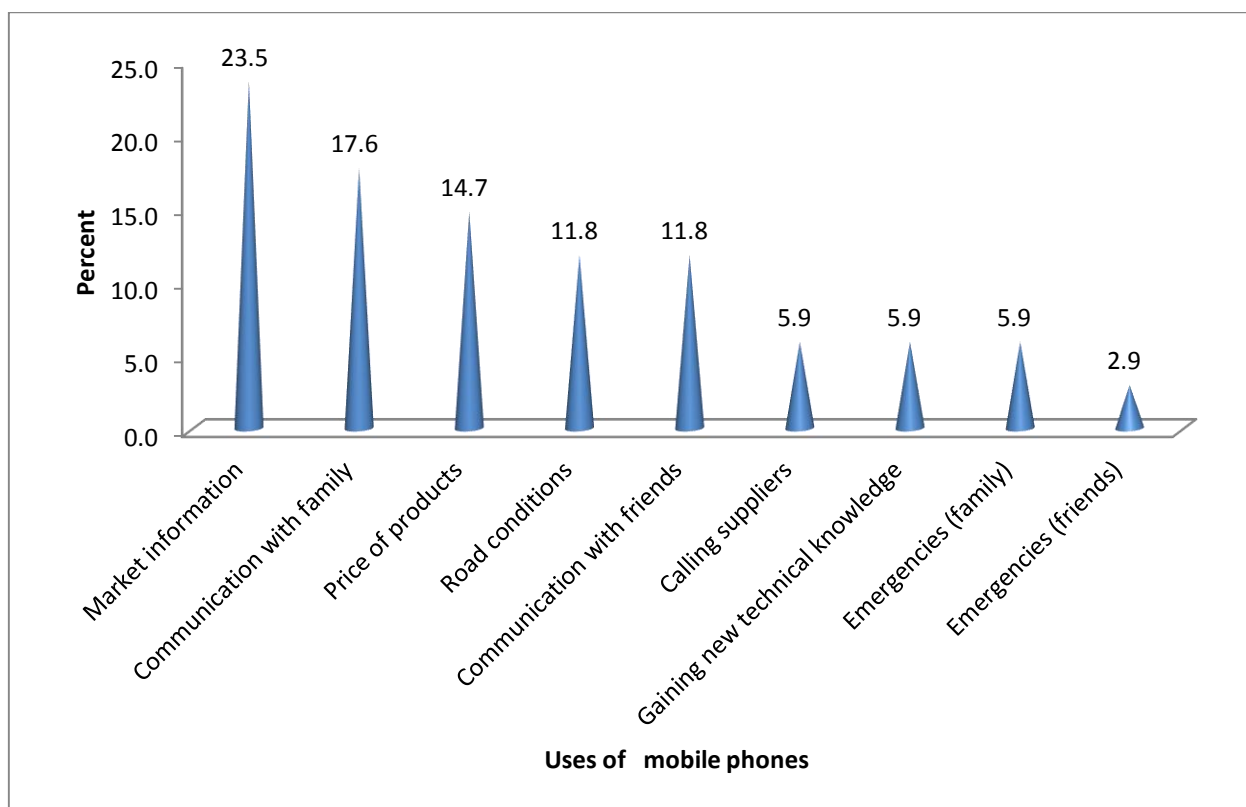


Figure 6.3: Purpose for mobile phone usage among respondents
Source: Survey data, 2012

From figure 6.3, a little over a fifth (23.5%) of the respondents used the mobile phone for market information. This was to find out about market trends in terms of movement of goods and services and prices of agricultural produce in nearby villages, and distant towns. This result is to be expected as the study areas are rural and predominantly agricultural and the likelihood of middlemen dictating the prices cannot be ruled out. In the view of Greenberg (2005), this is a classic case where information can have value. In its simplest examples, products (crops, fish, wool, etc) are sold to a middleman. Traditionally, the prices are set by the middleman. With appropriate communications, the seller can find out what the current market prices are, and therefore demand a higher wholesale price. A study by Sife, Kiondo and Lyimo-Macha (2010) showed that mobile phones contribute to market information for agriculture and livestock produce as it enhanced the ability of the respondents to directly discuss prices with buyers and cross check prices for their produce instead of relying on middlemen or a few buyers. The findings suggest that mobile usage enables rural farmers to access better markets and prices for their produce and were able to overcome the problem of being cheated by middlemen. The Technical Centre for Agricultural and Rural Cooperation (2006) and Jenson, Myers and Southwood (2004) have shown that farmers with access to market information in Mozambique obtain higher farm prices through the Mozambique Agricultural Marketing Service (SIMA). It is therefore significant that a little over a fifth of the respondents used mobile phones for market information in the study areas. This therefore empowers the respondents and enables them to receive more money than would otherwise have been the case thereby improving their livelihoods.

Communication with family members was reported by 17.6 percent of the respondents. This gives an indication of the strong family relations of the respondents as they keep in constant touch with relations on how well they are doing either health-wise or financially. They need to keep in constant touch as 68 percent and 18 percent of the respondents reported that they had family members who lived outside the community and abroad respectively. They therefore had to be in constant touch with them because as reported earlier on, 41.7 percent of them depend either slightly or highly on relatives living in other communities. This is an indication that the respondents are not socially isolated and that there is social cohesion through the use of mobile phones. This result is affirmed by Scott *et. al.* (2004) who reported that at present it is social reasons that drive phone use amongst the poor and that phone use is an enhanced sense of well-being.

About 14.7 percent of the respondents indicated that they use the mobile phone to find out about the price of products. Since as reported earlier on about 39 percent of them earn their living through crop farming, it is necessary for them to know the market price of their produce and at which markets before they proceed to send them to the market centre in order to obtain better prices for their produce. This is supported by a study in rural Thailand which found that the introduction of telephones enabled farmers to check prices regularly and had as much as doubled farm income (International Telecommunications Union, 1999) as cited by Kenny (2002). Dholakia and Kshetri (2002) report that farmers in Bangladesh have been using mobile telephones to monitor market prices of rice, vegetables and other farm produce. They further report that farmers in remote areas of Cote d'Ivoire share mobile telephones to track the hourly fluctuations in cocoa and coffee prices. Similarly,

fishermen in India have long been using mobile phones to collect information on prices at different ports before deciding where to land their catch (Rai, 2001). The flexibility of the technology enables them to seek information while on the high sea.

Additionally, they require to know the price of farm inputs like fertilizers and agro-chemicals. It is instructive to note that 5.9 percent of the respondents use the mobile phone to gain new technical knowledge. With respect to a similar study by Souter *et al.* (2005), 2.5 percent of the respondents described “gaining new knowledge” as their first, second and third most significant use of telephone. The study area being rural lacked a number of utilities such as good roads and it was not surprising that 11.8 percent of the respondents are very particular about the state of the road and so use the mobile phone to find out about that before they embark on a journey.

Communication with friends was cited by 11.8 percent of the respondents as one of the reasons for using a mobile phone. They therefore take socialization very seriously and could be assumed that they are not socially excluded. In this respect group formation and networking cannot be ruled out. They can use the groups so formed to seek for economic benefits. In times of emergencies such as ill-health, floods, fire outbreaks and death, about 9 percent of them can reach family and friends through the use of a mobile phone because of the speed and ease with which messages can be conveyed. It also gives an assurance that the message has been delivered and immediate response will be received. This is an indication that they are not too vulnerable in times of emergencies because they can quickly get assistance with the use of the mobile phone. Souter *et al.* (2005) cited by Duncombe (2012) found that mobile phones were extensively used in poor communities to

maintain social (particularly family) networks, and were considered essential for responding quickly to emergencies. A study by Greenberg (2005) found that even in the poorest areas, people willingly spend several dollars per month on personal communications. This includes talking to family in local cities or foreign countries, calls about remittances and making appointments for medical care or government interactions. The ability to place a phone call can either avoid a time-consuming and potentially risky trip to the city, or by scheduling appointments, make the trip more effective. All of these benefits can reduce quality of life, reduce costs and reduce time spent away from food or income producing activities (Greenberg, 2005).

The result is skewed towards economic empowerment than social, so it is an entry point for policy intervention. It is also to be noticed that technical information is underutilized especially for extension activities. There is therefore the need for more sensitization for using the mobile phone for gaining more technical information.

6.3.6 Number of times of mobile phone used by respondents

It has been observed overtime and through the development of the mobile telephony that it can perform a number of functions from making and receiving calls to transfer of document and using the internet. Following from the question on the purposes for which a mobile phone is used by the respondents; it became necessary to ask how they use a mobile phone during the times they use it. The responses are presented by figure 6.4 below.

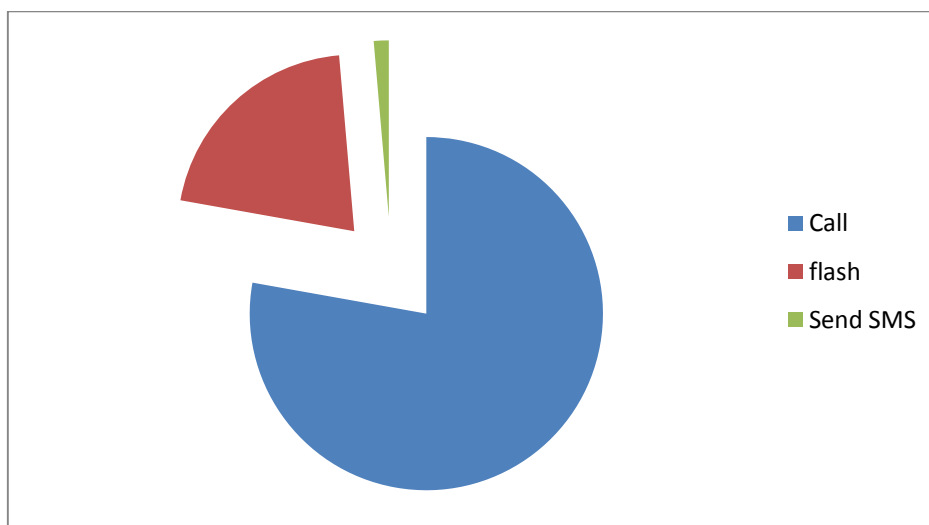


Figure 6.4: Number of times of mobile phone used by respondents

Source: Survey data, 2012

The majority of the respondents (284) representing 79 percent of those who responded to this question used the mobile phone to make calls to friends and relations. Over 80 percent of respondents from a Tanzania study (Samuel *et al.*, 2007) cited by Duncombe (2012) stated that the use of mobile phones had improved family relationships, made communication easier, as well as reducing the need to travel long distances to communicate with relatives as done previously. This result is to be expected as it is the primary use of a mobile phone and users receive prompt feedback if they require one for placing a call. Given that about 32.8 percent of the respondents as reported earlier on had no formal education with an equal percentage (37.1%) having completed JSS, it is to be expected that the primary function of the mobile phone will be used. It is to be noted that making calls can reduce the cost of travelling. This could have been reduced further if the cheaper option of using SMS were to be used more. However, because most of the respondents are illiterate, they cannot use the cheaper option of sending text messages and rather resort to

making calls. In effect because they are illiterate, the transaction cost of using mobile phone is higher.

A total of 70 respondents representing 20 percent of the total used it for ‘beeping’ or ‘flashing’ friends and relations. According to Souter *et al.* (2003), ‘beeping’ or ‘flashing’ is the practice of dialing another user’s number and letting it ring but hanging up before the call is answered, with the aim of prompting that person – for example, a more prosperous relative – to call back. Donner (2005) documents the widespread phenomenon of ‘beeping’ in Uganda. The most common signals identified by Donner (2005) are to request the recipient to call back, to convey a ‘pre-negotiated instrumental message’ such as ‘pick me up now’ or to simply convey that the beeper is thinking of the recipient. This system ensures communication without speaking or typing a single word. Most importantly, it costs nothing to the beeper. One of the ‘rules of beeping’ according to Donner (2005) is ‘the rich guy pays’.

Charkraborty (2004) also reports of a ‘missed call’ culture in Sitakund, Bangladesh, arising as a response to the high cost of calls from mobiles, where users have similarly devised systems where the number of times the caller allows the phone to ring before he/she disconnects the line has a specific signal (e.g., one ring = ‘I am at home, where are you?; two rings = ‘I am at your house, where are you?, etc.). Some of the examples given by Donner (2005) and Charkraborty (2004) were confirmed during the FGD and KII where the participants indicated that in some instances they use ‘beeping’ to confirm a pre-arranged meeting, to confirm that someone is waiting at a particular location or to inform the

recipient that somebody he/she has been looking for is in the house and can come over. Only 5(1.4%) respondents indicated that they use the mobile phone to send SMS. This may be due to the fact that the respondents may not be conversant with the services available, lack of the necessary technical skills required to send messages.

Results of the FGD confirmed the view that the respondents were not literate enough to send or receive text messages, so their preference for making calls where they can listen and understand what is being communicated clearly and can also express themselves very well without any misinterpretation by a third party. They were also of the view that speaking to the person directly ensures confidentiality of what is being discussed. Some of the views expressed by the respondents are summarized below: I do not want anybody to know that I am seeking for financial or material assistance from a relative living outside; I know that sending a text message is cheaper than making a call, but I cannot read and write; My peers will laugh at me if I ask them to send the message for me. In that case respondents will rather place a voice call which is more expensive than sending a text message or use the 'beeping' or 'flashing' system as a measure of reducing cost.

6.3.7 Use of mobile phone applications

With improvement in mobile technology, mobile phones now have features such as radio, camera, television, internet connection, music player, clock, calendar and calculator among many others. These features and functions depend on the type of mobile phone and model and their applications depend on the capability and preferences of the users. To find out which of the mobile phone applications are used by respondents for poverty alleviation,

they were required to indicate which of the features they use often if their mobile phone has them. The results are shown by table 6.8 below.

Table 6.8: Use of mobile phone applications

Application	Number of Respondents (N=412)	Percentage	Rank
Camera	82	19.9	6
Internet connection	39	9.5	7
Music Player	115	27.9	3
Radio	100	24.3	4
SMS	214	51.9	2
Television	10	2.4	8
Torchlight	84	20.4	5
Voice call	281	68.2	1

Source: Survey data, 2012

The results as presented by table 6.8 indicate that respondents use voice call (68.2%) more than any other feature on their mobile phone. This was followed by respondents who use SMS (52%) which are a bit surprising as in response to a previous question (**Section 6.3.6**), only 5(1.4%) respondents indicated that they use the mobile phone to send SMS. A possible explanation for this anomaly might be due to the fact that the questions might have been misunderstood by the respondents thereby resulting in the wide disparity in the responses. Sending a short and concise message to a recipient conveys the message quickly and it is cost-effective instead of the use of a voice call. Also with various promotional activities being undertaken by the mobile phone service providers, it is to be expected that most of the respondents would use such a feature on their mobile phone.

The low usage of internet connection (10%) might be due to the complex nature of how to get connectivity and also the fact that respondents may not be technically competent to use that feature. The results of the low usage of internet connection are consistent with a three-country study by Souter *et al.* (2005) which reported that in practice, in spite of the

availability of Internet facilities in local towns, less than 2 percent of those surveyed had ever made any use of these. More than a quarter (28%) of the respondents uses the music player feature on their mobile phone. The implication of this result is that it is likely to lead to cost reduction and cost savings by the respondents as they do not have to acquire either a camera, music player, radio or television as a simple mobile phone can provide them with all these features. It is also likely to improve the learning and literacy skills of the respondents as they have to keep up with the technology in order to use it efficiently and effectively. The wide range of use of the mobile phone applications indicate that the poor are interested in multiple features of the mobile phone and these should therefore be enhanced to ensure maximum usage by them.

6.3.8 Sharing of mobile phones

In the view of Lopez (2000), a mobile phone nominally belongs to a single person, but it is often informally shared between several people in the community, due to a strong culture of sharing communication tools. The developed world model of personal ownership of a phone is not relevant, or indeed appropriate, to the developing world. For according to James (2005), the 'Northern' model of an individually owned phone purchased by its one user may not apply in the global south where there has been a long history of shared ownership and access models in relation to ICTs. This gives way to a multiplier effect, as the impact of a single phone is spread out across several individuals, or even an entire community (Coyle, 2005). Konkka's research on mobile phone adoption in India found that the strong collectivist sense of group communication, trust, and emotional bonding plays a strong role in how mobile phones are used. The research allows one to conclude

that mobile telephony in India is seen more as a collective means of communication, rather than a personal communication device – as is the case in most developed economies. Collectivist norms are exhibited when, for example, sons and daughters ask to borrow their father's mobile when going out, or when it is considered unfriendly to deny a friend or colleague the use of your mobile phone. Similar norms can be identified in a number of African countries. In Kenya, for example, while most people cannot afford a cell phone, this has not prevented thousands of poor villagers from transforming their friends and families into walking communications nodes. This setup is deeply rooted in the traditional African communal mode of living (Wachira, 2003).

For these reasons, the study sought to find out whether or not those respondents who do not own a mobile phone use mobile phones, if any and through what mechanisms. A total of one hundred and sixteen respondents indicated that they do not own mobile phones (**Section 6.2**). Eighty five of this number representing 73 percent indicated that even though they do not own a mobile phone, they still used a mobile phone. They were then required to indicate through which mechanisms they use mobile phones. The survey results are presented by table 6.9 below.

Table 6.9: Sharing of mobile phones

Mechanism for Using Mobile Phones	Number of Respondents (N=85)	Percentage
Use mobile pay phone (space-to-space)	22	25.9
Borrow a mobile phone and use it myself	31	36.5
Use other people's handset and insert own SIM card	8	9.4
Ask a mobile phone owner to call a number and then talk	24	28.2
Total	85	100.0

Source: Survey data, 2012

The study revealed that more than a third (37%) of those who do not own a mobile phone borrow a phone and use it themselves. This may be from a friend or a relative in which case they may not pay for the use of the airtime. In this case it is likely that they may use the functions of the phone other than the calling mode. They may use it to listen to radio, as a camera or even a calculator. The use of these features does not have any cost implications. Other non-owners of mobile phones (28%) use the facility through asking someone who owns a mobile phone to call a number and then hand it over to him/her to speak. This is different from another 26 percent who use the services of mobile pay phone (space-to-space). Very small proportions of the respondents (9%) use other people's handset and insert their own SIM card and use. These may be people who might have owned a mobile phone previously but the phone may have been out of order and in view of the high cost of mobile phones, have not been able to replace it. They may also be people who might have bought the SIM card cheaply during promotional period with the view to acquire a mobile in future.

What this finding reveals is that the use of mobile phone is not limited to only those who own the handset but extends to those who do not have a handset as well. The larger implication is that usage statistics as provided by the mobile service providers and the NCA may not be a true reflection in view of the fact that use of mobile phones as noted above goes beyond the number of subscribers of mobile phone service providers and the number of handsets. It is also to be noted that though the number of people who use other people's handset is small, it is a good idea because any information passed through mobile phones

will be received. Mobile phones play a useful informational role in the lives of the people and its usage should be encouraged at all levels.

6.3.9 Expenditure on mobile phones

The respondents who own mobile phones were requested to provide on the average how much they spend on mobile phones per week in Ghana Cedis in order to establish how affordable mobile services were. The amount spent has been interpreted in this study to cover only the amount spent on acquiring mobile phone credit or airtime. This excludes the money spent on recharging the phone battery in households without electricity, for repair and maintenance of the mobile handset. The results are presented by figure 6.5 below.

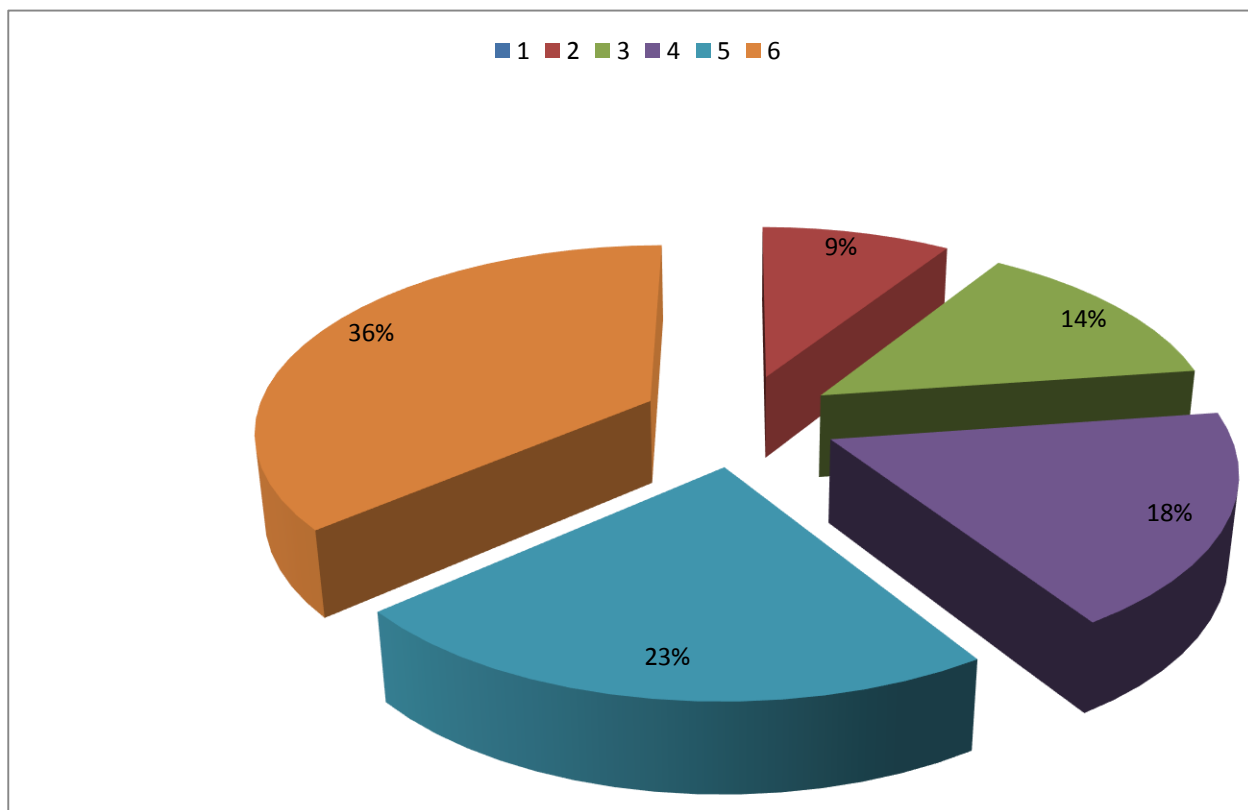


Figure 6.5: Average amount spent on mobile phone per week

Source: Survey data, 2012

As shown by figure 6.5, One hundred and seven respondents representing 36 percent of the total spend 6 Ghana Cedis (\$3) per week on mobile phone airtime. This is a very important result as it indicates how valuable the mobile phone is to the respondents. Indeed, they indicate that it helps in reducing transaction cost, increase income, empowers them socially and allows them to network which leads to economic empowerment.

6.4 Access to and Use of Radio

Radio is still the dominant mass-medium in Africa with the widest geographical reach and the highest audiences compared with television (TV), newspapers and other information and communication technologies (ICTs). Overall, radio is enjoying a renaissance and numbers of small local stations have exploded over the last twenty years, due to democratization and market liberalization and also to more affordable technologies. Radio seems to have proven itself as a developmental tool, particularly with the rise of community and local radios, which have facilitated a far more participatory and horizontal type of communication than was possible with the older, centralized broadcasting model of the 1960s and 70s (Myers, 2008). It is used both by the rich, poor, the young and old in society and it delivers very useful and diverse information to people in the remotest areas. With respect to the useful and diversified nature of radio, it is natural that users of radio choose radio stations of preference, the programmes and the listening times of preference to them. To have an understanding of radio access and use is important because it brings to the fore the kinds of information that people obtain through radio with respect to their livelihood activities. At the time of the fieldwork (2011/2012), there were 164 operational radio stations in Ghana.

To have a good understanding of the access and use of radio by the respondents, they were required to indicate which radio stations they listen to frequently and why, their favourite radio programme, and the time of day they prefer to listen to a radio programme.

6.4.1 Radio stations listened to frequently

The respondents were requested to indicate a maximum of three radio stations they listen to frequently and the reason for listening to those radio stations. They were provided with a list of nine radio stations to choose from and an option to provide additional stations they listen to that were not provided by the researcher. The results are shown in figure 6.6 below.

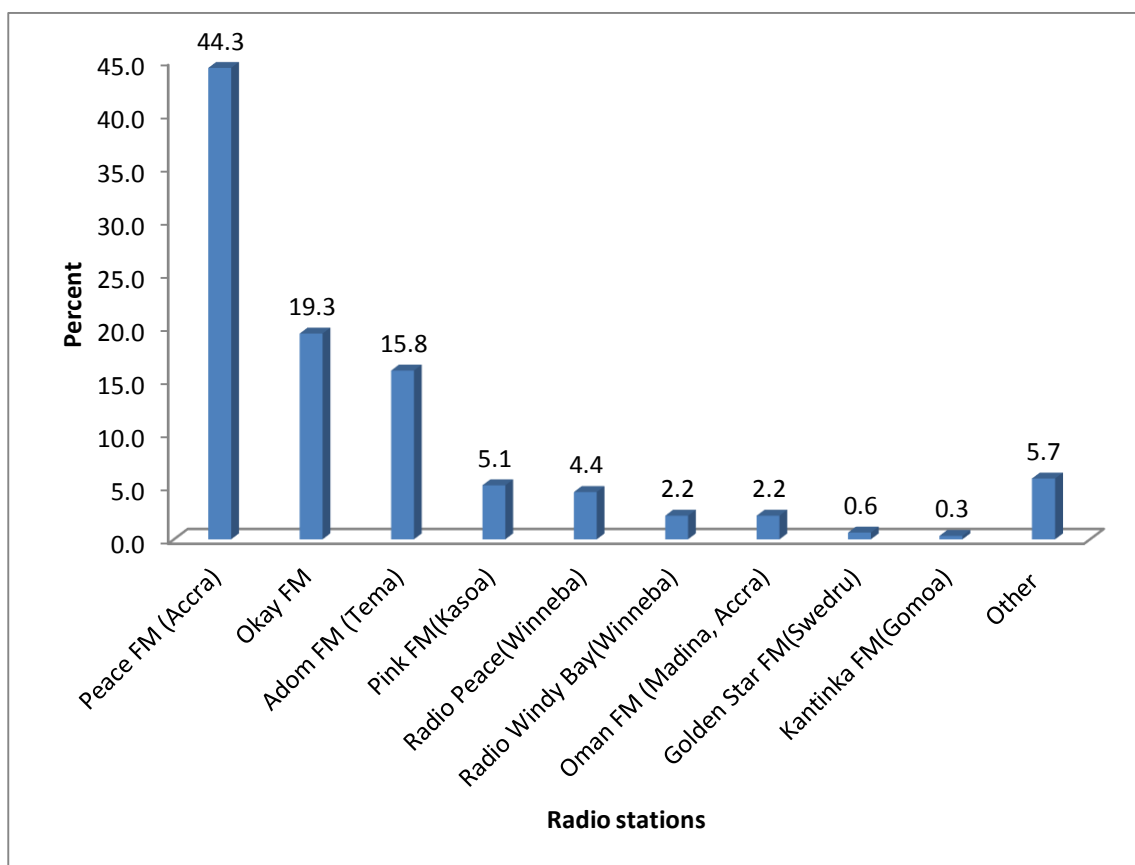


Figure 6.6: Proportional distribution of frequently listened radio stations

Source: Survey data, 2012

The survey results as presented by figure 6.6 indicate that out of the nine radio stations listed, five of them were either in the study area or close to the study area with the rest in Accra and Tema which is over a hundred kilometers from the study area. However, respondents listened to radio stations outside the study area more than those in the study area. Peace FM which is a commercial FM station located in Accra was listened to by 44 percent of the respondents. The reason for listening to Peace FM by most of the respondents was attributed to the language used which is understood by most of them, the clear signals and the type of content they produce. This was followed at a distance by Okay FM (19.3%) and Adom FM (15.8%) both commercial FM stations located in Accra and Tema respectively. This means over 79 percent of the respondents listen to radio stations outside the study area which is a bit surprising. Radio Peace, a community radio station located in Winneba was listened to by a little over 4 percent of the respondents. Although Radio Peace broadcast agricultural programmes once in a week with a repeat in the same week, the respondents were of the view that the time of broadcast was not suitable to them, hence the low patronage.

All the radio stations that the respondents listened to frequently broadcast their programmes in one of the local Akan languages (Fante or Twi) which most of the respondents either speak or can understand. This is the main reason for listening to these radio stations and also the fact that they broadcast programmes that the respondents are interested in. For example, Peace FM and Adom FM have a newspaper review segment in their programme from Monday to Friday in the morning for over four hours. This programme reviews the major news making the rounds and also has a discussion segment

which is done by panelists who represent the major political parties. In addition to this, listeners can also call into the programme and make a contribution. This is an indication that language of broadcast influences listenership of radio programmes. This is because the national broadcaster (Ghana Broadcasting Corporation) was not listened to though it has very clear signals in the study area, but they broadcast in the English language. In addition to the language influence, the programme content which is basically their news items, entertainment programmes and social programmes these radio stations broadcast also influence listenership.

In producing these programmes, the rich rendering of the Akan language attracts many listeners to them. For example, a Linguistics Professor who serves as a panel member for the newspaper review for Peace FM attracts many listeners not only for his contribution to the programme but also how he teaches correct pronunciation and usage of the Akan language. The issue of language, clear and noise-free sound, time of broadcast and content of programmes was confirmed by most of the FGD participants as the key reasons for listening to one radio station or another. It can therefore be assumed that these factors affect the information received from radio programmes which can in turn influence the role that radio plays in their livelihoods and poverty reduction activities.

6.4.2 Radio programme and information obtained from radio

Radio is regarded as a medium through which the citizenry are provided with information for educational, recreational and entertainment purposes, and for gaining general knowledge. The type of radio programme that a person listens to determines the type of

information they receive for their information and communication needs and how it contributes to their livelihoods and poverty reduction activities. Content is therefore one of the important dimensions of media use. With respect to the study, radio programmes were categorized into eight and respondents were required to rank all that is applicable to them. The radio programmes are on: agricultural and rural development, business and economic, cultural, entertainment and musical, environment and health, news (local and international), political, and religious programmes. The results of the survey are presented in figure 6.7 below.

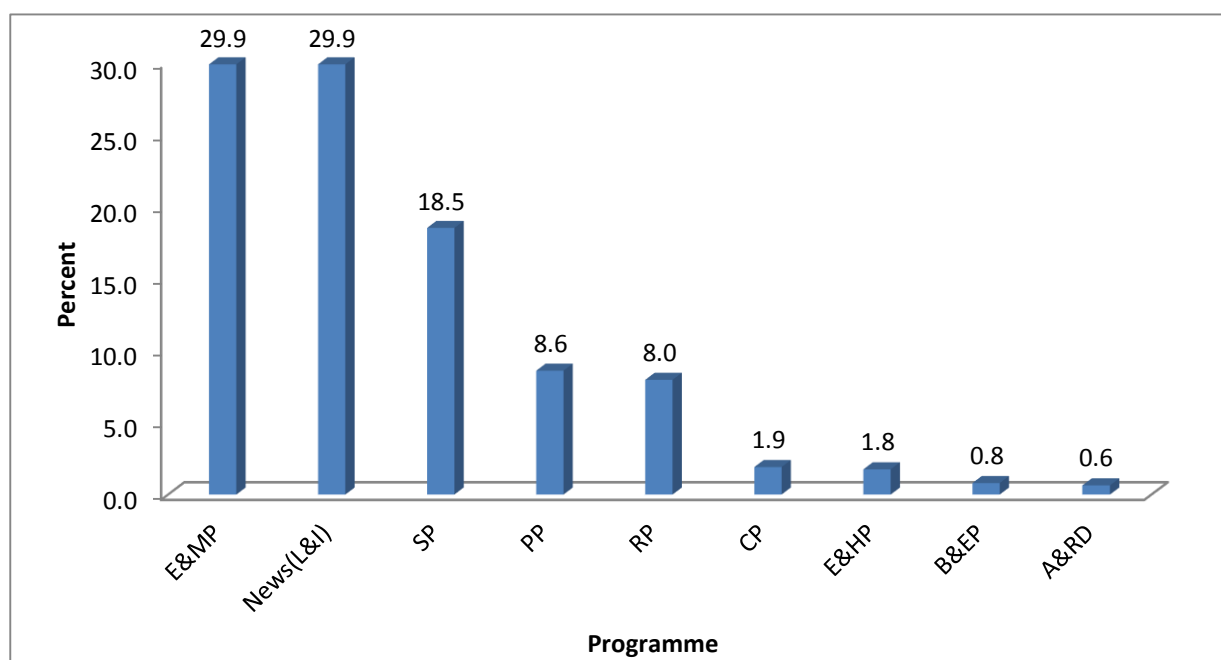


Figure 6.7: Proportional distribution of radio programmes listened to
Source: Survey data, 2012

Note: E&MP(Entertainment and musical programmes); SP(Social programmes); PP(Political programmes); RP(Religious programmes); CP(Cultural programmes); E&HP(Environment and health programmes); B&EP(Business and Economic programmes); A&RD(Agriculture and Rural Development programmes); News(L&I) ((News (Local&International))

The results of the survey as presented by figure 6.7 indicate that almost a third (29.9%) of the respondents listened to entertainment and musical programmes and local and

international news more than any other programme aired by their preferred radio stations. This was followed by social programmes (18.5%) and political programmes (8.6%). The results of the study confirm an earlier work by Whaites (2005) which analyzed rural FM radio in Ghana. That study indicated that the most favoured and listened to programme was music, followed by news and religious programmes. This might have influenced the radio stations to provide the listeners what they want and not necessarily programmes that will contribute to livelihood enhancement and poverty reduction activities. Respondents have acquired urban-centred taste for radio listening. Little wonder environment and health programmes (1.8%), business and economic programmes (0.8%) and agriculture and rural development programmes (0.6%) were ranked as the least favourite programmes listened to by the respondents. This is a bit surprising especially with respect to agriculture and rural development programmes given that almost 45 percent of the respondents had their main occupation as either animal farming, crop farming agricultural trading or fishing/fishmongers. However, the explanation offered by some of the participants during the FGD was to the effect that the time for airing the agricultural programmes was not suitable for them. The low response for the environment and health as well as the business and economic programmes was attributed to the language (English) in which the programmes are broadcast. The conclusion that can be deduced from these results are that most of the programmes (environment, health, business, economic, and agriculture and rural development) which should play a significant role in the livelihoods and poverty reduction activities of the respondents are not being listened to as would have been expected. The time for broadcasting these educational programmes and the language (English) of broadcast are not suitable for the respondents. Respondents rather preferred

social and entertainment programmes to the educational ones. There is the need to have more community radio programmes which will broadcast programmes in the indigenous languages and whose main objective should be geared towards livelihood enhancement and poverty reduction activities.

According to Myers (2008) the world over, people use radio primarily as a source of news and music, and African listeners are no exception. Balancing Act's latest research (Balancing Act, 2008) as cited by Myers (2008) asked large representative samples of listeners from nine Sub-Saharan countries about what kinds of radio programmes they listened to on a daily basis comparing news, music, sport, talk, religion, call-ins and information. The results show that radio is listened to almost equally for news and music (a rough average of 57% across all nine countries listened to the radio *daily* for news and 58% for music). This is followed by sport 29 percent, 20 percent for religion, 18 percent for call-ins, 13 percent for 'information' and 9 percent for 'talk' (Balancing Act, 2008) as quoted by Myers (2008).

6.4.3 Time for listening to radio programmes

Apart from content of a radio programme, the time for airing and listening to a radio programme is also considered a very important dimension for media use. Respondents were therefore provided with a range of time from dawn to night to choose all that is applicable to them with respect to their preferred time for listening to a radio programme. The results are presented by figure 6.8 below.

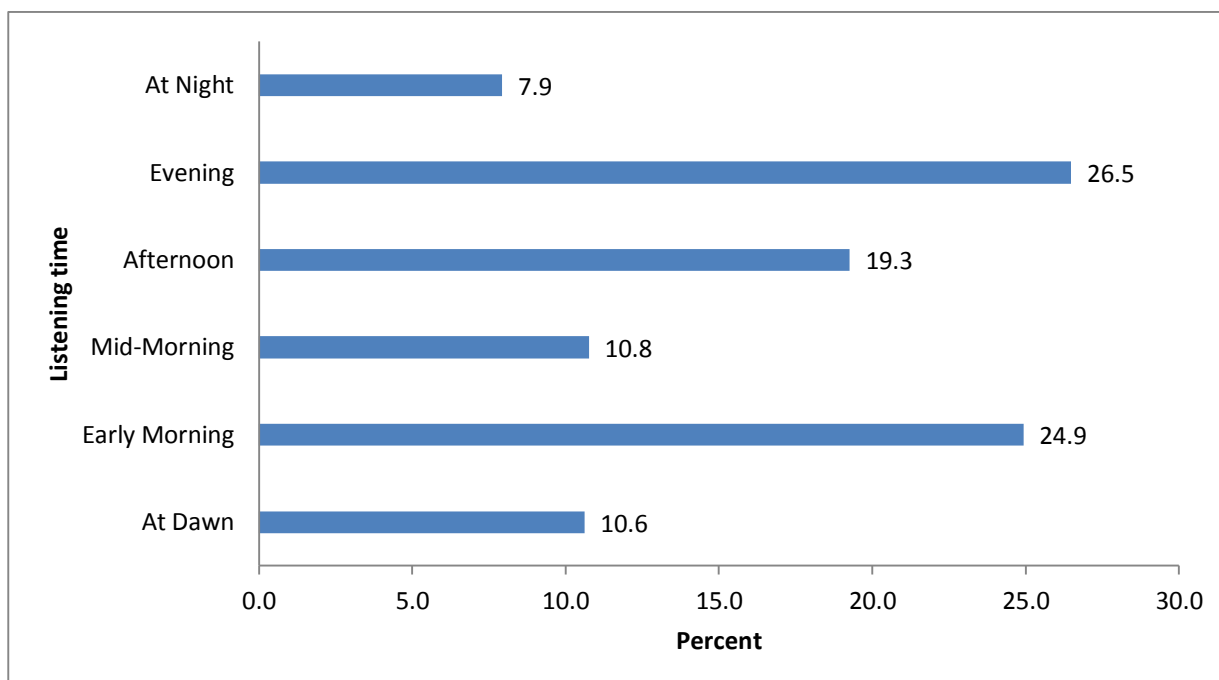


Figure 6.8: Radio listening time

Source: Survey data, 2012

Note: Dawn (4am-5am); Early morning (6am-9am); Mid-morning (10.00am-12 noon); Afternoon (12 noon-4pm); Evening (4pm-8pm); Night (9pm-12 midnight)

Most of the respondents (26.5%) preferred listening to radio in the evening with the least number of respondents (7.9%) listening to radio at night. Almost a quarter (24.9%) of the respondents listened to radio in the early morning hours, whilst about a fifth of them (19.3%) listen to radio programmes in the afternoon. The radio listening time follows a trend which broadcasters should take advantage of. As indicated by the results of the survey in figure 6.8, listenership starts slowly at dawn, peaks in the early morning hours when respondents will be preparing to go to work and falls during the mid-morning hours where respondents will be serious at their work. Listenership start building up in the afternoon hours and peaks in the evening. According to a study by Audience Dialogue (2006), the number of people listening to radio usually reaches a peak around meal times, particularly around 6 to 8 a.m, 12 noon to 2 p.m, and 6 to 8 p.m. In countries where most

people have TV, the evening peak usually applies to TV, not to radio. Radio stations should therefore follow this listening trend and tie in their programmes which will meet the information needs of the respondents as far as their livelihood enhancement and poverty reduction activities are concerned. Important messages for wealth creation can be targeted for the evening.

6.5 Access to and Use of Television

The television complements the radio medium as a mass medium in the dissemination of all kinds of information with the view to improve the life of the citizenry. It does not reach a wide geographical area as radio. This may be due to the use of electricity to power the televisions which may not be available in all areas especially rural communities which may lack such basic amenity. For some rural areas, though electricity may be available, the television reception may be poor and thereby limiting access. The issue of poor reception of television access can be overcome through the use of satellite receivers. This has cost implications. Use of satellite receivers if one can afford it, provides a lot of television channels with a wide variety of programmes. Televisions also tend to be a bit expensive in terms of cost and not many people can afford it. Use of English in most of the television programmes may also serve as a hindrance for its effective use. The television medium provides a number of useful and diversified programmes aimed at children, young adults, adults and the aged. These programmes assist with respect to the livelihood activities of the viewers.

During the fieldwork, it was observed that many people congregated at video centres to watch television at some specified period especially in the evenings. In most of the cases they will be watching either one of the Ghanaian or Nigerian movies or football, mostly the UEFA Championship. These programmes are normally shown on the pay TV channels which majority of the people do not subscribe to. This is not an indication that they do not have access to televisions.

To have a good understanding of the access and use of television by the respondents, they were required to indicate which television stations in Ghana they viewed frequently and why, their favourite television programmes, and the time of day they prefer to watch a television programme.

6.5.1 Television stations viewed frequently

The respondents were required to choose from a list of television stations and to rank them in order of those that they frequently view. This was to determine their preference of television stations and why they use such stations frequently. The results are shown by table 6.10 below.

Table 6.10: Distribution of proportional television stations accessed and used by respondents

Station	Frequency (N=192)	Percentage
GTV	57	29.7
Metro TV	12	6.3
TV Africa	3	1.6
TV3	106	55.2
Crystal TV	8	4.2
Multi TV	3	1.6
Net 2	1	0.5
Viasat	2	1.0
Total	192	100.0

Source: Survey data, 2012

The results of the survey as presented in table 6.10 indicate that all the television stations viewed by the respondents are outside the two study areas since all of them are located in Accra. The majority of the respondents (55.2%) viewed TV3, a privately-owned television station, followed by GTV, a state-owned television station viewed by almost 30 percent of the respondents. GTV used to be the only television station in Ghana and had a large viewership until the liberalization of the airwaves in the early 1990s. The only television station among the list which viewers have to pay an amount before they could access the channel is Multi TV viewed by almost 2 percent of the respondents. In the case of Multi TV, respondents have to pay for the satellite dish before they could access the channels. Respondents view a wide range of television channels which is good for them. More respondents viewing the private television stations is a good idea as they provide a variety of programmes which are social, cultural, religious in nature. The respondents are therefore not socially excluded and social inclusion is a key element in poverty alleviation.

6.5.2 Choice of television station

Further to the question on which television channels respondents view frequently, they were required to provide the reasons for viewing these channels. The results of the survey are presented in figure 6.9 and this is an indication of the type of information that the respondents obtain from television broadcast and the contribution of television programmes to their livelihoods enhancements and poverty reduction activities.

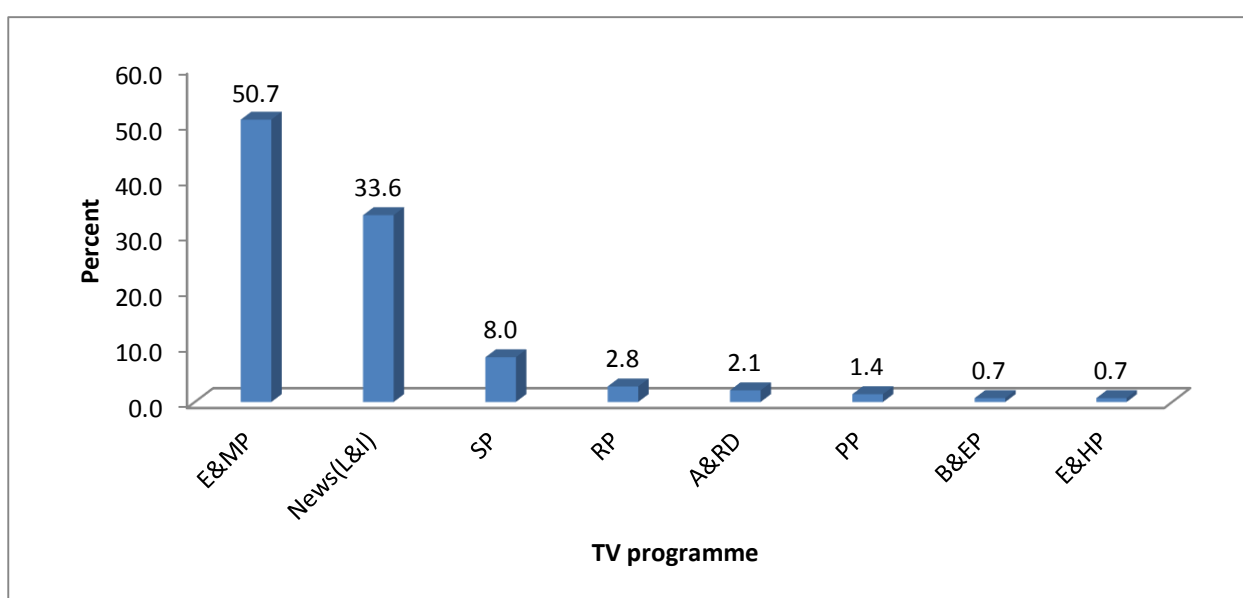


Figure 6.9: Reasons for choice of TV station

Source: Survey data, 2012

Note: E&MP (Entertainment and musical programmes); SP (Social programmes); PP (Political programmes); RP (Religious programmes); CP (Cultural programmes); E&HP (Environment and health programmes); B&EP (Business and Economic programmes); A&RD (Agriculture and Rural Development programmes); News (L&I) (News (Local & International))

As indicated by figure 6.9, almost 51 percent of the respondents viewed entertainment and musical programmes more than any other programme. This was followed by 34 percent of respondents who viewed news (local and international) as their reason for choice of a television station. The respondents not viewing agricultural and rural development

programmes, business and economic programmes which can empower them economically is worrying. However, issues pertaining to agricultural development, business opportunities are included in the national news, but when isolated loses its popularity. The viewing pattern of television is consistent with the radio listening pattern reported earlier on. Social programmes (8.0%), religious programmes (2.8%) and agriculture and rural development programmes (2.1%) were the least viewed programmes. Viewing social programmes indicated that the poor also had leisure which is social empowerment. They should however be made to watch more of agricultural and rural development programmes to help in development. As noted earlier on in the case of radio listenership where fewer respondents listened to agriculture and rural development programmes because of the time of airing the programme and the language barrier, with respect to television, the television stations had fewer agriculture and rural development programmes while others did not even have a slot for that. It is to be noted that respondents viewed entertainment and musical programmes which are readily available and in a language that they can identify with than educational, economic, environmental and health programmes which have an effect on their livelihood enhancement and poverty reduction activities. These entertainment and musical programmes are mostly Ghanaian and African movies on rituals, romance and humour. The respondents using the television for socialization is a good indicator for development planners to understand the interest of the poor in viewing television and model the economic issues around drama to empower the people.

6.5.3 Preferred time for viewing television programmes

Viewing times tend to affect the programmes people ascribe to. The respondents were also asked to choose from a list their preferred time for watching television. This is shown by figure 6.10.

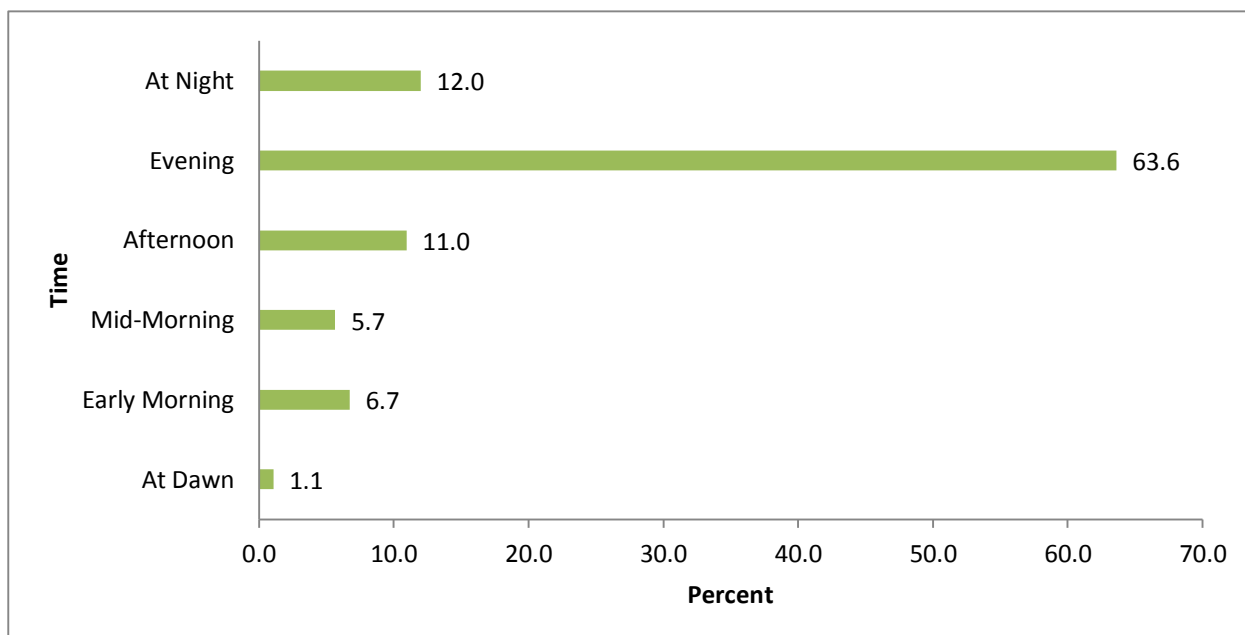


Figure 6.10: Preferred time for viewing television

Source: Survey data, 2012

Note: Dawn (4am-5am); Early morning (6am-9am); Mid-morning (10.00am-12 noon); Afternoon (12 noon-4pm); Evening (4pm-8pm); Night (9pm-12 midnight)

As presented by figure 6.10, the majority of the respondents (63.6%) preferred viewing television in the evening with the least number of them (1.1%) viewing television at dawn. Those who viewed television at dawn indicated that they normally view religious programmes during the period and this assists them in the daily morning devotion activities. Those who view television at night constituted 12 percent of the respondents, with 11 percent of them viewing it in the afternoon. With majority of the respondents

viewing television in the evening is a good time for designing programmes that will empower the people both socially and economically.

6.5.4 Expenditure on viewing television

Further to the question on the viewing time of television, the respondents who do not own a television set were required to state how much they spend each time they view a television programme. The results of the survey are as shown by table 6.11.

Table 6.11: Expenditure on television viewing

Amount in Ghana Cedis	Frequency (N=148)	Percentage
None	140	94.6
0.20	3	2.0
0.30	1	0.7
0.50	1	0.7
1.00	1	0.7
2.00	2	1.3
Total	148	100.0

Source: Survey data, 2012

Almost 95 percent of the respondents who do not own a television do not pay any amount for viewing television. They either visited a friend or relations to view their preferred television programme so do not pay any amount for that. It was observed during the study that in some households during the evening, a member of the household who owns a television set will mount the television set outside his room in the open space and the household members would gather around and view a programme. Five percent of the respondents who did not own a television set pay between 20 Ghana Pesewas (10 cents) and 2 Ghana Cedis (\$1.00) to watch a television programme. This is mostly at the

commercial centres where they pay to watch either movies or football matches which are not available on the free channels.

6.6 Factors that affect Access to and Use of ICTs

This section of the work contributes to research question 1 of the study which seeks to examine the accessibility and utilization of mobile phones, radio and television in two rural districts of the Central Region of Ghana. Access to and use of ICTs is usually influenced by personal characteristics of the user (age, gender), the technical characteristics (income, education) and institutional characteristics (electricity). In order to find out if differences in access to and use of ICTs were statistically significant, a cross tabulation was undertaken with age, gender, income level, education and electricity as independent variable against mobile phone, radio and television. The findings of the survey are shown by tables 6.12 to 6.16.

Table 6.12: ICT access to and use by age group

	Mobile phone use (N=293)		Radio use (N=235)		Television use (N=139)	
Age group	Frequency	Percent	Frequency	Percent	Frequency	Percent
21-30	113	38.6	87	37.0	52	37.4
31-40	82	28.0	58	24.7	39	28.1
41-50	52	17.8	44	18.7	26	18.7
51-60	24	8.2	19	8.1	12	8.6
61+	22	7.5	27	11.5	10	7.2
Total	293	100	235	100	139	100

Source: Survey data, 2012

Table 6.12 presents data on access to and use of ICTs (mobile phones, radio and television) tabulated against the age groups of the respondents. It was gathered that majority (66.6%)

of the youth aged between 21-40 accessed and used mobile phones with only 7.5 percent of the aged (61+) accessing and using mobile phones. A Chi-square test performed produced $\chi^2 (4, N = 412) = 16.708, p = 0.002$ which is an indication of a significant relationship between the age groups of respondents and their frequency of access and use of mobile phones, with a significant level at or beyond the 0.05 significant value. From the statistical point of view it can be concluded that the younger the age of a person, the more likely of he/she having access to and use of mobile phones. This brings to the fore the question of whether or not mobile phone is a fashion piece that is why more young people are using it. This result has a number of implications for the society in that younger people should be encouraged to use the beneficial aspects of the tool and parents can also be encouraged to monitor their young adult in the use of mobile phones.

With respect to age and access to and use of radio as shown by table 6.12, almost 62 percent of the youth aged between 21 and 40 years accessed and used radio while about 8 percent aged between 51 and 60 years access and use radio. However, a Chi-square test performed to ascertain the degree of relationship between the variables produced $\chi^2 (4, N = 412) = 4.970, p = 0.290$. The result is an indication of no significant relationship between the age ranges of the respondents and their access to and use of radio sets. Age groups did not influence access to and use of radio sets, and *vice versa*; and that there might be other reasons that account for this trend recorded, and not necessarily chance. The radio is usually used at the household level and not as personalized as a mobile phone and this might be the reason for the result. However, the young people using the radio are within the economically active group but early income earners.

Further analysis was undertaken with regard to age and access to and use of television as shown by table 6.12. Almost 66 percent of the youth aged between 21 and 40 years accessed and used television while about 9 percent aged between 51 and 60 years access and use television. The Chi square test performed showed $\chi^2 (4, N = 412) = 3.131, p = 0.536$, which is an indication that there is no significant relationship between the age ranges of respondents and their access to and use of television sets, hence there may be other reasons that account for this trend, and not necessarily chance.

The results of the survey as depicted by table 6.13 shows the relationship between gender and access to and use of mobile phones, radio and television.

Table 6.13: ICT access to and use by gender

	Mobile phone use (N=293)		Radio use (N=235)		Television use (N=139)	
Gender	Frequency	Percent	Frequency	Percent	Frequency	Percent
Male	169	57.7	158	67.2	98	70.5
Female	124	42.3	77	32.8	41	29.5
Total	293	100	235	100	139	100

Source: Survey data, 2012

The study also cross-tabulated the results of respondents' access to and use of ICTs (mobile phones, radios and television) against their genders, and this is presented in table 6.13. The results show that 80.9 percent of the male respondents owned mobile phones, while 19.1 percent did not have the device. But results from the female respondents however showed a reduction, with 61.1 percent of them having mobile phones and 38.9 percent of them without the device. The Chi square test results on these variables showed $\chi^2 (4, N = 412) = 19.610, p = 0.0001$, indicating that there was a significant relationship between the gender

of the respondents and their access to and use of the device at the minimal 0.05 level. This shows that irrespective of gender respondents had access to and used ICTs.

Data on the relationship between the gender of respondents and their access to and use of radio sets indicate that 75.6 percent of the male respondents had the device, as against 24.4 percent of them who did not have them. There was however a sharp contrast with the results from the females, which showed that only 37.9 percent of them had radio sets as against 62.1 percent who did not have them. The Chi square result $\chi^2 (4, N = 412) = 59.624, p = 0.0001$ showed that there is a significant relationship between the two variables. The results gathered from the study shows that the access to and use of radio sets by respondents in the study might have been influenced by their gender or *vice versa*.

Table 6.13 also presents results on the relationship between the gender of respondents and their access to and use of television sets. The study gathered that 46.9 percent of the male respondents owned television sets, whereas 53.1 percent of them did not have access to the device. Their female counterparts recorded similar results with only 20.2 percent of them having access to television sets, and 79.8 without the device. The result from the Chi square test $\chi^2 (4, N = 412) = 32.821, p = 0.0001$ showed that there was a significant relationship between the gender of respondents and their access to and use of television sets.

Further analysis was made with respect to the educational level of the respondents and access to and use of mobile phones, radio and television. This was to find out if

educational levels had an influence on access to and use of mobile phones, radio and television. The results of the survey are shown by table 6.14.

Table 6.14: ICT access and use by educational level

Educational level	Mobile phones (N=293)		Radio (N=235)		Television (N=139)	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Attended literacy classes	1	0.3	1	0.4	1	0.7
Less than Primary school	25	8.5	18	7.7	8	5.8
Completed Primary school	41	14.0	34	14.5	18	13.0
Completed JSS (or Middle school)	128	43.7	104	44.3	74	53.2
Completed SSS (secondary school, technical)	22	7.5	19	8.1	13	9.4
Completed Tertiary Education (Polytechnic)	4	1.4	5	2.1	4	2.9
None	72	24.6	54	23.0	21	15.1
Total	293	100	235	100	139	100

Source: Survey data, 2012

Data in table 6.14 presents access to and use of the various ICTs (mobile phone, radio and television) according to their educational levels. For the purposes of analysis, the educational levels were grouped into 4, namely: those without formal education, low level of education (attended literacy class to completed primary school), moderate level (completed JSS/Middle School to completed SSS) and high level (completed tertiary education). Almost 52 percent of respondents with moderate level of education access and use mobile phones while about 25 percent without formal education access and use mobile phones. A Chi square test was conducted on the relationship of the variables, and the results $\chi^2 (6, N = 412) = 45.740, p = 0.0001$ indicate that there is a significant relationship between the educational background of respondents and access to and use of mobile

phones, but the direction of this relationship goes beyond the scope of this study. This is an indication that the higher ones educational level, the likelihood of using a mobile phone.

The results as presented in table 6.14 indicate that about 54 percent of respondents with moderate level of education access and use radio sets while about 23 percent without formal education access and use radio sets phones. The Chi square test results on the relationship between educational levels of respondents and access to and use of radio sets showed $\chi^2 (6, N = 412) = 37.307, p = 0.0001$, signifying that there was a marked relationship between the educational background of the respondents and their access and use of the device at the minimal 0.05 level, but also significant at and beyond the more stringent 0.0001 level. Access to and use of radio sets among respondents in the study may have been influenced by their educational background or *vice versa*.

Concerning the relationship between the educational levels of respondents and access to and use of television sets as shown by table 6.14, about 63 percent of respondents with moderate level of education access and use television sets while 15 percent without formal education access and use television sets. The Chi square test result $\chi^2 (6, N = 412) = 49.430, p = 0.0001$ proved that there is a significant relationship between the educational levels of respondents and access to and use of television sets. The results indicate that the higher the educational level of a person, the more likelihood, he or she will access and use mobile phones, radio and television.

Furthermore, analysis was made with respect to the annual income levels of respondents and access and use of mobile phones, radio and television. This was to find out if income levels have an influence on access and use of mobile phones, radio and television. The results of the survey are shown by table 6.15.

Table 6.15: ICT access to and use by income level (Annual)

	Mobile phones (N=78)		Radio (N=60)		Television (N=29)	
Distribution of Annual income (GH¢)	Frequency	Percent	Frequency	Percent	Frequency	Percent
200-500	11	14.1	9	15	6	20.69
501-1000	24	30.8	13	21.67	6	20.69
1001-1500	12	15.4	10	16.67	4	13.79
1501-5400	31	39.7	28	46.67	13	44.83
Total	78	100	60	100	29	100

Source: Survey data, 2012

For the purposes of analysis, the respondents whose annual income was between GH¢200 (\$100) and GH¢1000 (\$500) were classified as low income earners and those between GH¢1001 (\$500.50) and GH¢5400 (\$2700) as moderate income earners. Concerning the relationship between the annual income of respondents and access to and use of mobile phones as shown by table 6.15, about 45 percent of respondents with low level of income access and use mobile phones while 55 percent with moderate income access and use mobile phones. A Chi square test was conducted to detect a relationship between these variables and the result $\chi^2 (4, N = 412) = 24.664, p = 0.0001$ shows that there is a significant relationship among the variables. The result is an indication that the higher ones income the more likely he or she will use a mobile phone.

With respect to the relationship between income levels and access to and use of radio, the results of the study as revealed by table 6.15 showed that about 37 percent of the low income earners had access to and used radio sets while 63 percent of the moderate earners had access to and used radio sets. The chi square test conducted $\chi^2 (4, N = 412) = 11.060, p = 0.026$ revealed that there is a relationship between the two variables of income ranges of respondents and their access and use of radio sets. But the exact direction of this relationship is not depicted by the Chi square results and goes beyond the scope of this study.

Concerning the income levels of respondents and access to and use of television sets, the study gathered that 42 percent of low income earners and 58 percent of moderate income earners access and use television sets. The Chi square test conducted $\chi^2 (4, N = 412) = 8.106, p = 0.088$ indicated that there is no significant relationship between these two variables of income levels of respondents and access to and use of television sets. Thus, any trend recorded, could have been caused by other variables, and not necessarily chance. In conclusion it can be stated income levels have a significant relationship with access to and use of mobile phones and radio sets except television sets.

Finally, an analysis was undertaken with respect to access to electricity and access to and use of mobile phones, radio and television. This was to find out how access to electricity had an influence on access to and use of the studied ICTs. The results of the survey are shown by table 6.16.

Table 6.16: Access to electricity versus use of ICTs

	Mobile phones (N=293)		Radio (N=235)		Television (N=139)	
Access to Electricity	Frequency	Percent	Frequency	Percent	Frequency	Percent
No	102	34.8	78	33.2	17	12.2
Yes	191	65.2	157	66.8	122	87.8
Total	293	100	235	100	139	100

Source: Survey data, 2012

The study found out that there were some respondents who had access to electricity and others who did not have. About 35 percent of respondents who did not have access to electricity had access to mobile phones, and 65 percent of those who had access to electricity had access to and used mobile phones. This was possible because social relations in the communities allowed the sharing of electric power for low consuming gadgets like mobile phones, and there were also business ventures that charged mobile phones for a fee. Chi square evaluations detected a relationship between these variables and the result $\chi^2 (2, N = 412) = 20.063$, $p = 0.0001$ shows that there is a significant relationship among the variables. This means that the more access an individual have to electricity, the more likely he or she is to access and use mobile phones.

With respect to access and use of radio, the study found out that 33 percent of those who did not have access to electricity had access to and used radio sets, whereas 67 percent of those who had access to electricity had access to and used radio sets. It was possible for those who did not have access to electricity to have access to radio sets because of the alternative power sources such as dry and wet cells. Such applications are also widespread and available with modern simple mobile phones. The Chi square test result $\chi^2 (2, N = 412)$

= 16.466, $p = 0.0001$ revealed a significant relationship between the two variables of access to electricity and access and use of radio sets.

The study showed that concerning access and use of television sets, about 12 percent of the respondents who did not have access to electricity had television sets, whereas about 88 percent of those who had access to the electricity also had access to and used television sets. Just like it was with radio sets, alternative power sources enabled television ownership for those who did not have access to electricity. Chi square test conducted $\chi^2 (2, N = 412) = 75.155$, $p = 0.0001$ revealed that there is a significant relationship between the two variables. Hence the more access an individual had to electricity, the more likely it was for him or her to access and use television sets.

6.7 Influence of ICTs on Rural Communication and Information Exchange

Research question 2 of the study was aimed at determining the influence of ICTs on rural communication and information exchange. This was to find out how ICTs influence rural communication and information flows. With a good understanding of how ICTs influence rural communication provided an insight on how these technologies complement information flows, information exchange and social networks. The respondents were therefore required to provide responses to the communication channels they prefer and their experience on the influence that ICTs (mobile phone, radio and television) have had on the communication channels.

The results from a modal response aggregation indicated that the use of mobile phones did not influence respondents' reliance on government offices, letters and post offices, newspapers and the consultation of information brokers for information and communication exchange. However, there was a slight reduction on their reliance on social visitations, and face-to-face interactions for information and communication purposes due to the use of mobile phones. With social visits and face-to-face interactions reduced, transactional costs will be reduced and enough time will be available to the respondents to carry out other social and economic activities which will empower them.

With respect to radio and television influences on alternative means of information and communication, the modal response outcome indicated that there was no change in the people's use of newspapers, visitation to congregation venues in the villages, consultation of extension officers, and attendance to local meetings as means of information and communication exchange.

The study further sought to find out places in the community respondents meet frequently in the course of the week. The results are shown by table 6.17 below.

Table 6.17: Respondents' meeting places as information and communication channels

Meeting place	Frequency (N=397)	Percentage
Drinking bar	39	9.8
Chop bar/restaurant	15	3.8
Market	84	21.2
Church	191	48.1
Mosque	15	3.8
Work place/office	53	13.3
Total	397	100.0

Source: Survey data, 2012

Respondents were provided with a number of places to choose from to indicate the places in the study area where they visit most frequently during the week. Meeting places are very important information and communication channels that people depend on for their information and communication activities and how these impact on their livelihood activities. The results as shown by table 6.17 revealed that the church and the market place were the most visited places in the study areas in the course of the week. This result is to be expected as majority of the respondents are Christians and engaged in trading activities. The least visited places were the mosque and chop bar/restaurant. Earlier responses provided indicate that there were very few Moslems in the study areas, hence the low rating of visits to the mosque. The chop bars/restaurants were not patronized much for the simple reason that they were 'alien' to the indigenes as they consider it as a relic of the Western world. The result of this indicates that respondents are not socially excluded as they tend to meet frequently for either religious reasons, commerce or for developmental discussions when they meet at the drinking bars.

The study further probed to find out how their means of communication and information exchange activities had changed or otherwise as a result of using the ICTs (mobile phones, radio and television) under study. This was to find out if by using specific ICTs they have been influenced positively or negatively with respect to their means of communication and information exchange activities. Respondents were then provided with five options from greatly reduced to greatly increased to choose from as regards their means of communication and information exchange activities. The survey results are presented by tables 6.18 to 6.20.

Table 6.18: Effect of the use of mobile phones as a means of communication and information exchange

Communication and information exchange activities	Greatly reduced	Slightly reduced	No change	Slightly increased	Greatly increased	Total	Mean (μ)	Standard deviation (σ)
Governance								
Frequency	2	18	346	0	0	366	2.9	17.0
Percentage	0.6	4.9	94.5	0.0	0.0	100		
Making social visits								
Frequency	97	139	127	3	1	367	2.1	10.4
Percentage	26.4	37.9	34.6	0.8	0.3	100		
Use of letters and post office								
Frequency	44	51	270	0	1	366	2.6	13.7
Percentage	12.0	13.9	73.8	0.0	0.3	100		
Face to face communication								
Frequency	87	160	115	5	0	367	2.1	10.6
Percentage	23.7	43.6	31.3	1.4	0.0	100		
Use of newspapers								
Frequency	30	34	299	1	1	365	2.8	14.9
Percentage	8.2	9.3	81.9	0.3	0.3	100		
Consulting middlemen								
Frequency	20	39	291	2	0	352	2.8	14.5
Percentage	5.7	11.1	82.7	0.6	0.0	100		

Source: Survey data, 2012

The results of the survey as shown by table 6.18 reveal that the use of mobile phone has greatly reduced making social visits as reported by more than a quarter (26.4%) of the respondents. What this result means is that physical contact has been reduced as people can interact through the use of the mobile phone. Travelling to visit distant relations and friends had reduced as a result and had assisted in reducing cost of travel. According to the respondents, the wear and tear associated with travelling which also has health implications has been reduced. The issue of reduction in making social visits is also reinforced by the great reduction in face-to-face communication reported by a quarter (23.7%) of the respondents. In the view of the respondents, instead of meeting friends and relations at a

meeting point and talking for long hours, they now use the mobile phone to deliver important messages and use the rest of the time profitably. The use of mobile phone has had some influence on the use of letters and postal services as reported by 12 percent of the respondents. For the majority of the respondents (73.8%) there had been no change in the use of postal services and letter writing as these were not being used previously. They preferred delivering their message in person in this case they know the recipient will receive and attend to it instead of using an unreliable postal service. Besides, there is no postal service in the villages and they had to travel to the nearby urban centres to either post or receive a letter. This, according to the respondents was a bit cumbersome so they preferred to deliver a message or submit a form, a letter in person instead of using the postal service.

With respect to consulting middlemen, the survey results indicated that the use of mobile phone had not reduced greatly, as about 6 percent of the respondents reported that. This result is a bit surprising given that participants at the FGD blamed the middlemen for distorting the market prices and blamed them for the low prices received for their produce. Some of the respondents were of the view that they could not do away with the middlemen as they provide them with soft loans, especially during the planting season, resulting in majority of them (82.7%) reporting no change in their communicative activities with them with respect to mobile phone use. Some of the respondents indicated that they were not previously using the middlemen in their transactions as they had a way of consulting their buyers directly. Mobile phones according to the respondents have enhanced their customers and greatly enhanced their livelihoods activities.

With regard to visiting government offices, mobile phones have not had any influence as majority of the respondents (94.5%) reported no change in their communication and information exchange activities. Most of the respondents indicated that if they had to do business with any government official, they would prefer to meet the official in person so as to ensure that what they want is well understood and that action will be taken. There is some sort of mistrust of public officials and a perception that unless the official sees you in person, no action can be taken on your request. This is the reason why in spite of the availability of an easier way of communicating with government offices, respondents still prefer to travel long distances to the urban and peri-urban centres where the offices are located to transact business.

In summary, with regard to the influence of mobile phones on communication and information exchange activities, it could be deduced that, generally, except for making social visits and face-to-face communication, mobile phones had not had any significant influence on visits to government offices, use of newspapers and consulting middlemen. From the results, it can be suggested that it may take some time before the respondents can embrace fully the use of mobile phones to transact business with government offices. They are still traditional in their ways of dealing with government. Mobile phones can however be integrated into the traditional system of information exchange and communication.

The study further sought to find out the influence of radio on communication and information exchange activities of the respondents. The results of the survey are presented by table 6.19 below.

Table 6.19: Effect of the use of radio as a means of communication and information exchange

Communication and information exchange activities	Greatly reduced	Slightly reduced	No change	Slightly increased	Greatly increased	Total	Mean (μ)	Standard deviation (σ)
Reading newspapers	15 (4.6%)	47 (14.4%)	264 (80.7%)	1 (0.3%)	0 (0%)	327 (100%)	2.8	13.2
Visiting congregation points in the village	1 (0.3%)	32 (9.8%)	293 (89.3%)	2 (0.6%)	0 (0%)	328 (100%)	2.9	14.5
Consulting extension officers	1 (0.3%)	23 (7.0%)	301 (91.5%)	2 (0.6%)	2 (0.6%)	329 (100%)	2.9	14.9
Attending local meetings	0 (0)	24 (7.3)	300 (91.7%)	3 (0.9%)	0 (0%)	327 (100%)	2.9	14.8

Source: Survey data, 2012

Generally, as revealed by table 6.19, the use of radio had no influence on the communication and information exchange activities of the respondents. About 92 percent of the respondents indicated that the use of radio had not changed their activities of attending local meetings and consulting extension agents. This result goes to confirm an earlier finding where majority of the respondents did not listen to agriculture and rural development programmes. With the extension agent-farmer ratio in Ghana being low, it was expected that with radio broadcasting agricultural programmes with a feedback mechanism of a phone-in respondents would have taken advantage of that. The use of radio also had less influence on reading newspapers by the respondents as 81 percent of them reported no change with respect to newspaper reading.

In summary, it can be concluded that use of radio had very little influence on newspaper reading, attending local meetings, consulting extension agents and visiting congregation points in the village.

Furthermore, the study sought to find out the influence of television on communication and information exchange activities of the respondents. The results of the survey are presented by table 6.20.

Table 6.20: Effect of the use of television as a means of communication and information exchange

Communication and information exchange activities	Greatly reduced	Slightly reduced	No change	Slightly increased	Greatly increased	Total	Mean (μ)	Standard deviation (σ)
Reading newspapers								
Frequency	11	27	226	1	1	266	2.8	11.2
Percentage	4.1	10.2	84.9	0.4	0.4	100		
Visiting congregation points in the village								
Frequency	0	19	238	1	0	258	2.9	11.7
Percentage	0	7.4	92.2	0.4	0	100		
Consulting extension officers								
Frequency	0	6	250	2	0	258	3.0	12.3
Percentage	0	2.3	96.9	0.8	0	100		
Attending local meetings								
Frequency	0	7	247	6	0	260	3.0	12.2
Percentage	0	2.7	95.0	2.3	0	100		

Source: Survey data, 2012

Results of the survey as depicted by table 6.20 indicates that use of television had not changed the means of communication and information exchange activities of the respondents as reported by between 85 percent to 97 percent of the respondents. These results only go to confirm earlier findings where respondents do not listen to or watch agriculture and rural development programmes so it follows naturally that their means of communication and information exchange activities will not change.

6.8 Summary

The results of the fieldwork which is a response to the research question, how are people in the two rural districts of the Central Region of Ghana accessing and using mobile phones, radio and television are presented.

The findings of the survey indicate that mobile phone was owned by a majority of the respondents than the other two ICTs under study. Males owned more of the ICTs than females and there was no significant difference in the ownership of ICTs in the two districts under study. The principal means of communicating and receiving information was face-to-face followed by mobile phone and radio. The study revealed that majority of the respondents (80%) acquired the phone more than two years prior to the research. There were five mobile service providers operating in Ghana at the time of the fieldwork and the most used service provider was MTN. Quality of mobile services was considered to be generally good in the study area.

More than a third (35%) of the respondents with mobile phone had two or more SIM cards with almost two thirds of them (59.2%) indicating that they own more than one SIM card to enable them communicate when one network is down. This shows how valuable the use of mobile phones is to the respondents. Most of the respondents use the mobile phone to obtain market information and to communicate with family members, resulting in reduction in travelling and transactional cost thus leading to social and economic empowerment of the respondents. Even though one hundred and sixteen respondents do not own mobile phone, they still use mobile phones through sharing of handsets. This is an indication that

mobile phone use is not limited to those who own the handset but extends to those without as well meaning that any information passed through mobile phones will be used. About a third (36%) of the respondents spend Gh¢6.00 (\$3) per week on airtime.

The study revealed that Peace Fm was the most frequently listened to radio station and they listen to entertainment, musical, local and international news programmes. Business and economic programmes and agricultural and rural development programmes are the least listened to programmes. Respondents listen to radio mostly in the early morning and evening. More than half of the respondents (55%) watch TV3 and the most watched programmes are entertainment, musical, local and international news programmes. Most of the respondents watch television in the evenings and about 5 percent of them pay between 20 pesewas (10 cents) and Gh¢2.00 (\$1.00) per week to watch television.

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CHAPTER SEVEN

USE OF ICTs IN POVERTY ALLEVIATION AND CONSTRAINTS OF USING ICTs

7.1 Introduction

It was noted from the literature review in chapter 3 of this study that there is a close linkage of ICTs with socio-economic development in general and poverty reduction in particular. Issues had also been raised about how ICTs are used by people to protect themselves against vulnerability and take opportunities for a more prosperous future, whether people use ICTs for social or business purposes, and how important is it in emergencies. It was in the light of these issues that the study was undertaken on the use of ICTs in poverty alleviation at the individual and household levels in two rural districts of the Central Region of Ghana. This chapter attempts to provide answers to the fifth research question which is: how has access to and use of ICTs (mobile phones, radio and television) reduced the individual components of poverty in two rural districts of the Central Region of Ghana with specific reference to ill-health, illiteracy, low income and expenditure, education, vulnerability, assets, poverty level, and business turnover? A number of questions were asked in order to find answers to the fifth research question. Questions were asked relating to the following components of the SLF, namely: social capital, financial capital, human capital, physical capital, vulnerability, processes, institutions and policies. These questions were asked directly to find out how the use of ICTs influences poverty. In view of this, a number of tests, namely: mean, standard deviation and Chi square were conducted to find out the influence of ICTs on poverty alleviation.

Furthermore, the chapter provides answers to the third and fourth research questions, namely: what are the detrimental effects of using mobile phones, radio and television in two rural districts of the Central Region of Ghana, and what are the barriers to the effective use of mobile phones, radio and television in two rural districts of the Central Region of Ghana? The use of frequencies, mean and standard deviation was used to analyse these questions.

7.2 Relationship between Access to and Use of Mobile Phone on Livelihoods and Poverty Alleviation

The study was undertaken to explore how access to and use of mobile phones had a relationship either positively or negatively on livelihoods and poverty aspects of the respondents at the individual and household levels. This was with respect to financial capital, social capital, human capital, their vulnerability issues, and on their relationship with government departments regarding processes, institutions and policies. The survey results are presented by tables 7.1 to 7.4.

According to Duncombe (2012), one of the most significant development trends in the past decade had been the explosive growth of mobile phones. Mobile cellular technologies have enabled even the poorest countries to extend telecommunication network coverage to the mass of their populations including the rural poor. A number of recent reviews of practice have revealed widespread application of mobile phones in support of livelihoods in rural and less-developed regions of developing countries. Reviews from South Asia (De Silva, 2008) and sub-Saharan Africa (Donner, 2009; Gakuru *et al.*, 2009; Munyua, 2008) as cited

by Duncombe (2012) identify mobile phones as a key innovative technology in support of livelihoods, with evidence of growing integration into agricultural-extension, information provision and marketing systems. Mobile phones in support of livelihoods are not restricted to agriculture, but include new forms of micro-financial service provision and micro-enterprise support, and data gathering and dissemination for projects concerned with social development covering education, health, the environment and humanitarian relief in response to disasters and emergencies. Table 7.1 presents the results of the study which dealt with the use of mobile phone and household development over the last two years on livelihoods and poverty aspects with respect to financial capital.

Table 7.1: Use of mobile phone and household development over the last two years on livelihoods and poverty aspects – financial

Livelihood and poverty aspects	Negative	No influence	Low influence	Medium influence	High influence	Total	Mean (μ)	Standard deviation (σ)
Household income	16 (4.4%)	72 (19.8%)	83 (22.8%)	108 (29.7%)	85 (23.4%)	364 (100%)	3.5	1.2
Status of your business	0 (0.0%)	136 (37.7%)	82 (22.7%)	80 (22.2%)	63 (17.5%)	361 (100%)	3.2	1.1
Market information for agricultural/livestock produce	2 (0.6%)	239 (66.2%)	36 (10%)	46 (12.7%)	38 (10.5%)	361 (100%)	2.7	1.1
Travelling and transport of goods and services	2 (0.6%)	140 (38.4%)	45 (12.3%)	95 (26%)	83 (22.7%)	365 (100%)	3.3	1.2
Sending money	2 (0.6%)	278 (76.4%)	25 (6.9%)	39 (10.7%)	20 (5.49%)	364 (100%)	2.4	0.9
Receiving money	2 (0.6%)	254 (69.6%)	38 (10.4%)	46 (12.6%)	25 (6.9%)	365 (100%)	2.6	1.0

Source: Survey data, 2012

7.2.1 Use of mobile phones and household income

One of the indicators of poverty is lack of income or low levels of income. In undertaking this study, cognizance was taken of the fact that poverty is multi-dimensional and income is only one of the indicators of poverty. The study sought to identify the use of mobile phone over the last two years on livelihoods and poverty reduction with respect to household

income. As revealed by table 7.1, almost a quarter (23.4%) of the respondents was of the view that mobile phones had a high influence on their household income. Indeed, about three quarters (76%) indicated that their household income had been highly influenced by the use of mobile phone. This finding is confirmed by a mean score of 3.5 and a standard deviation of 1.2 indicating a medium influence of mobile phones on household income. It can, therefore, be concluded that mobile phone use had an influence on household income as it resulted in saving in transactional costs in doing business, and reduction in travel costs. The savings could be used to supplement household income thereby improving their livelihoods and reducing poverty.

In a follow up question on which areas mobile phones had improved or had an effect on their household income, the responses are presented by table 7.2.

Table 7.2: Areas of mobile phone improvement and household income

Income activities	Frequency	Percentage	Rank
Income from selling mobile services	256	52.6	1
Income from reduced travelling	210	43.1	2
Improved business/markets	19	3.9	3
Improved agricultural/livestock keeping activities	2	0.4	4

Source: Survey data, 2012

As presented by table 7.2, over half of the respondents (53%) reported that their household income improved as a result of selling mobile services, with about 43 percent indicating that mobile phone use had resulted in reduced travelling and thereby saving income which would otherwise be used to pay for transport. Essegbey and Frempong (2011) reported the impact of mobile phones on reducing transportation component of business expenditures in

a study in Ghana. They reported that an overwhelming majority (91%) emphasized the cost effectiveness of using mobile phones for transactional purposes which invariably contributed to the reduction in the cost of doing business. The findings reflected an earlier study by Samuel *et al.* (2005) that *spaza* shop owners in Tanzania reduced physical travel to contact suppliers or to place orders by relying on their mobile phones to perform these activities.

In African business setting, one cannot entirely rule out physical travels, but travels may only be made when they are unavoidable, for example, to collect orders which had previously been negotiated and concluded through mobile phone intermediation. Courier systems enabling a supplier to send a consignment to a buyer appears not well developed in Africa. So Medium and Small Enterprise (MSE) operators only travel to the supplier when consignments are ready for delivery. This reduces the cost of transaction for the entrepreneur (Essegbey & Frempong, 2011).

7.2.2 Use of mobile phones and business development

Of all the ICT services, mobile telephones have increasingly become the dominant service that is accessible to many people, irrespective of the physical location. The International Telecommunications Union (ITU) estimated that by the end of 2007, there would be over 3.1 billion mobile subscribers in the world, compared to 1.3 billion fixed telephone lines (ITU, 2008a). Africa has been one of the fast growing markets for mobile telephones and this has made the technology prominent on the continent. The relative ease of access and the flexibility it provides in communication has resulted in mobile telephony being the

preferred means of communication not only for social, but increasingly for business activities (Frempong, 2009).

As presented in table 7.1, out of 361 respondents who answered the question on the use of mobile phone and the status of their business, 18 percent of them reported mobile phones had a high influence on their business. A total of 225 respondents (62.4%) found mobile phone to have highly influenced (low-high influence) their business. This was explained by the respondents to mean the easy access with which it gives them to link up with customers and suppliers respectively. Further analysis of the findings produced a mean of 3.2 and a standard deviation of 1.1 confirming that mobile phone use had a low influence on the business activities of the respondents. This is supported by Jagun, Heeks and Whalley (2007) who argued that business relation becomes quicker as the required business information necessary for decision making can be fast-tracked through increased application of mobile phones in business cycle. Furthermore, intermediaries who normally add to the cost of doing business can be eliminated or curtailed to ensure direct relationships with their clients through the mobile phone communication. In a study by Donner (2006), a micro operator in Rwanda estimated an increase of 30 percent in business activities that he ascribed to the use of mobile telephones. It can therefore be deduced that the use of mobile phone plays a significant role in improved livelihoods and poverty reduction.

7.2.3 Use of mobile phones and market information for agricultural productivity

Three hundred and sixty one respondents as revealed by table 7.1 answered the question on the use of mobile phones on market information for agricultural productivity. Out of this, 11 percent reported high influence on accessing market information on agricultural productivity. About 33.2 percent were of the view that mobile phone had highly influenced (low-high influence) their access to market information for agricultural productivity. Interestingly, 66.2 percent reported that mobile phone had no influence on their access to market information for agricultural productivity. This finding is confirmed by a mean of 2.7 and a standard deviation of 1.1, but is contrary to findings of previous studies in Bangladesh for instance where farmers use the mobile phone to monitor market prices. According to Franklyn and Tukur (2012), spot exchanges helps arbitrage the price levels effectively and helps farmers to find buyers at right prices. In effect, it breaks down barriers of communication which farmers face in finding the optimal price and its buyer. Combined with an operational feature exchange, it can integrate speculation and other aspects of trading, making the price discovery transparent to the individual farmer. They continued that ICT can help individual small farmers to find such aggregators who can buy small lots and sell to big buyers. This function can also be shortened and facilitated by electronic means of the exchanges, if agricultural produce becomes standardized and conforms to specified quality standard levels. Buyers place orders with minimal inspection as to quality, which add to the cost of supply chain management.

Emerging literature from developing countries provides numerous examples of innovative applications of ICTs to support MSE development. For example, farmers in Bangladesh

have been using mobile telephones to monitor market prices of rice, vegetables and other farm produce (Dholakia and Kshetri, 2002). Dholakia and Kshetri (2002) further report that farmers in remote areas of Cote d'Ivoire share mobile telephones to track hourly fluctuations in cocoa and coffee prices. Similarly, fishermen in India have long been using mobile telephones to collect information on prices at different ports before deciding where to land their catch (Rai, 2001). The flexibility of the technology enables them to seek information while on the high sea. Eggleston *et al.* (2002) reported that basic telephony services including mobile telephones in rural China have reduced price dispersion and purchase prices of various commodities.

7.2.4 Use of mobile phones and travelling and transport of goods and services

Travelling and transport of goods and services constitute one of the major costs of doing business and it can contribute to price hikes. In Ghana, it is noted that once transport costs are increased, it has a rippling effect on the price of goods and services and thereby worsen the poverty situation of the citizenry. It was also noted that the road network in the study areas was not good enough in terms of the motorable nature of the roads and the number of vehicles that link one village to another. This therefore results in high cost of travelling and transport costs and time lost in travelling. Given this scenario confronting people in the study area, it became necessary to find out if there are any means by which the respondents used to reduce transport and travelling costs.

Out of 365 respondents, 84 (23%) respondents reported high influence of mobile phone on travelling and transport of goods and services. Also 223 (61%) respondents reported that

the use of mobile phone had highly influenced (low-high influence) their travelling and transport of goods and services. This is confirmed by a mean of 3.3 and a standard deviation of 1.2 indicating that the use of mobile phones had a low influence on travelling and transport of goods and services. In a study by Frempong (2009) on MSEs in Ghana, it was found out that reduced cost of doing business is an integral part of an efficient system. The overwhelming majority (91%) of the MSEs underscored the cost-effectiveness of using mobile telephones for transactional purposes, which invariably contributes to reducing cost of doing business. The positive assessment corroborates with the findings of Samuel, Shah and Hadingham (2005) where *spaza* shop owners in Tanzania have reduced physical travel to contact suppliers or place orders by relying on their mobile telephones to perform these activities. The majority (35%) of the MSEs rated the contribution of mobile phones to the improvement of their profits as 'good'.

7.2.5 Use of mobile phones and sending and receiving money

About a third of the respondents (30%) as shown by table 7.1 reported using mobile phones to receive money whilst 23 percent did so sending money. With a mean of between 2.4-2.6 and a standard deviation of 0.9-1.0, it is observed that the use of mobile phones did not have any influence on the economic activity of majority of the respondents of sending and receiving money. However, during the FGD and the KII, respondents expressed the view that the use of mobile phones had reduced the incidence of lost of funds which were previously sent through friends and close relations and has also facilitated their access to funds from relatives living elsewhere. The use of middlemen had also been eliminated. A study conducted by McNamara (2008) reported that remittances, which form an important

component of rural incomes in developing countries, have been greatly facilitated through mobile communications. Sending and receiving money through the traditional means brought in its wake a lot of hardships as in most instances the money was either received late or not received at all as various reasons were given for the non-delivery of the funds. This was especially so, when sent through friends and relations returning home from abroad. This resulted in tensions among family members. With the introduction of the Western Union Money Transfer and the MTN Mobile Money, for instance, this has reduced drastically.

Mobile phones provide a new and rapidly developing technological means to facilitate monetary payments and transfers for those excluded from formal financial systems (CGAP 2008a; 2008b; Porteous, 2007; Cracknell, 2004) as cited by Duncombe (2009). Mobile phones have considerable potential in this respect due to their functionality. Mobile communications are now the fastest growing technology in the developing world and research has already demonstrated that use of mobile phones has had significant socio-economic impact in poor communities (Abraham, 2006; Jensen, 2007; Overa, 2006) as cited by Duncombe and Boateng (2009). Because mobile phones are increasingly becoming part of the everyday lives of the poor, it is argued that they have potential to become a low cost accessible 'account' or delivery channel for financial information, services and transactions (Porteous, 2006) as cited by Duncombe and Boateng (2009) thus facilitating innovations including micro-payments (m-payments), electronic money (e-money), and a banking channel (m-banking).

7.3 Use of Mobile Phone and Livelihood and Poverty Aspects – Social Capital

One of the key components of the sustainable livelihoods framework is social capital. The study was designed to find out what role access and use of mobile phone had played on poverty alleviation in rural communities with respect to social capital. This was based on the level of influence mobile phones had on them. The responses are shown by table 7.3.

Table 7.3: Use of mobile phone and livelihood and poverty aspects – social capital

Livelihoods and poverty aspects	Negative	No influence	Low influence	Medium influence	High influence	Total	Mean (μ)	Standard deviation (σ)
Arranging social functions	0 (0%)	214 (59%)	54 (14.9%)	51 (14.1%)	44 (12.1%)	363 (100%)	2.8	1.1
Relationship/contact with friends	1 (0.3%)	39 (10.7%)	69 (19%)	143 (39.4%)	111 (30.6%)	363 (100%)	3.9	1.0
Relationship/contact with relative	1 (0.3%)	20 (5.5%)	61 (16.8%)	143 (39.4%)	138 (38%)	363 (100%)	4.1	0.9
Status of your culture	4 (1.1%)	202 (56.6%)	86 (24.1%)	33 (9.2%)	32 (9%)	357 (100%)	2.7	1.0
Membership in groups	0 (0%)	214 (59.9%)	54 (15.1%)	50 (14%)	39 (10.9%)	357 (100%)	2.8	1.1
Membership in networks	0 (0%)	217 (60.6%)	50 (14%)	44 (12.3%)	47 (13.1%)	358 (100%)	2.8	1.1

Source: Survey data, 2012

7.3.1 Use of mobile phones and social functions

Social functions, such as weddings (both traditional and western), parties, naming ceremonies, religious activities, puberty rites and funeral rites are very important functions in most rural villages in Ghana. Every effort is therefore made by relatives and friends both home and abroad to attend these functions which increased social bonding among them and also reduces their social isolation. For these reasons, respondents were asked how mobile phones had influenced either positively or negatively in arranging social functions on their livelihoods and poverty reduction activities. Out of the total of 363 respondents, 149 representing 41 percent found mobile phones helpful in arranging social functions. Interestingly, 59 percent indicated that use of mobile phones had no influence in

such activity. This finding is confirmed by a mean of 2.8 and a standard deviation of 1.1. For this group of respondents, word of mouth continues to be used to communicate information to friends and relatives and also the fact that if they speak to the person(s) face-to-face, they are sure that the message had been well received. On the other hand respondents who use mobile phones for arranging social functions found it very convenient, fast, effective and efficient way of communicating and also the fact that it reaches many people at the same time when a text message is sent. Not only is it convenient and fast, but also cost effective and reduces isolation as people can be reached in the remotest villages to attend social functions rather than sending emissaries sometimes not meeting the person. It is a waste of time, resources and work suffers while with mobile phone someone can work, relax as message is sent.

7.3.2 Use of mobile phones and contact with friends and relations

This study further investigated how the use of mobile phones had an effect on their social relationships such as contact with friends and relations. As shown by table 7.3, out of 363 respondents who responded to the question, about 113 (31%) respondents reported that using mobile phones had a high influence on relationship with friends, with 38 percent with relatives. In total, 89 percent of the respondents reported a high influence (low-high) on their social relationship with friends, whilst 94.2 percent reported a high influence (low-high) on their social relationship with relatives. A mean of between 3.9-4.1 and a standard deviation of 0.9-1.0 confirms this result. This is a very important finding of the study as it reveals strong bonding among friends and relations and therefore brings about social integration. People did not feel isolated because of distance as they can get in touch with

friends and relations. It also reduces cost and the risks involved in traveling to visit friends and relatives. Responses from the FGD and the KII supported the increased communication among friends and relatives living in both home and abroad to update them on what is happening back home. Relations are constantly briefed on developments back home, can identify with developments that are on-going in their locality and so they are not alienated on return home.

According to Duncombe (2012), a large body of research from developing countries suggests that the major impact of mobile phones has been to expand private communication within personal and social networks which has been shown to have widespread benefits both for maintaining existing forms of livelihood and mitigating vulnerability. A three-country study by Souter *et al.* (2007) conducted in India, Mozambique and Tanzania found that mobile phones were extensively used in poor communities to maintain social (particularly family) networks, and were considered essential for responding quickly to emergencies. Over 80 percent of respondents from another Tanzanian study by Samuel *et al.* (2007) cited in Duncombe (2012) found the use of mobile phones to improve family relationships, made communication easier, as well as reducing the need to travel long distances to communicate with relatives.

7.3.3 Use of mobile phones and culture

Still on social capital, the study also investigated the effect of the use of mobile phones on the way of life of the respondents. Out of the 357 respondents who answered this question, 252 respondents representing 58 percent indicated that mobile phones had no influence on

the status of their culture. Their cultural values had been preserved even though they continuously use mobile phones. However, 24 percent of them reported that mobile phone usage had a low influence on the status of their culture. The mean of 2.7 and a standard deviation of 1.0 confirm the finding that the use of mobile phones had no influence on the culture of the respondents.

7.3.4 Use of mobile phones and group membership and networks

Social isolation and exclusion is one of the indicators or components of poverty. In order to find out about the use of mobile phone on social capital, the respondents were questioned on how mobile phones had influenced their livelihoods and reduced poverty with respect to their membership of groups and networks. The results as shown by table 7.3 indicate that mobile phone had no influence with respect to membership of groups or networks on about 60-61 percent of the respondents. This finding is confirmed by a mean of 2.8 and a standard deviation of 1.1. However, between 39-40 percent of the respondents reported that mobile phones had an influence on their membership of groups or networks. Horst and Miller (2005) as cited by Duncombe (2012) highlighted the importance of mobile phones in supporting social networks amongst poor women in Jamaica, and the role they play in building coping strategies. Indeed, during the FGD, participants were of the view that the use of mobile phones has brought them together and they can communicate among themselves and know what is happening in the society. It is also through mobile phones that those who belong to social groups get in touch with one another frequently, an indication of a stronger networking activity thereby making them learn from each other to improve on their livelihoods and well-being. They are thus not socially isolated.

According to Duncombe (2012) studies carried out by Sife *et al.* (2010), Jagun *et al.* (2008), Molony (2007) and Overa (2006) demonstrate that users of mobile phones are able to enhance (or make more productive use of) their pre-existing social and economic networks. Research suggests that the poor get their most valued market information via word of mouth, and the diffusion of mobile phones is playing a key role in extending these organic informal networks (Donner, 2006; Duncombe & Heeks, 2002) as cited by Duncombe (2012). In this way, passive diffusion is increasing the efficiency of underlying market-related information processes. This is demonstrated by studies from the field of information economics that show conclusively how the use of phones within local markets by producers and traders leads to a higher degree of market participation, as well as reduced search costs and a lessening in price dispersion (Mutu & Yamano, 2009; Aker, 2008; Jensen, 2007) cited in Duncombe (2012).

7.4 Use of Mobile Phone and Livelihood - Vulnerability, Human Capital and PIP

Other key components of the sustainable livelihoods framework, namely: vulnerability, human capital and PIP were examined to establish what role access to and use of mobile phone had played on poverty alleviation in rural communities with respect to these components. The responses are shown by table 7.4 below.

Table 7.4: Use of mobile phone and livelihood - vulnerability, human capital and PIP

Livelihoods and poverty aspects	Negative	No influence	Low influence	Medium influence	High influence	Total	Mean (μ)	Standard deviation
Efficiency of your daily activities	0 (0%)	84 (23.1%)	86 (23.6%)	94 (25.8%)	100 (27.5%)	364 (100%)	3.6	1.1
General security in the neighbourhood	0 (0%)	203 (55.6%)	74 (20.3%)	48 (13.2%)	40 (11%)	365 (100%)	2.8	1.0
Communication with government department	0 (0%)	295 (81.3%)	27 (7.4%)	22 (6.1%)	19 (5.2%)	363 (100%)	2.4	0.8
Assistance in emergencies	1 (0.3%)	99 (27.6%)	86 (24%)	60 (16.7%)	113 (31.5%)	359 (100%)	3.5	1.2

Source: Survey data, 2012

7.4.1 Use of mobile phones and daily activities

The study wanted to find out how the use of mobile phones had influenced (positively or negatively) on the efficiency and effectiveness of the daily activities of the respondents. The data as presented by table 7.4 indicated that 194 respondents out of 364 representing 53.3 percent reported that mobile phones had a high influence on the efficiency of their daily activities. In total, 77 percent of the respondents reported that the use of mobile phones had a high influence (low-high) on the efficiency of their daily activities. This result is confirmed by a mean of 3.6 and a standard deviation of 1.1. What this finding suggests is that the respondents could plan well in advance and make prior arrangement with clients for the delivery of goods and services in a timely and most cost-effective manner. The costs saved in travelling could then be used for some economic activities which would be beneficial to the respondents. The time spent on travelling could be reduced, risks involved in travelling reduced or eliminated completely. A study by Sife *et al.* (2010) reports that four fifths of a sample of households in Morogoro, Tanzania experienced improved or greatly improved efficiencies in the conduct of social and productive activities, due to mobile phones, particularly when the costs associated with communication over large geographical distances were reduced.

Peer-reviewed studies have pointed towards greater efficiencies in information search (Acker, 2008; De Silva, 2008) and in the coordination of multi-level local activities in agricultural value chains that are geographically extensive and organizationally complex (Overa, 2006). Thus, greater efficiency of productive activity creates potential for better financial returns. Enhancement of forms of human and social capital is also evident.

Coleman (1994) suggests that “human capital is created by changing persons so as to give them skills and capabilities that make them able to act in new ways”. Castells *et al.* (2008) observe this in the manner that local language expressions and conventions have been combined with other languages (such as English) and embodied in mobile phone use through local software adaptation. The language of mobile phones (short message services; use of codes; shortened forms; visual tools, etc) requires new skills as well as cultural and language reorientation on behalf of the user. Development of the capabilities for effective use of a mobile phone also leads to enhancement of social capital.

7.4.2 Use of mobile phones and general security

General security in neighbourhoods is very important to ensure that citizens go about their duties peacefully without let or hindrance by anyone. The respondents were therefore asked if the use of mobile phones has had any influence on the general security in their neighbourhood. More than half of the respondents (56%) indicated that mobile phones had no influence on general security in their neighbourhood. Further analysis confirmed this finding with a mean of 2.8 and a standard deviation of 1.0. The reason given for this was that their communities are generally safe. They have therefore not used the mobile phone for seeking assistance as far as petty theft cases are concerned. However, 44 percent of the respondents are of the view that the use of mobile phones had a high influence on the general security in the neighbourhood. They feel very comfortable with the use of mobile phone because in the few instances in which the peace in their communities had been disturbed as a result of communal violence and chieftancy disputes, the police was reached

very quickly to restore law and order. This was confirmed by both the FGD and KII participants.

7.4.3 Use of mobile phones and communication with government departments

The section sought to find out how close the respondents were in their relationship with the decentralized government departments especially the Directorate of Agricultural Extension Services. They were therefore asked to indicate how the use of mobile phones had influenced their relationship with government departments. The results as shown by table 7.4 indicate that 295 of the respondents representing 81.3 percent reported not using mobile phones to contact decentralized government departments. A mean of 2.4 and a standard deviation of 0.8 confirmed this result. The respondents rather prefer to go to the government offices in person to do business, if any, instead of using the mobile phone. They showed a clear sense of distrust of government officials such that they are of the view that they can be attended to when they are at the office personally. Only 19 percent had used mobile phones to do business with government departments before, although they sometimes visit such offices personally to ensure that their concerns were attended to.

7.4.4 Use of mobile phones and emergencies

Earlier results presented by this study indicated that the use of mobile phones had led to the reduction in the frequency of travelling, reduced time spent on travelling and generally led to time and cost saving. The time and the cost saved could be reallocated to other activities to generate economic benefits to enhance livelihoods and reduce poverty. To this end, the study investigated how the use of mobile phones had influenced the ability of the

respondents in dealing with emergencies. Almost a third (31.5%) of the respondents reported mostly using mobile phones to deal with emergencies. This is with respect to dealing with bush fire outbreaks which is very rampant in the study areas, calling the police to deal with chieftancy matters, placing a call to the district veterinary office to assist with outbreak of epidemics and calling relatives to remit them when cash strapped or informing them in times of the death of relatives. In all, 259 respondents 73 percent reported that use of mobile phones had highly influenced their ability to deal with emergencies. This result is confirmed by a mean of 3.5 and a standard deviation of 1.2. In effect, the use of mobile phones had led to the respondents in the study area responding more quickly to emergencies and thereby improving their livelihoods. This was confirmed by both the FGD and KII participants.

7.5 ICT Services as Income Generating Activities

The study further sought to find out from respondents whether or not they or their family members undertake any ICT related activity that assists them in generating any income to improve their livelihoods and thereby reduce poverty. The responses are shown by figures 7.1 and 7.2.

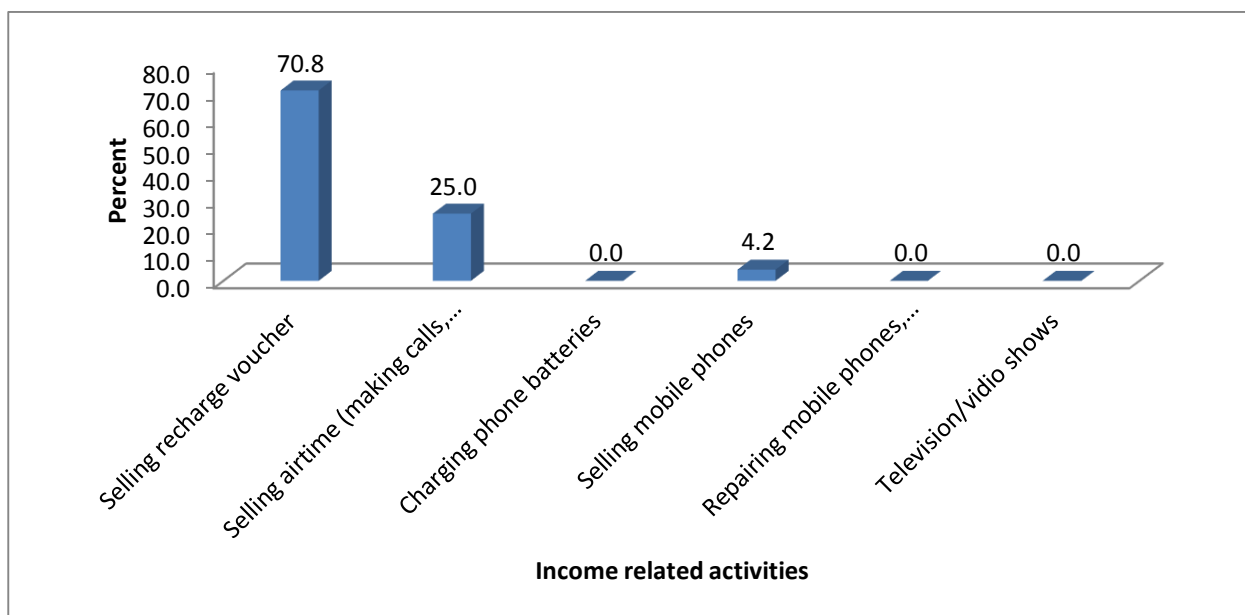


Figure 7.1: Proportion of respondents involved in ICT related services

Source: Survey data, 2012

As revealed by figure 7.1, a number of respondents undertake income related activities with respect to ICTs. About 71 percent of those who responded to this question reported that they earn income by selling recharge cards known locally as ‘units’. This is done on part-time basis to supplement their incomes. Some of the respondents explained that selling recharge vouchers is one of the goods that they sell as traders. Twenty five percent of the respondents indicated that they sell airtime, that is, they use their mobile phones to make or receive calls for others and charge a small fee for providing such services. The respondents also reported that some of their family members also undertake income related activities with respect to ICTs. This is shown by figure 7.2.

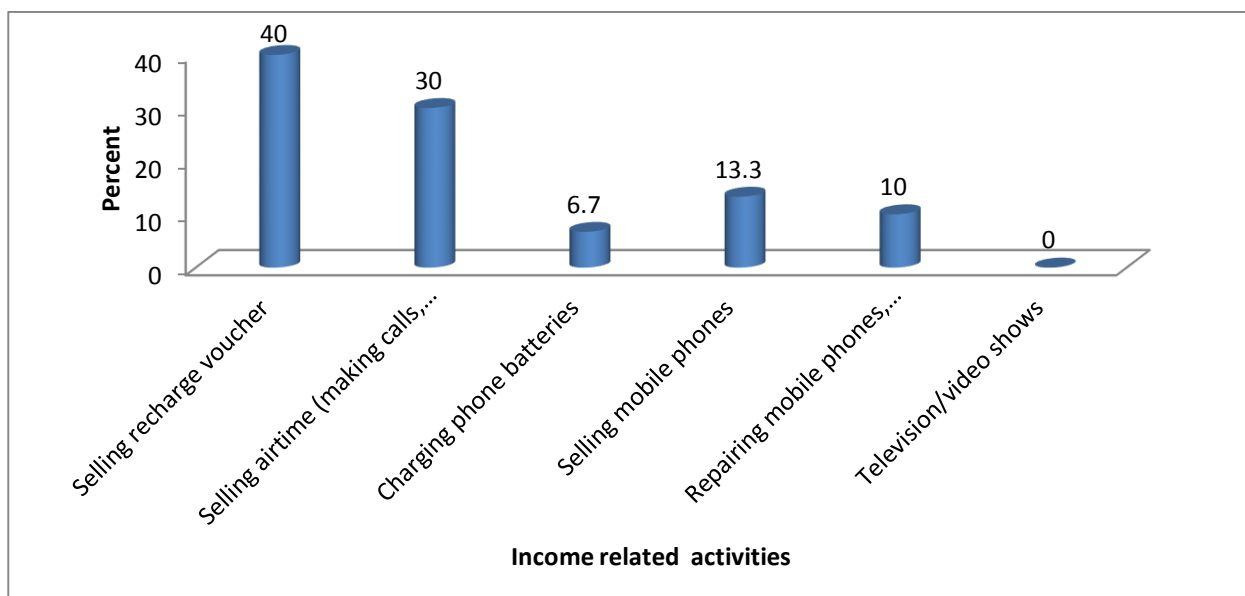


Figure 7.2: Proportion of respondents with family members involved in ICT related income generating activities

Source: Survey data, 2012

They reported that 40 percent and 30 percent of their family members either sell recharge vouchers or sell airtime. These income generating activities are undertaken on part-time basis as they have their main source of income but use this to supplement their income. About 13 percent had relatives who sell mobile phones to earn a living, with only a few with relatives earning income for charging fees for others. These are basically those who do not have electric power in their premises and therefore depend on others. This gives an indication that people do not let lack of electricity to serve as a constraint to their use of mobile phones. They have found an innovative way of going round the problem, though it adds to the cost of using mobile phones.

7.6 Perceived Role of Access to and Use of Radio on Livelihoods and Poverty Alleviation

The study further sought to find out about the perceived role that access to and use of radio play on livelihoods and poverty alleviation in rural communities. A number of questions were therefore asked to find out how radio has played a role in influencing either positively or negatively on livelihoods and poverty particularly with respect to financial capital, social capital, human capital, their vulnerability issues, and on their relationship with government departments with respect to processes, institutions and policies. The survey results are presented by tables 7.5 to 7.6.

Table 7.5: Perceived role of using radio over the last two years on financial and social capital

Livelihood and poverty aspects	Negative	No influence	Low influence	Medium influence	High influence	Total	Mean (μ)	Standard deviation (σ)
Household income	5 (1.6%)	190 (60.7%)	63 (20.1%)	20 (6.4%)	35 (11.2%)	313 (100%)	2.6	10.0
Awareness of financial services	0 (0%)	160 (51.1%)	81 (25.9%)	43 (13.7%)	29 (9.3%)	313 (100%)	2.8	9.2
Status of business	1 (0.3%)	186 (59.4%)	69 (22.1%)	35 (11.2%)	22 (7%)	313 (100%)	2.7	9.9
Household food security	0 (0%)	207 (66.1%)	63 (20.1%)	25 (8%)	18 (5.8%)	313 (100%)	2.5	10.7
Travelling and transport of goods	0 (0%)	199 (63.6%)	60 (19.2%)	31 (9.9%)	23 (7.4%)	313 (100%)	2.6	10.4
Status of agricultural/livestock activities	2 (0.6%)	224 (71.6%)	44 (14.1%)	24 (7.7%)	19 (6.1%)	313 (100%)	2.5	11.3
Social relationship	1 (0.3%)	164 (52.6%)	73 (23.4%)	37 (11.9%)	37 (11.9%)	317 (100%)	2.8	9.2
Entertainment options	0 (0%)	10 (3.2%)	39 (12.4%)	150 (47.8%)	115 (36.6%)	314 (100%)	4.2	9.5

Source: Survey data, 2012

7.6.1 Use of radio and household income

One of the indicators of poverty is lack of income or low levels of income. In designing this study, cognizance was taken of the fact that poverty is multi-dimensional and income is

only one of the indicators of poverty. As revealed by table 7.5, a little more than a tenth (11.2%) of the respondents who answered this question was of the view that radio had a high influence on their household income. In total, slightly more than a third (37.7%) of the respondents indicated that the use of mobile phone had highly influenced (low-high influence) their household income. Significantly, almost two thirds (60.7%) of the respondents reported that listening to radio had no influence on their household income. This result is confirmed by a mean of 2.6 and a standard deviation of 10.0. This result is consistent with earlier responses provided by the respondents when 0.8 percent and 0.6 percent of them listen to business and economic programmes and agricultural and rural development programmes respectively. This is not surprising as their most favourite programmes are musical and entertainment (29.9%) as well as listening to news (29.9%).

7.6.2 Use of radio and awareness of financial services

The study sought to find out from the respondents how influential radio had been on their awareness of financial service, namely: banking services, micro-financial services, saving and loans companies, credit unions, insurance services and financing of start-up operations. The results as presented by table 7.5 indicate that radio had no influence on the awareness of financial services on more than half (51.1%) of the respondents. Less than a tenth (9.3%) of the respondents reported that radio had a high influence on their awareness of financial services. This is confirmed by a mean of 2.8 and a standard deviation of 9.2. About 49 percent of the respondents reported that radio had highly influenced their awareness of financial services. This is very good for the livelihoods of the respondents as they can access the financial services available to enable them operate their businesses with the necessary financial advice and support.

7.6.3 Use of radio and status of business

Further respondents were required to indicate whether or not by listening to radio there had been any influence (positively or negatively) on the status of their business. The responses provided by the respondents are consistent with earlier responses for as revealed by table 7.5, only 7 percent of the respondents reported that listening to radio had a high influence on their business activities. Almost two thirds (59.2%) of the respondents reported that listening to radio had no influence on the status of their business. A mean of 2.7 and a standard deviation of 9.9 confirmed that listening to radio had no influence on the status of the business. This result is to be expected since earlier results reported revealed that very few of the respondents listen to business and economic programmes.

7.6.4 Use of radio and household security

The study further sought to find out from the respondents if by listening to radio there had been an influence on their household security. More than two thirds (66.1%) of the respondents as revealed by table 7.5 reported that listening to radio had no influence on their household security. Further analysis confirms this with a mean of 2.5 and a standard deviation of 10.7. They were of the view that very few security awareness programmes are aired on radio and most of them are also in the English language which some of them could not follow. Only 6 percent of the respondents reported that listening to radio had highly influenced their household security.

7.6.5 Use of radio and travelling and transport of goods

Due to the poor nature of the roads in the study areas, there is a high cost of travel and transport of goods in the study area. For this reason, the study sought to find out from the respondents if by listening to radio there had been an influence (positively or negatively) on travelling and transport of goods. The results as presented by table 7.5 indicate that radio had no influence on majority of the respondents (63.6%). This is confirmed by a mean of 2.6 and a standard deviation of 10.4. Twenty three respondents representing 7.4 percent of the total reported that listening to radio had a high influence on travelling and transport of goods.

7.6.6 Use of radio and status of agricultural development and productivity

The respondents were finally requested to indicate whether or not listening to radio had had any influence on their agricultural (crop/livestock) activities. As shown by table 7.5 the majority of the respondents (71.6%) reported listening to radio had not influenced the status of their agricultural activities (crop/livestock). Further analysis confirmed this result with a mean of 2.5 and a standard deviation of 11.3. This result is not surprising but consistent with earlier results which indicated that only a few of the respondents (0.6%) listen to agricultural and rural development programmes. It could be inferred from the responses that listening to radio had very little influence on improving livelihoods and poverty reduction of the respondents.

7.6.7 Perceived role of access to and use of radio - social capital

As noted earlier on, one of the key components of the sustainable livelihoods framework is social capital. The study was therefore designed to find out what role access to and use of radio had played on poverty alleviation in rural communities with respect to social capital. The responses are shown by table 7.5.

People need the opportunity to participate fully in the life of their community if they are to flourish and realize their potential. But certain groups in society are systematically excluded from opportunities that are open to others, because they are discriminated against on the basis of their race, religion, gender, caste, age, disability or other social identity (DfID, 2005). For these reasons, the study sought to find out if there were any impediments in their social relationships and if by listening to radio their social relationships had been influenced either positively or negatively. The objective was to find out if on the basis of someone's ethnicity, religion, gender for instance, they were unable to participate meaningfully in the life of their community. As shown by table 7.5, more than half of the respondents (53%) reported listening to radio had not influenced their social relationship. This is confirmed by a mean of 2.8 and a standard deviation of 9.2. Such persons remained the same with respect to their social relationship with or without listening to radio. However, 47 percent of the respondents reported that their social relationships had been greatly influenced by listening to radio. Their social relationships had been influenced for the better and are therefore not socially excluded from society. According to the respondents, issues raised during radio programmes became the topic for further discussions among them and therefore they did not feel excluded from society. It could

therefore be deduced that radio played a key role in influencing social relationships and therefore reducing social exclusion.

The study further sought to find out if by listening to radio, the entertainment options of respondents had been influenced positively or negatively. As presented in table 7.5, more than a third of the respondents (37%) reported that listening to radio had a high influence on their entertainment options. A mean of 4.2 and a standard deviation of 9.5 confirm this result. This result is to be expected as about a third of the respondents (30%) had earlier reported that their most favourite radio programme was listening to music and entertainment. In total, about 97 percent of the respondents reported that listening to radio had an influence (low-high) on their entertainment options.

7.7 Perceived Influence of Using Radio on Human Capital, Vulnerability and PIP

One of the key components of the sustainable livelihoods framework, namely: human capital was examined to determine how listening to radio had influenced them either positively or negatively in terms of human capital. The responses are shown by table 7.6 below.

Table 7.6: Perceived influence of using radio on human capital, vulnerability and PIP

Livelihood and poverty aspects	Negative	No influence	Low influence	Medium influence	High influence	Total	Mean (μ)	Standard deviation (σ)
General level of knowledge/awareness	0 (0%)	19 (6.1%)	44 (14%)	143 (45.5%)	108 (34.4%)	314 (100%)	4.0	9.1
Receiving local news	0 (0%)	12 (3.8%)	48 (15.3%)	142 (45.2%)	112 (35.7%)	314 (100%)	4.1	9.2
Receiving national news	0 (0%)	8 (2.6%)	49 (15.6%)	140 (44.6%)	117 (37.3%)	314 (100%)	4.2	9.3
Receiving international news	0 (0%)	26 (8.3%)	52 (16.6%)	132 (42%)	104 (33.1%)	314 (100%)	4.0	8.7
Awareness of educational opportunities	0 (0%)	174 (55.8%)	86 (27.6%)	32 (10.3%)	20 (6.4%)	312 (100%)	2.7	9.7
Health information	2 (0.6%)	66 (21.1%)	82 (26.2%)	116 (37.1%)	47 (15%)	313 (100%)	3.4	8.0
Improvement in making community decisions	1 (0.3%)	221 (70.8%)	37 (11.9%)	31 (9.9%)	22 (7.1%)	312 (100%)	2.5	11.2
Weather/climate information	0 (0%)	51 (16.4%)	128 (41.2%)	75 (24.1%)	57 (18.3%)	311 (100%)	3.4	8.2
Access to government policies and regulations	0 (0%)	124 (39.9%)	56 (18%)	70 (22.5%)	61 (19.6%)	311 (100%)	3.2	8.1
Communication with government departments	2 (0.6%)	232 (74.1%)	37 (11.8%)	24 (7.7%)	18 (5.8%)	313 (100%)	2.4	11.6

Source: Survey data, 2012

7.7.1 Use of Radio and General Level of Knowledge and Awareness

Radio is still the dominant mass-medium in Africa with the widest geographical reach and the highest audiences compared with television (TV), newspapers and other information and communication technologies (ICTs) (Myers, 2008). Its objective is to inform, educate and entertain listeners. It is for this reason that the study sought to find out from respondents if listening to radio had influenced their general level of knowledge and awareness. The researcher interpreted general level of knowledge and awareness to mean receiving information through radio from sports, religion, arts, culture, education, economic, business development, music, and entertainment. As presented in table 7.6, more than a third of the respondents (34.4%) reported listening to radio had some influence

on their general knowledge and awareness of issues that affect their livelihoods especially in the area of education and sports. In all, 94 percent of the respondents reported that listening to radio had an influence (low-high) on their general level of knowledge and awareness. This result is confirmed by a mean of 4.0 and a standard deviation of 9.1.

7.7.2 Use of Radio and Receiving News

The study sought to find out from the respondents how listening to radio had an influence on receiving news (local, national and international). As shown by table 7.6, respondents reported that listening to radio had had a high influence on receiving local, national and international news. Between 33 percent and 37 percent of the respondents indicated that listening to radio had a high influence on receiving local, national and international news. A higher number of respondents (42-45 percent) reported that listening to radio had a medium influence on receiving local, national and international news. This result translated into between 75 percent and 82 percent of the respondents reporting that listening to radio had an influence (low-high) on receiving local, national and international news. Further analysis confirmed this result with a mean of between 4.0-4.2 and a standard deviation of 8.7-9.2 as indicated by table 7.6. This result is to be expected as the respondents had earlier indicated that the most favoured radio programme they listen to is local and international news (29.9%). This result is an indication that the respondents were not socially isolated as they were well informed through listening to news on what is happening in the world around them and could participate and make informed decisions which are likely to have a positive effect on their livelihoods and poverty reduction.

7.7.3 Use of Radio and Awareness of Educational Opportunities

Access to education and educational attainments are one of the pre-requisites for overcoming poverty and improving the livelihoods of people. This question was asked on the assumption that various educational institutions advertise their programmes on radio and also as part of the educational objectives of radio stations, they run educational programmes from time to time. As presented by table 7.6, more than half of the respondents (55.8%) reported listening to radio had not influenced them on their awareness of educational opportunities. This is confirmed by a mean of 2.7 and a standard deviation of 9.4. What this seems to suggest is that the respondents do not listen to educational programmes aired by the radio stations. Even if they listen and do not have the funds to sponsor their wards it is meaningless. Most of the programmes are also broadcast in the English language. This point is reinforced by earlier responses by the respondents which indicated that about a third of them listen mostly to entertainment and music and news instead of educational programmes. The study also revealed that only 44 percent of the respondents by listening to radio had influenced their awareness of educational opportunities.

7.7.4 Use of Radio for Health Information

As noted earlier on, the objective of radio is to educate, inform and entertain the listeners. For this reason respondents were required to indicate whether or not listening to radio had an influence on health information. As shown by table 7.6, more than a fifth of the respondents (21.1%) reported that listening to radio had no influence on the health information they received. More than a third of the respondents (37.1%) indicated that

listening to radio had medium influence on listening to radio. In total, about 78 percent of the respondents reported that listening to radio had an influence (low-high) on health information. A mean of 3.0 and a standard deviation of 8.0 confirmed this result. This is an indication that radio assists greatly in delivering health information through running various programmes on health issues frequently. Various health issues on sanitation, communicable and non-communicable diseases, drug abuse are discussed on a weekly basis on the respective radio stations. It is therefore not surprising that more than three quarters of the respondents reported that listening to radio had an influence on their health information.

7.7.5 Use of Radio for Improvement in Making Community Decisions

The study further sought to find out from the respondents if listening to radio had had an influence on making community decisions. There are a number of unit committees at the local level which form the basis for governance at the local level. Such committees are involved in making decisions with respect to agricultural, educational, health and developmental issues at the local level. It was for these reasons that this question was asked. The majority of the respondents (70.8%) reported that listening to radio had not influenced them in making improved community decisions. This result is confirmed by a mean of 2.5 and a standard deviation of 11.2. What this result suggests is that, most of the respondents were not involved in making decisions at the local level even though social and political programmes are their favourite radio programmes. Only about 7 percent of the respondents reported that radio had a high influence in contributing to community decision making.

7.7.6 Use of Radio for Weather/Climate Information

In its role of informing, radio had been used as an invaluable tool in delivering content relating to hazard warnings and disaster recovery services in the contexts of emergencies and in humanitarian aid services. As presented by table 7.6, almost a fifth of the respondents (18.3%) indicated listening to radio had a high influence on their receipt of weather/climate information. In total about 84 percent of the respondents reported listening to radio had influenced the receipt of weather/climate information. This result is confirmed by a mean of 3.4 and a standard deviation of 8.2. Agriculture is the mainstay of the Ghanaian economy and it is essentially rain-fed so farmers depend on the weather to undertake their farming activities. It is therefore not surprising that majority of the respondents reported listening to radio had influenced them. The daily weather reports and the forecasts provided by the Meteorological Agency are taken very seriously by the respondents and this assists them in planning their farming activities.

7.7.7 Use of Radio and Access to Government Policies and Regulations

Radio plays a very useful role in society as it acts as the watch-dog to government, disseminator of policies and programmes of government and to offer constructive criticisms where and when due. Additionally, radio provides a feedback mechanism to government on its regulations and policies. Radio serves as a quick mechanism by which government policies and programmes can be delivered to the citizenry in a timely manner. For these reasons, the study sought to find out from the respondents how listening to radio had influenced their access to government policies and programmes. Almost two fifths (39.9%) of the respondents as indicated by table 7.6 reported that there had been no

influence on them with regard to access to government policies and regulations by listening to radio. Nearly a fifth of the respondents (19.6%) reported that listening to radio had highly influenced their access to government policies and programmes. In total about 60 percent of the respondents reported that their access to government policies and regulations had been influenced positively (low-high). A mean of 3.2 and a standard deviation of 8.1 confirmed this result. Through listening to radio, respondents indicated that they had access to useful information on the activities of government in the area of agriculture, education, health and civic responsibilities.

The respondents reported that it was through radio that they got information that the mass cocoa spraying exercise was free and should therefore not pay for it. Other issues concerning health such as immunization against polio, for instance the information was received through radio. Through programmes supported by the National Commission on Civic Education, respondents became aware of their rights and responsibilities and also the fact that government and its assigns and agents are to serve them and not to lord over them. Through such educational programmes, they gained confidence in relating to their more privileged friends and family members as they got to know that they are all equal before the law and not based on ones educational background or social status. Radio had therefore impacted positively on their lives, and therefore improving their livelihoods and poverty status.

7.7.8 Use of Radio and Communication with Government Departments

About 74 percent of the respondents reported that listening to radio had not influenced their communication with government departments. This result is consistent with an earlier response on the use of mobile phones and communication with government departments where 81.3 percent of the respondents reported that use of mobile phones had no influence on their relationship with government departments. This is confirmed by a mean of 2.4 and a standard deviation of 11.6. Further discussions with the respondents who had communicated with government departments revealed that after the radio discussions on particular issues, they go there personally for clarification. An instance is the free services provided by government on cocoa spraying and that of immunization which prompted them to communicate with government departments. They also sometimes follow-up on the agricultural extension officers. These, they indicate is few and far between.

7.8 Perceived Role of Access to and Use of Television on Livelihoods and Poverty Alleviation

Just as done for mobile phones and radio, the study further sought to find out the role that access to and use of television play on livelihoods and poverty alleviation in rural communities. The questions were on how television had influenced livelihoods and poverty with respect to financial capital, social capital, human capital, their vulnerability issues, and on their relationship with government departments with respect to processes, institutions and policies. The survey results are presented by tables 7.7 and 7.8 below.

Table 7.7: Perceived role of using television on financial and social capital

Livelihood and poverty aspects	Negative	No influence	Low influence	Medium influence	High influence	Total	Mean (μ)	Standard deviation (σ)
Household income	1 (0.5%)	156 (72.0%)	32 (15%)	9 (4.2%)	16 (7.5%)	214 (100%)	2.5	7.9
Awareness of financial services	1 (0.5%)	127 (58.5%)	43 (19.8%)	26 (12%)	20 (9.2%)	217 (100%)	2.7	6.8
Status of business	2 (0.9%)	153 (71.8%)	29 (13.6%)	11 (5.2%)	18 (8.5%)	213 (100%)	2.5	7.7
Household food security	0 (0%)	159 (74.7%)	31 (14.6%)	13 (6.1%)	10 (4.7%)	213 (100%)	2.4	8.0
Travelling and transport of goods	0 (0%)	158 (73.5%)	35 (16.3%)	10 (4.7%)	12 (5.6%)	215 (100%)	2.4	8.0
Status of agricultural/livestock activities	1 (0.5%)	168 (78.1%)	23 (10.7%)	11 (5.1%)	12 (5.6%)	215 (100%)	2.4	8.4
Social relationship	3 (1.4%)	132 (61.1%)	36 (16.7%)	18 (8.3%)	27 (12.5%)	216 (100%)	2.7	6.9
Entertainment options	1 (0.5%)	19 (8.8%)	28 (12.9%)	103 (47.5%)	66 (30.4%)	217 (100%)	4.0	6.2

Source: Survey data, 2012

7.8.1 Use of Television and Household Income

One of the indicators of poverty is lack of income or low levels of income. The question was therefore asked to find out how influential (positively or negatively) the use of television had played a role in household development over the last two years on livelihoods and poverty reduction with respect to household income. As revealed by table 7.7, less than a tenth (7.5%) of the respondents who answered this question were of the view that television had a high influence on their household income. In total, slightly more than a quarter (26.7%) of the respondents indicated that the use of television had highly influenced (low-high influence) their household income. Significantly, 73 percent of the respondents reported that viewing television had no influence on their household income. This result is confirmed by a mean of 2.5 and a standard deviation of 7.9. This result is consistent with earlier responses provided by the respondents which indicated that 0.7 percent and 2.1 percent of them listen to business and economic programmes and

agricultural and rural development programmes respectively. This is not surprising as their most favourite television programmes were musical and entertainment (50.7%) as well as listening to news (33.6%).

7.8.2 Use of Television and Awareness of Financial Services

The study sought to find out from the respondents how influential television had been on their awareness of financial services, namely: banking services, micro-financial services, saving and loans companies, credit unions, insurance services and financing of start-up operations. The results as presented by table 7.7 indicate that television had no influence on almost two thirds (58.5%) of the respondents. A mean of 2.7 and a standard deviation of 6.8 confirmed this. Less than a tenth (9.2%) of the respondents reported that television had high influence on their awareness of financial services. In total about 41 percent of the respondents reported that television had an influence (low-high) on their awareness of financial services.

7.8.3 Use of Television and Status of Business

Further respondents were required to indicate whether or not by viewing television there had been any influence (positively or negatively) on the status of their business. The responses provided by the respondents are consistent with earlier responses as revealed in table 7.7, only 9 percent of the respondents reported that viewing television had a high influence on their business activities. About 72 percent of the respondents reported that viewing television had no influence on the status of their businesses. This result is confirmed by a mean of 2.5 and a standard deviation of 7.7. This result is to be expected

since earlier results revealed that very few of the respondents view business and economic programmes on television.

7.8.4 Use of Television and Household Security

The study further sought to find out from the respondents if by viewing television there had been an influence on their household security. Almost three quarters (74.7%) of the respondents as revealed by table 7.7 reported that viewing television had no influence on their household security. A mean of 2.4 and a standard deviation of 8.0 confirm this. They were of the view that very few security awareness programmes are aired on television and most of it are also in the English language which some of them could not follow. Only 5 percent of the respondents reported that viewing television had highly influenced their household security.

7.8.5 Use of Television and Travelling and Transport of Goods

Due to the poor nature of the roads in the study areas, there is a high cost of travel and transport of goods in the area. For this reason, the study sought to find out from the respondents if by viewing television there had been an influence (positively or negatively) on travelling and transport of goods. The results as presented by table 7.7 indicate that television viewing had no influence on majority of the respondents (73.5%). Further analysis of this result was confirmed by a mean of 2.4 and a standard deviation of 8.0. Twelve respondents representing 5.6 percent of the total reported that viewing television had a high influence on travelling and transport of goods.

7.8.6 Use of Television and Status of Agricultural Development and Productivity

The respondents were finally requested to indicate whether or not viewing television had had any influence on their agricultural (crop/livestock) activities. As shown by table 7.7 majority of the respondents (78.1%) reported that viewing television had no influence on the status of their agricultural activities (crop/livestock). This result is confirmed by a mean of 2.4 and a standard deviation of 8.4. This result is not surprising but consistent with earlier results which indicated that only a few of the respondents (2.1%) view agricultural and rural development programmes. Twelve respondents representing 5.6 percent of the total reported that viewing television had a high influence on the status of their agricultural development and productivity activities. It could be inferred from the responses that viewing television had very little influence on improving livelihoods and poverty reduction of the respondents.

7.9 Effect of Access to and Use of Television on Livelihoods and Poverty Alleviation - Social Relationships and Entertainment Options

As noted earlier on, one of the key components of the sustainable livelihoods framework is social capital. The study was therefore designed to find out what role access to and use of television had played on poverty alleviation in rural communities with respect to social capital. A number of questions were therefore asked to find out how television had played a role in influencing either positively or negatively on livelihoods and poverty aspects of the respondents at the individual and household levels with respect to social capital. The responses are shown by table 7.7.

People need the opportunity to participate fully in the life of their community if they are to flourish and realize their potential. But certain groups in society are systematically excluded from opportunities that are open to others, because they are discriminated against on the basis of their race, religion, gender, caste, age, disability or other social identity (DfID, 2005). For these reasons, the study sought to find out if there were any impediments in their social relationships and if by viewing television their social relationships had been influenced either positively or negatively. The objective was to find out if on the basis of someone's ethnicity, religion, gender for instance, they are unable to participate meaningfully in the life of their community. As shown by table 7.7, more than three fifth of the respondents (61.1%) reported that viewing television had no influence on their social relationship. A mean of 2.7 and a standard deviation of 6.9 confirmed this result. What this means is that they had not been influenced either positively or negatively by viewing television. They had remained the same with respect to their social relationship with or without viewing television. However, 38 percent of the respondents reported that their social relationships had been influenced (low-high) by viewing television. Their social relationships had been influenced for the better and are therefore not socially excluded from society. According to the respondents, issues raised during television programmes became the topic for further discussions among them and therefore did not feel excluded from society. It could therefore be deduced that television had played a key role in influencing social relationships and therefore reducing social exclusion.

The study further sought to find out if by viewing television, the entertainment options of respondents had been influenced positively or negatively. As presented by table 7.7,

almost a third of the respondents (30.4%) reported that viewing television had a high influence on their entertainment options. This result is to be expected as slightly higher than half of the respondents (50.7%) had earlier reported that their most favourite television programme was watching to music and entertainment. About 91 percent of the respondents reported that viewing television had an influence (low-high) on their entertainment options. Further analysis confirmed this result with a mean of 4.0 and a standard deviation of 6.2.

7.10 Perceived Role of the Use of Television on Livelihoods and Poverty Aspects – Human Capital, Vulnerability and PIP

One of the key components of the sustainable livelihoods framework, namely: human capital was examined to find out what role access to and use of television had played on livelihoods and poverty alleviation in rural communities with respect to this component. A number of questions were therefore asked to find out how viewing television had played a role in influencing either positively or negatively on livelihoods and poverty aspects of the respondents at the individual and household levels with respect to human capital, vulnerability and policies, institutions and processes. The responses are shown by table 7.8 below.

Table 7.8: Perceived Role of the Use of Television to Household Development over the Last Two Years on Livelihood and Poverty Aspects – Human Capital, Vulnerability and PIP

Livelihood and poverty aspects	Negative	No influence	Low influence	Medium influence	High influence	Total	Mean (μ)	Standard deviation (σ)
General level of knowledge/ awareness	1 (0.5%)	39 (18.1%)	45 (20.8%)	86 (39.8%)	45 (20.8%)	216 (100%)	3.6	5.6
Receiving local news	0 (0%)	45 (20.8%)	48 (22.2%)	85 (39.4%)	38 (17.6%)	216 (100%)	3.5	5.6
Receiving national news	1 (0.5%)	40 (18.4%)	49 (22.6%)	81 (37.3%)	46 (21.2%)	217 (100%)	3.6	5.5
Receiving international news	2 (0.9%)	48 (22.1%)	51 (23.5%)	77 (35.5%)	39 (18%)	217 (100%)	3.5	5.4
Awareness of educational opportunities	0 (0%)	138 (64.5%)	43 (20.1%)	20 (9.4%)	13 (6.1%)	214 (100%)	2.6	7.2
Health information	2 (0.9%)	62 (28.7%)	44 (20.4%)	76 (35.2%)	32 (14.8%)	216 (100%)	3.3	5.5
Improvement in making community decisions	2 (0.9%)	160 (74.4%)	23 (10.7%)	16 (7.4%)	14 (6.5%)	215 (100%)	2.4	8.0
Access to government policies and regulations	1 (0.5%)	112 (51.9%)	38 (17.6%)	37 (17.1%)	28 (13%)	216 (100%)	2.9	6.2
Weather/climate information	0 (0%)	87 (40.1%)	71 (32.7%)	34 (15.7%)	25 (11.5%)	217 (100%)	2.9	5.8
Communication with government departments	3 (1.4%)	125 (57.9%)	40 (18.5%)	29 (13.4%)	19 (8.8%)	216 (100%)	2.7	6.7

Source: Survey data, 2012**7.10.1 Use of television and general level of knowledge and awareness**

Television, just like radio has the objective of informing, educating and entertaining viewers. It is for this reason that the study sought to find out from respondents if viewing television had influenced their general level of knowledge and awareness. The researcher interpreted general level of knowledge and awareness to mean receiving information through television from sports, religion, arts, culture, education, economic, business development, music, and entertainment. As presented by table 7.8, about a fifth of the respondents (20.8%) reported that viewing television had a high influence on their general knowledge and awareness of issues that affect their livelihoods especially in the area of

entertainment, education and sports. About 81 percent of the respondents reported that viewing television had an influence (low-high) on their general level of knowledge and awareness. This result is confirmed by a mean of 3.6 and a standard deviation of 5.6. In this way, viewing television could be indirectly deduced to have a great influence on the respondents' livelihoods and poverty reduction activities.

7.10.2 Use of Television and Receiving News (local, national and international)

The study sought to find out from the respondents how viewing television radio had an influence on receiving news (local, national and international). As shown by table 7.8, respondents reported that viewing television had a high influence on receiving local, national and international news. Between 18 percent and 21 percent of the respondents indicated that viewing television had a high influence on receiving local, national and international news. A higher number of respondents (36-39 percent) reported that viewing television had a medium influence on receiving local, national and international news. This result translated into between 77 percent and 81 percent of the respondents reporting that viewing television had an influence (low-high) on receiving local, national and international news. This finding is confirmed by a mean of 3.5 and a standard deviation of 5.6. This result is to be expected as the respondents had earlier indicated that the most favoured television programme they view is local and international news (33.6%). This result is an indication that the respondents are not socially isolated as they are well informed through viewing news on what is happening in the world around them and could participate and make informed decisions which are likely to have a positive effect on their livelihoods and poverty reduction.

7.10.3 Use of Television and Awareness of Educational Opportunities

Access to education and educational attainments are one of the pre-requisites for overcoming poverty and improving the livelihoods of people. For this reason the study sought to find out from the respondents how the use of television had impacted positively or negatively on their awareness of educational opportunities. This question was asked on the assumption that various educational institutions advertise their programmes on television and also as part of the educational objectives of television stations, they run educational programmes from time to time. As presented by table 7.8, more than three fifth of the respondents (64.5%) reported that viewing television had no influence on their awareness of educational opportunities. A mean of 2.6 and a standard deviation of 7.7 confirmed this finding. What this seems to suggest is that the respondents do not watch educational programmes that are aired by the television stations. This result is reinforced by earlier responses by the respondents which indicated that between a third and half of them watch mostly entertainment and music and news instead of educational programmes. The study also revealed that about 36 percent of the respondents indicated that watching television had an influence (low-high) on their awareness of educational opportunities.

7.10.4 Use of Television and Health Information

As noted earlier on, the objective of television is to educate, inform and entertain the viewers. For this reason respondents were required to indicate whether or not viewing television had an influence on health information. A question was asked to the effect that one of the indicators of poverty is ill-health and it was therefore necessary to find out if by viewing television had any influence on their health status. As shown by table 7.8, slightly more than a quarter of the respondents (28.7%) reported that viewing television had no

influence on the health information they received. More than a third of the respondents (35.2%) indicated that viewing television had medium influence on their health status. In total, about 70 percent of the respondents reported that viewing television had an influence (low-high) on health information. This finding is confirmed by a mean of 3.3 and a standard deviation of 5.5. This is an indication that television assists greatly in delivering health information through running various programmes on health issues frequently. Various health issues on sanitation, communicable and non-communicable diseases, drug abuse are discussed on a weekly basis on the respective television stations. It is therefore not surprising that more than three fifth of the respondents reported that viewing television had an influence on their health information.

7.10.5 Use of Television and Improvement in Making Community Decisions

The study further sought to find out from the respondents if viewing television had had an influence on making community decisions. This question was asked with respect to the involvement of the respondents taking part in decision making at the local level. There are a number of unit committees at the local level which form the basis for governance at the local level. Such committees are involved in making decisions with respect to agricultural, educational, health and developmental issues at the local level. It was for these reasons that this question was asked. Majority of the respondents (74.4%) reported that viewing television had no influence in decision making at the community level. This finding is confirmed by a mean of 2.4 and a standard deviation of 8.0. What this result suggests is that most of the respondents were not involved in making decisions at the local level and

that television had no influence. Only 6.5 percent of the respondents reported that television had a high influence in contributing to community decision making.

7.10.6 Use of Television and Weather/Climate Information

As noted earlier on, the objective of television is to inform, educate and entertain. In its role of informing television had been used as an invaluable tool in delivering content relating to hazard warnings and disaster recovery services in the context of emergencies and in humanitarian aid services. For these reasons the study sought to find out how the respondents had used television to receive information relating to the weather/climate and how the information received had an influence on them. As presented by table 7.8, slightly higher than a tenth of the respondents (11.5%) indicated that viewing television had a high influence on their receipt of weather/climate information. In total, about 60 percent of the respondents reported that viewing television had an influence (low-high) on the receipt of weather/climate information. This result is confirmed by a mean of 2.9 and a standard deviation of 5.8. Agriculture is the mainstay of the Ghanaian economy and it is essentially rain-fed so farmers depend on the weather to undertake their farming activities. It is therefore not surprising that majority of the respondents reported that viewing television had an influence on them. This means that the daily weather reports and the forecasts provided by the Ghana Meteorological Agency were taken very seriously by the respondents and this assists them in planning their farming activities.

7.10.7 Use of Television and Access to Government Policies and Regulations

The study further sought to find out from respondents if viewing television had an influence on their access to government policies and regulations. More than half (51.9%) of the respondents as indicated by table 7.8 reported that there had been no influence on them with regard to access to government policies and regulations by viewing television. Slightly more than a tenth of the respondents (13.0%) reported that viewing television had highly influenced their access to government policies and programmes. In total about 48 percent of the respondents reported that their access to government policies and regulations had been influenced positively (low-high). This finding is confirmed by a mean of 2.9 and a standard deviation of 6.2. Through watching television, respondents indicated that they had access to useful information on the activities of government in the area of agriculture, education, health and civic responsibilities.

The respondents reported that it was through television that they got information that the mass cocoa spraying exercise was free and they should therefore not pay for it. Other issues concerning health issues like immunization against polio, for instance the information was received through television. Through programmes supported by the National Commission on Civic Education, respondents indicated that they became aware of their rights and responsibilities and also the fact that government and its assigns and agents are to serve them and not to 'lord' it over them. Through such educational programmes, they gain confidence in relating to their more privileged friends and family members as they got to know that they are all equal before the law and not based on your educational

background or social status. Television had therefore impacted positively on their lives, are not marginalized and therefore improving their livelihoods and poverty status.

7.10.8 Use of Television and Communication with Government Departments

Furthermore, the study sought to find out if viewing television had influenced either positively or negatively on their communication with government departments. About 58 percent of the respondents reported that viewing television had not influenced their communication with government departments. This result is consistent with an earlier response on use of mobile phones and communication with government department where 81.3 percent of the respondents reported that use of mobile phones had no influence on their relationship with government departments. 41 percent of the respondents indicated that viewing television had influenced (low-high) on their communication with government departments. A mean of 2.7 and a standard deviation of 6.7 confirmed this result. Further discussions with the respondents who had communicated with government departments revealed that after the television discussions on particular issues, they go there personally for clarification. Examples provided were the free mass cocoa spraying exercise and free national immunization against polio. They also sometimes follow-up on the agricultural extension officers. These, they indicate are few and far between.

7.11 Detrimental Effects of using ICTs

The third research question sought to find out what were the detrimental effects of using ICTs in the study area. A total of 8 negative or detrimental effects of using ICTs which ranged from time wastage in watching television to perceived health hazards as a result of using mobile phones were identified. They were then listed and the respondents were

required to answer either ‘yes’ or ‘no’ to the set of questions provided. The results as shown by table 7.9 indicated those who answered ‘yes’ to the question.

Table 7.9: Detrimental Effect of Using ICTs

Detrimental Effect	Mobile Phone		Radio		Television	
	N=412	%	N=412	%	N=412	%
Distortion of culture	94	22.8	33	8.0	160	38.8
Exposure to unethical information	63	15.3	17	4.1	237	57.5
Facilitates crime	163	39.6	14	3.4	138	33.5
Health hazard	137	33.3	10	2.4	40	9.7
Increased immoral behaviour in society	131	31.8	24	5.8	224	54.4
Social isolation	14	3.4	31	7.5	50	12.1
Time wastage	57	13.8	27	6.6	253	61.4
Unnecessary use of money	281	68.2	22	5.3	37	9.0

Source: Survey data, 2012

From table 7.9, it is shown that of the studied ICTs, the detrimental effect of using radio was lower compared to mobile phone and television except social isolation where more people answered that it was detrimental than mobile phone. This is due to the fact that the person listening to a radio programme may be far away from the radio and can also undertake any activity whilst listening to the radio unlike mobile phone and television. With only about 3 percent of the respondents reporting that using mobile phone had a detrimental effect was a very interesting result. What it meant was that majority of them feel part of the social structure and can therefore relate well. ICTs are therefore not a barrier to most of the respondents. Almost a quarter (23%) of the respondents indicated that radio distorts their cultural values, and about a third (39%) reported that television distorts cultural values. This view was shared by participants at the FGD and during the KII where they explained that watching television had led to the changing lifestyle of the youth especially in the way they dress and carry themselves about. It was noted that some youth in the area had taken to kissing and pecking in public which was alien to the

traditional setting. Also some men had started putting on earrings which is the preserve of women. The wearing of short skirts and dresses with bare backs and others where their navels were exposed are some of the detrimental effects of television complained about. Yet another issue raised was to do with skin bleaching by some women and men, the use of tattoo and very outrageous hairstyles worn by both men and women. It must be emphasized that the issue of distortion of cultural values was not limited to watching western movies only but also some African ones as well. For example, an issue was raised where a widower put on white clothing to mourn the husband claiming she learnt it from one of the African movies and thought it appropriate to practice it when she lost the husband. This was completely frowned upon by the in-laws as the practice in Ghana was to put on black cloth without earrings. One KII stated that: “children do not give up their chairs for elderly people these days claiming that it is their human right to be comfortably seated at a function. They put up all manner of behavior by greeting elders with their left hand. This is what they call civilization”.

Time wastage was reported by a majority of the respondents (61%) of television viewers, due to the fact that new television channels like Multi TV and Smart TV show very interesting series of movies or football matches. Particular mention was made of some Ghanaian and Nigerian movies which had many parts and are screened one after the other. Granted that a football match or a movie lasts for 90 minutes or more in some cases and someone watches three of them in a day means a lot of time being spent at a spot. The time could have been used profitably by a student to study or a farmer to undertake an economic venture. Suggestions were made at the FGD to the effect that if not controlled, excessive

viewing of television could lead to poor academic performance as occurred during the 2011 Basic Education Certificate Examination in the two study areas. More than a tenth (14%) of the respondents reported that mobile phone wastes time. This was because of the time spent in receiving calls, sending text messages which could have been used for some other productive activity. However, during the FGD majority of the participants were of the view that this is not too negative as it could also contribute in no small measure in reducing cost of travel for example and the dangers involved in travelling to deliver messages. It was also a more convenient way of getting in touch with friends and relatives especially during emergencies so a little bit of time spent on the phone should not be detrimental to their economic well-being.

A little over half (54%) and a third (32%) of the respondents reported that television viewing and mobile phone use respectively had increased immoral behavior in society. The respondents were of the view that people try to imitate what they watch on television, for example public kissing, promiscuous sexual behaviours, excessive smoking and drinking. Some of these behaviours can result in health hazards such as liver problems, heart failure and sexually transmitted diseases. The use of offensive and indecent language on television was also cited as contributing to increased immoral behaviours in society. It was noted that young people had found a very convenient way of escaping the watchful eyes of their parents by using mobile phones to communicate and pass on information to one another. This had resulted in increased immoral behaviours.

With respect to health hazards as a detrimental effect in using ICTs, about a third (33%) of the respondents reported health hazards associated with the use of mobile phones and a tenth (10%) reported that television viewing had a negative health effect on viewers. Mobile phones getting warm after use for a long time were reported as a possible health hazard as the heat emitted may contain some rays which may be injurious to the body. This view was reinforced during the FGD where participants indicated that they had cause to suspect that excessive use of mobile phones and viewing television can cause headaches, heart attack, breast cancer and impotency in men. They were therefore a bit careful in using mobile phones even though they were aware of the tremendous benefits to them especially in times of emergencies and receiving vital information in a timely manner. They noted that sitting down for a long time to view television also causes back pain and waist problems to some of them. According to the respondents, they had information that sitting down for a long time (sedentary lifestyle) can result in high blood pressure and therefore hypertension. It could also cause eye problems as sometimes one had to strain the eye to watch television. Further discussions indicated that these health hazards were perceptions and not a matter of fact. It could be deduced that these perceptions of the health hazard of mobile phone use could add to their vulnerabilities. For this reason, they were very careful in the excessive use of ICTs. With respect to radio, the view was that you can listen to it whilst going about your normal activities and therefore does not pose any health problem to majority of the respondents (98%).

Majority of the respondents (68%) reported that one of the detrimental effects of using mobile phone was the unnecessary use of money. This was attributed to the buying of airtime so as to keep in touch with friends and relatives.

Almost two fifths (40%) of the respondents indicated that mobile phones facilitate crimes and a third (34%) associated viewing of television with crime facilitation. This was supported by participants at the FGD who were of the view that mobile phones had been used by criminal gangs to coordinate their activities to escape from arrest. Mobile phones were used to pass on information to their accomplices to escape from the crime scene. Criminals are also attracted by good quality mobile phones which they use all manner of tricks to steal. It therefore induces people to crime. Violent scenes and the manner in which criminal activities are planned on television were also attributed to facilitating crime and people learn from these and practice them in real life situations.

7.12 Constraints in Using ICTs

ICTs have been found to be very beneficial in terms of improving the socio-economic status of individuals and societies at large. However, a number of constraints have been identified which act as barriers to the effective access and use of ICTs. In order to find out the constraints that impede the effective access and use of ICTs, respondents were required to indicate the magnitude of constraint (from 'not a constraint (1)' to 'major constraint (4)'). This was based on the four-point Likert type scale. This question was asked in order to find an answer to research question 4 which stated that, 'what are the barriers to the effective use of ICTs in two rural districts of the Central Region of Ghana? The use of

frequencies, mean and standard deviation was used to analyse this question. The results are shown by table 7.10.

Table 7.10: Inhibitions to ICT access and use

Constraint	Not a Constraint	Somewhat a Constraint	Constraint	Major Constraint	Total	Mean (μ)	Standard deviation (σ)
Difficulties in getting recharge voucher	241 (69.3%)	50 (14.4%)	40 (11.5%)	17 (4.8%)	348 (100%)	1.5	12.3
Fear of using new ICTs	215 (60.7%)	90 (25.4%)	38 (10.7%)	11 (3.1%)	354 (100%)	1.6	11.6
High cost of ICTs	74 (20.9%)	90 (25.4%)	124 (35.15)	66 (18.6%)	354 (100%)	2.5	8.9
Lack of appropriate features	288 (81.8%)	29 (8.2%)	22 (6.3%)	13 (3.7%)	352 (100%)	1.3	14.3
Lack of electricity supply	182 (51.6%)	61 (17.3%)	20 (5.9%)	90 (25.2%)	353 (100%)	2.1	10.5
Lack of necessary skills/knowledge of using ICTs	195 (57.5%)	83 (24.5%)	47 (13.9%)	14 (4.1%)	339 (100%)	1.6	10.7
Language difficulties (English)	229 (65.6%)	44 (12.6%)	48 (13.8%)	28 (8.0%)	349 (100%)	1.6	11.8
Location (physical distance) of ICT services from users	180 (51.3%)	99 (28.2%)	62 (17.7%)	10 (2.8%)	351 (100%)	1.7	10.5
Low educational levels	176 (49.6%)	102 (28.7%)	64 (18.0%)	13 (3.7%)	355 (100%)	1.8	10.5
Low income	96 (27.0%)	118 (33.2%)	88 (24.8%)	53 (14.9%)	355 (100%)	2.3	9.0
Weakness/unreliable network	116 (32.9%)	133 (37.8%)	70 (19.9%)	33 (9.4%)	352 (100%)	2.0	9.4

Source: Survey data, 2012

The results as shown by table 7.10 indicated that more than half (52%) of the respondents reported lack of electricity was not a constraint in using ICTs in the study area. This result is confirmed by a mean score of 2.1 and a standard deviation of 10.5. Although all the studied areas were connected to the national grid, however, not all the households had electricity supply as a result 25% of the respondents reported lack of electricity supply being a major constraint to the use of ICTs. A number of reasons, namely: high cost of wiring the house and the frustrations involved in acquiring a meter for the house accounted for some of the respondents not connected to the national grid. At the FGD it was noted that the flat rate that clients are billed in the absence of meters was too exorbitant. It was therefore not affordable for the respondents given their meager incomes. Low voltage and

erratic power supply was also considered a constraint in the use of ICTs. An observation was made to the effect that some households without electricity send their mobile phones to friends and relatives who had access to electricity to recharge. This sometimes caused a lot of inconveniences for both parties.

Almost 35 percent of the respondents considered high cost of ICTs as a constraint with a further 19 percent considering high cost as a major constraint in using ICTs. This was explained to mean the high cost of mobile phone handsets in spite of cheap quality handsets on the market from China, for example. New television sets were also considered expensive so they had to resort to acquiring second hand ones which were less expensive. However, frequent breakdown of the television sets and the cost of repair made them expensive in the long run. Apart from the high cost of the mobile phone handset, the least airtime cost of Gh¢1.00 (50 cents) was considered too expensive. The respondents indicated that this runs too fast so are compelled to either buy Gh¢2.00 (\$1.00), a higher unit or stop using the handset for some time. However, in times of emergencies, they buy units or airtime to send messages to friends or relatives, an indication that mobile phones were useful despite the cost and respondents would continue to use them. It is to be noted that about 46 percent of the respondents considered high cost of ICT as either not a constraint or somewhat a constraint in using ICTs. This result is supported by a mean score of 2.5 and a standard deviation of 8.9.

Low income was also considered by over a tenth (15%) of the respondents as a serious constraint to the use of ICTs. This explained why very few respondents had television sets

and the difficulty in buying airtime. However, about 60 percent of the respondents reported that low income is either not a constraint or somewhat a constraint. A mean score of 2.3 and a standard deviation of 9.0 confirmed this result. It can therefore be deduced from this finding that low income may not necessarily be a factor in the use or none use of ICTs.

About a tenth (9.4%) of the respondents indicated that weak or unreliable network was a major constraint. This was in relation to poor quality of signals and reception of the ICTs. As regards television, most of the households had installed very high antennas constructed with bamboo on top of their houses to receive clear signals. In spite of this, not all the television channels produce clear signals coupled with a lot of hissing noise. Those who can afford buy additional equipment known in local parlance as ‘booster’ to stabilize the television set for a clear reception. This adds on to the high cost of the ICT. With respect to mobile phones, only a few locations in the study area had good reception. In some of the communities it was observed that people congregate at a particular location to either make or receive a call. This situation did not allow for confidentiality in conversations as passersby could clearly listen to what other people were discussing or what information being passed on. This therefore creates inconveniences for users of mobile phones. In spite of all that, a greater majority (71%) reported that weakness/unreliable network was either not a constraint or somewhat a constraint. This finding is confirmed by a mean score of 2.0 and a standard deviation of 9.4 indicating that unreliable network is not in any way a constraint to the use of ICTs as other means are found to overcome that.

Interestingly, low levels of education were considered a major constraint by only 4 percent of the respondents, whilst 8 percent of them reported language difficulties (English) as a major constraint. In fact 78 percent each of the respondents reported that low levels of education and language difficulties (English) was either not a constraint or somewhat a constraint in using ICTs. This is confirmed by a mean score of between 1.6-1.8 and a standard deviation of between 10.5-11.8. At the FGD, participants explained that they required only functional literacy to make/receive calls as they could recognize the numerals. Therefore low level of education was not necessarily a major constraint. However, they had a difficulty when it came to sending and receiving text messages.

In concluding this section, 4 items were identified as either a constraint or a major constraint, namely: high cost of ICTs (54%), low income (40%), lack of electricity supply (31%), and weak or unreliable network (29%). These therefore limit the use of ICTs. In spite of the fact that some alternative means had been found by respondents to overcome some of the constraints, the alternative means invariably made the use of ICTs more costly thereby putting further strain on the income and well-being of the poor. This, in the long run, tends to discourage the poor from using ICTs unless alternative remedial measures are put in place at the local or national governmental level to reduce, if not completely eliminate these constraints.

7.13 Summary

The results of the study indicated that mobile phones had influence on the following livelihoods aspects: household income, reduction in travelling and transport of goods and

services thereby reducing transactional costs, improvement in business development. However, it had no influence on market information for agricultural productivity and sending and receiving money though it had reduced the incidence of lost funds through middlemen. Mobile phone reduces social isolation, improves networking and thereby socially empowering the respondents. It is very influential in times of emergencies and useful for household security. Mobile phones had influenced efficiency in daily activities so could plan well in advance and make prior arrangements with clients for the delivery of goods and services.

Listening to radio and watching television on the other hand had no influence on household income, status of business, household security, travelling and transport. However, they had high influence on creating awareness on financial services, social relationships, entertainment options, listening to national and international news, general knowledge and awareness especially with respect to education and sport. Respondents are thus socially and economically empowered. Radio and television had also highly influenced respondents with regard to access to health information, weather information and access to government policies and regulations.

The study found that the ICTs studied (mobile phone, radio and television) had detrimental effect on distorting cultural values, exposure to unethical information, increased immoral behavior in society, facilitating crime, time wastage, unnecessary use of money and health hazards. It was also revealed that respondents also faced some constraints in accessing and

using the studied ICTs, namely: lack of electricity, low voltage and erratic power supply, high cost of ICTs, low income, weak or unreliable network, and low level of education.

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CHAPTER 8

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

8.1 Introduction

The final chapter of the study summarizes the general issues relating to the research, the purpose of the study, key issues relating to the literature review, the theoretical framework, methods employed in the study to obtain the results, the major findings of the study and the conclusion of the study based on the statement of the problem and the standpoint of the thesis. The final section of the chapter is the recommendations which propose a number of issues relating to the contribution of the study to information science, advocacy, policy and areas of further research.

8.2 General Issues relating to the Background of the Study

Ghana's performance in eradicating poverty has been quite remarkable at the national and urban areas. However, there are worrying trends of disparities across the 10 regions and socio-economic groups in terms of the poverty incidence and the depth. The country managed to halve extreme poverty from 36.5 percent to 18.2 percent between 1991 and 2006, and almost halve the proportion of people living below upper poverty line from 51.7 percent to 28.5 percent over the same period.

Various measures have been adopted in the past by the Government of Ghana to address the problems of poverty. The Ghana Poverty Reduction Strategy II, for instance placed more emphasis on growth as a means to accelerate poverty reduction and to eliminate the worst manifestations of poverty, social deprivation and economic injustice from Ghanaian

society. However, structural challenges emerged, characterized by large fiscal and balance of payment deficits mainly as a result of fiscal over-runs and external shocks including upsurge in crude oil and food prices at the end of 2008. The current medium-term national development framework, known as Ghana Shared Growth and Development Agenda (GSGDA), 2010-2013 seeks to address these challenges.

Information and knowledge are critical components of poverty alleviation strategies, and ICTs offer the promise of easy access to huge amounts of information useful for the poor. However, the digital divide is argued to be the result rather than the cause of poverty, and efforts to bridge it must be embedded within effective strategies that address the causes of poverty. Increases in household income that can be directly attributed to the use of ICTs are probably easy to isolate with careful research. The potential contribution of ICTs to development generally, and poverty reduction in particular has received a growing attention worldwide in recent years. The widespread availability of ICTs has generated much interest in their potential use for development and poverty alleviation. The linkage between ICTs, livelihoods and poverty stems from the recognition that information is a critical factor for development and poverty reduction purposes. The need to conduct empirical research on ICTs and poverty alleviation arose out of the concern that although ICTs have been shown to promote economic growth, the precise linkages between ICTs and poverty alleviation are unclear. ICTs have the potential to improve the welfare of the poor by providing opportunities to increase social capital, create economic opportunities, better access to health and educational facilities.

There is very little scientific evidence from detailed field research in specific poor communities about the ways in which individuals and households' access and use ICTs and the impact they have on livelihoods in rural and peri-urban communities. ICTs have contributed significantly to development, but there are still concerns regarding the extent to which access to and use of ICTs contributes to sustainable livelihoods and poverty alleviation, particularly in rural areas where poverty is pervasive. There is also no clear empirical evidence on the linkage between ICTs, poverty and livelihoods in Ghana as the few studies available have not yielded sufficient evidence to comprehensively understand the subject. It is against this background that this study was undertaken to explore the use of mobile phones, radio and television in poverty alleviation at the individual and household levels in fourteen rural villages in two districts of the Central Region.

On the basis of the foregoing, the study was based on the standpoint that: there is a relationship between ICT access and use, poverty alleviation and sustainable livelihoods. The relationship between ICT access and use and poverty alleviation is complex. ICTs are one of the ingredients in poverty alleviation and sustainable livelihoods. The more people use ICTs, the lower the rate of poverty. There is a great potential for the use of ICTs to reduce the many dimensions of poverty and ICTs, if supported with the right policies will complement and strengthen other multi-sectoral efforts that are required for poverty alleviation.

8.3 Purpose of the Study, Theoretical Framework and Methodology

The purpose of this case study has been to explore the use of Information and Communication Technologies (mobile phones, radio and television) in poverty alleviation in two districts (Effutu Municipal and Awutu-Senya District) of the Central Region of Ghana. Poverty alleviation is defined as the substantial reduction in all the negative aspects of poverty, namely: ill-health, illiteracy, low income and expenditure, education, vulnerability, assets, poverty level, and business turnover. In this study, questionnaire was used to collect quantitative data on the use of mobile phones, radio and television in poverty alleviation by heads of households at the individual and household levels in fourteen rural villages in two districts (Effutu Municipal and Awutu-Senya District) of the Central Region of Ghana. Concurrently, focus group discussions and key informant interviews were conducted to collect qualitative data to complement the information obtained from the questionnaire and also to gain more insight and to have a better understanding of the research questions.

In order to achieve this purpose, the study attempted to find answers to the following research questions:

- a. How are people in the two rural districts of the Central Region of Ghana accessing and using mobile phones, radio and television?
- b. How do mobile phones, radio and television influence rural communication and information exchange?
- c. What are the detrimental effects of using mobile phones, radio and television in two rural districts of the Central Region of Ghana?

- d. What are the barriers to the effective use of mobile phones, radio and television in two rural districts of the Central Region of Ghana?
- e. How has access to and use of ICTs (mobile phones, radio and television) reduced the individual components of poverty in two rural districts of the Central Region of Ghana with specific reference to ill-health, illiteracy, low income and expenditure, education, vulnerability, assets, poverty level, and business turnover?

The study sought to address the above questions by gathering data through the use of secondary and primary sources. The main primary source of data gathering was the use of questionnaire, focus group discussion and key informant interviews. The questionnaire was used to gather information on: household demographic characteristics, economic status, social exclusion and vulnerability, access to and use of ICTs, influence of ICTs on rural communication and information exchange, potential role of ICTs in poverty alleviation, constraints and detrimental effects of using ICTs. These themes sought to answer the research questions of the study. The case study research design was employed and the study sample was made up of four hundred and twelve heads of household, ten focus group discussions and eleven key informant interviews. The data collected was analyzed using the SPSS version 21.

The theoretical framework that guided the study was the Sustainable Livelihoods Framework (SLF). The SLF is an approach to development and poverty reduction which evolved from the changing perspectives of poverty. It focuses on sustainable local poverty reduction strategies which strengthen people's own inventive solutions. The SLF serves as

an important reminder of the complexity of rural poverty and of the equally complex strategies that the poor deploy to address their daily vulnerabilities. It is a flexible tool that enables users to explore livelihoods of different communities from different angles and helps to describe the multidimensionality of livelihoods and poverty.

8.4 Major Findings of the Study

In line with the purpose of the study, this section provides the summary of the major findings of the study, which have been grouped under 5 main sub-headings, namely: background of respondents, access to and use of ICTs, potential role of access to and use of ICTs in poverty alleviation, influence of ICTs on rural communication and information exchange, detrimental effects and barriers to effective use of ICTs.

8.4.1 Background of respondents

The study established a ratio of male to female for the study to be almost 1:1 as there were 51 percent males and 49 percent female respondents. The majority of the respondents (80%) were below 50 years, with 35 percent of the total being between the ages of 20-29. With respect to education, the study revealed that 37 percent of the respondents had completed JSS and 33 percent of them had no formal education.

Respondents who professed the Christian faith were in the majority (94%) and those from the Fante ethnic group (45%) were the dominant ethnic group. The study also established that most of the respondents (37%) were crop farmers and artisans (21%) comprising hairdressers, beauticians, carpenters, masons and blacksmiths. Crop farming was also the

principal source of income for majority of the respondents. The study revealed that about 59 percent of the respondents earn about Gh¢1,000 (\$500) per annum, with 30 percent of them earning less than Gh¢500 (\$250) per annum.

The mean household size was 4.5 which is higher than the national average of 4.4. The study established that heads of household play a significant role in supporting financially and materially other people who live in the house. With respect to household assets and quality of housing, the study revealed that about 63 percent of the respondents were house owners with about 52 percent of the houses being cement walled with corrugated roof. Fifty three percent of the houses have electricity supply with about 38 percent of the houses having access to pipe borne water.

The study revealed that mobile phone ownership was 72 percent with radio and television being owned by 63 percent and 37 percent of the respondents respectively. With respect to non-ICT assets, it was established that most of the respondents had bicycles, clothes, jewels, fridges and a few of them with landed property.

8.4.2 Access to and use of ICTs

The study revealed that majority of the respondents acquired a mobile phone two or more years ago, an indication that they are more likely to be in a position to respond to questions on the quality and reliability of network connection and also cost of airtime. The majority of the respondents used the services of MTN more than any other service provider. This

was attributed to good network connection and the affordability of the airtime costs of MTN.

Quality of mobile service was considered to be generally good in the study area by most of the respondents and most of them used the services of MTN, TiGO and Vodafone. The quality of Vodafone was rated highly than that of MTN though majority of the respondents use the services of MTN. This suggests that issues other than costs are considered in using a mobile phone service provider. The study revealed that 25 percent of the respondents owned 2 or more SIM cards. This is to either be able to communicate when one network is down or to save cost on network to network. Users are aware that network connectivity will be down for sometime so in order to stay connected use other services.

The study revealed that majority of the respondents use the mobile phone to access market information, communicate with friends and family, to know the price of products and also in times of emergencies. This result gives an indication that the respondents are not vulnerable in times of emergencies; they are not socially excluded and used mobile phones to maintain strong social networks. Furthermore, the use of mobile phones made communication easier and reduced travel distances. About a fifth of the respondents used the mobile phone for ‘beeping’ or ‘flashing’ purposes thus using the mobile phone without paying for airtime costs. Respondents also lacked the necessary technical skills to send text messages. With respect to the use of mobile phone applications, voice call is used by majority of the respondents. There was low usage of internet connection due to the

complex nature of how to get connectivity and their lack of technical competence to use that feature. More than a quarter of them use the music player feature.

The study further revealed that the use of mobile phone is not limited to only those who own the handset but extends to those who do not have a handset. The implication of this result is that subscription statistics provided by the NCA and the service providers may not be a true reflection in view of the fact that mobile phone usage goes beyond subscribers and handset ownership. On the average majority of the respondents spent about Gh¢2 (\$1) per week on airtime cost.

The study revealed that most of the respondents listen to Peace FM, Okay FM and Adom FM which were outside the study area and broadcast mostly in the Akan language which was widely spoken in the study area. Language of broadcast, time of broadcast and content of programmes were the key reasons for listening to the radio stations. Entertainment, musical, local and international news were the most preferred radio programmes listened to by respondents and were listened to equally by the respondents. Though farming was the most dominant occupation in the study area, most respondents did not listen to agricultural programmes because the time for airing the programme and language used were not suitable. The study further revealed that most of the respondents listened to radio in the evening and early morning.

With respect to television, the majority of the respondents viewed TV3 and GTV and they also viewed entertainment, musical, local and international news which was consistent with

the viewing pattern of radio. However, more respondents viewed entertainment and musical programmes than local and international news. The majority of the respondents viewed television in the evening and about 5 percent of those who did not own television spent between 20 Ghana Pesewas (10 cents) and Gh¢2 (\$1) to watch television.

A cross tabulation with age, gender, income level, and education as independent variables with ICTs revealed that: the younger the person, the more likelihood he/she access and use mobile phones, while age did not influence access to and use of radio and further there was no significant relationship between age and access to and use of television. With respect to gender, the study revealed that there was a significant relationship between gender of respondents and the use of the studied ICTs. With regard to educational level and access to and use of the ICTs, it was established that there was a significant relationship between educational background and access to and use of mobile phones and that the higher one's educational level, the likelihood of using a mobile phone. There was also a relationship between access to and use of radio and television respectively. As regards income level and access to and use of mobile phones, the study showed that there was a significant relationship between the variables and that the higher one's income the more likely he/she will use a mobile phone. The study further revealed a significant relationship between income levels and access to and use of radio but no significant relationship between income levels and television access and use. It can thus be concluded that income levels have a significant relationship with access to and use of the ICTs studied except television.

8.4.3 Potential role of access and use of ICTs in livelihoods and poverty alleviation

The study revealed that the use of mobile phones had highly influenced the household income of majority of the respondents. This was with respect to earning extra income from selling mobile services, earning income from reduced travelling time and improving their business activities. Improving the business activities of the respondents was to do with the easy access with which they can link up with suppliers and customers, eliminating the use of middlemen who add on to the cost of doing business.

Contrary to what is in the literature for instance in Bangladesh, where most farmers use the mobile phone to monitor market prices, the study revealed that majority of the respondents in the study area reported otherwise and indicated that mobile phone use had no influence on their access to market information. The use of mobile phones had highly influenced travelling and transport of goods and services thereby reducing the cost of doing business and travelled when it was absolutely necessary leading to better planning of business.

The study also established that mobile phone use had highly influenced the sending and receiving of money through the MTN mobile money transfer and the Western Union Money Transfer thereby reducing the incidence of lost funds experienced previously when it was sent through intermediaries. Two fifth of the respondents reported that arranging social functions had been influenced by the use of mobile phones making it very fast, convenient and cost saving leading to reducing social isolation and improving their livelihoods. The study also established a strong bonding among friends and relations and therefore social integration because of the high influence the use of mobile phones had, on

contact with friends and relatives. Respondents did not feel isolated as a result of being in constant touch with friends and relations. The cultural values of the respondents had not been influenced with the use of mobile phones. With respect to group membership and networks, about three fifth of the respondents reported no influence on the use of mobile phones.

Another significant finding of the study was the high influence the use of mobile phones had on the efficiency of the daily activities of the respondents. They could therefore plan well in advance and make prior arrangement with clients for the delivery of goods and services in a timely and cost-effective manner. Respondents preferred to go to the government offices in person to do business instead of using mobile phones as they did not trust that their problems would be attended to without being there in person. It was established that in times of emergencies, the use of mobile phone had highly influenced the ability of respondents to seek for support promptly. This had invariably reduced their vulnerability and therefore improved their livelihoods.

It was established that listening to radio had no influence on household income, awareness of financial services, status of their business, household security, travelling and transport of goods and services, status of agricultural development and productivity. This was reported by more than half of the respondents. However, listening to radio had influenced the social relationships of the respondents with respect to entertainment, their general level of knowledge and awareness, receiving local, national and international news, health

information and therefore reducing social exclusion, improving their livelihoods and reducing poverty.

The potential role of television on livelihoods and poverty alleviation revealed that television viewing had no influence on household income of respondents, awareness of financial services, status of business, household security, travelling and transport of goods, social relationships on more than half of the respondents. However, viewing television had influenced their general level of knowledge and awareness, receiving local, national and international news, health information and therefore reducing social exclusion, improving their livelihoods and reducing poverty.

8.4.4 Influence of ICTs on rural communication and information exchange

The study established that use of mobile phones had reduced social visits and face-to-face interactions. The livelihoods of the respondents had been improved as a result of the time saved which had been used profitably. However, in terms of governance, use of letters and post office, use of newspapers and consulting middlemen, no change was observed in the use of mobile phones as a means of communication and information exchange.

Radio and television had no influence as people continue to congregate at the village centre to discuss issues pertaining to development activities. The church and the market place were the congregation centres where the respondents meet, an indication that they are not socially excluded and take active part in commercial activities of buying and selling. The study established that there had been no change in reading newspapers, visiting

congregation points, consulting extension agents and attending local meetings as a result of either listening to a radio or watching television on the means of communication and information exchange.

8.4.5 Detrimental effects and barriers to effective use of ICTs

In spite of the benefits that access to and use of ICTs brought about to the individual in particular and the community at large, there were a number of detrimental effects and barriers that constrain the effective use of ICTs in improving livelihoods and reducing poverty. These were: exposure to unethical information, increased immoral behavior in society, time wastage leading to less productivity thereby affecting livelihoods, unnecessary use of money. Significantly, ICTs also facilitated criminal activities and possible health hazards as a result of sitting for a long time to watch television, for instance. The collective effect of these detrimental effects played a role in increasing the vulnerabilities of the respondents. The study also established the following as either a constraint or major constraint in access to and use of ICTs: lack of electricity supply, low voltage and erratic power supply, high cost of the ICTs, low income, and weak or unreliable network. The combined effect of these constraints may adversely affect the vulnerability and livelihoods of the respondents.

8.5 Conclusion of the Study

In line with the purpose of the study, the following conclusions have been drawn based on the major findings of the study:

8.5.1 Background of respondents

This sub-section of the Chapter is organized under: personal characteristics, household characteristics and socio-economic status of the respondents. Most of the heads of the households (80%) were below the age of 50 years, with JSS as the highest qualification obtained by 67 percent of them. Crop farming was the principal source of income for most of the respondents with more than half (53%) of them earning between Gh¢500 (\$250)-Gh¢1000 (\$500) per annum and 30 percent who earn less than Gh¢500 (\$250) per annum. Most of the respondents own modest houses with cement wall and roofed with corrugated roofs. Some of the houses were not connected to the national grid, an indication of serious constraint in the use of ICTs which are basically powered by electricity. A few respondents had supply of pipe borne water to the household.

8.5.2 Access to and use of ICTs

Majority of the heads of households under the study had access to and made use of mobile phones and radio than television. The ICTs under study which the respondents possess were acquired to assist them principally to meet their information needs and to communicate with their friends, family or business partners. The ICTs had been beneficial to the respondents and this extended to the non-owners of the technologies as well since they shared them with the owners.

The network coverage and the quality of service in the study area were generally good and MTN was the most used service provider. Two factors, namely: quality and cost of service informed users on which service provider to use in the study area. Cost of mobile phone

services were considered generally high and the respondents used a number of strategies to go round the cost element and pay minimally for the services. They made fewer and important calls, acquired more than one SIM card and resorted to ‘beeping’, which though a nuisance to the recipient, assisted them to reduce cost.

Most of the respondents listened to radio and watched TV stations which were outside the study area principally because of the time of broadcast, language of broadcast and programme content. The most preferred programmes of the respondents were: entertainment, musicals, local and international news. Though agriculture was the dominant occupation in the study area, respondents did not listen to or watch agricultural programmes because of the broadcast time and the language of broadcast.

The younger the person, the more likely he/she will access and use mobile phones. Age however had no influence on access to and use of radio and television. There was a significant relationship between gender, educational level and use of the studied ICTs. There was also a significant relationship between income, mobile phones and radio. The higher the income level of a person, the more likely he/she will use a mobile phone or radio but not television.

8.5.3 Access to and use of ICTs in livelihoods and poverty alleviation

Mobile phones had played significant roles to reduce poverty and improve rural livelihoods through expanding and strengthening social capital (social networks), overcome their vulnerabilities such as social and economic exclusion, to deal with emergencies, increase

people's ability to work together thereby reducing cost and increasing productivity. They had also reduced travel cost, minimized physical risks, maximized outcome of necessary journeys, improved efficiency of activities, made arrangements with suppliers and customers, saved time and money. Use of mobile phones had reduced social visits and face-to-face interactions – improved livelihoods (communicate and prompt access to information, cut down costs, physical risks, increased household income and productivity).

Generally, mobile phones had played a role in improving rural livelihoods and reduced poverty with fast and easy modes of communication and increased their ability to access livelihood assets, undertake diverse livelihoods strategies and overcome their vulnerabilities.

Radio and TV had played significant roles to reduce poverty and improve rural livelihoods through increased entertainment options and dialogue between media stations and listeners through mobile phones (phone-in). Radio and TV had also increased awareness and general knowledge of the respondents, boosted people's ability to overcome their vulnerabilities, participated in development activities and made positive changes in their livelihoods.

ICTs have generally had an influence on reducing poverty and improving livelihoods through reducing vulnerabilities, enhancing generation of revenue, socially empowering people, improving ill-health and illiteracy and reducing cost of doing business. From the foregoing, the study established that there is a relationship between access to and use of

ICTs, poverty alleviation and sustainable livelihoods. Furthermore, ICTs are one of the ingredients in poverty alleviation and sustainable livelihoods. However, these ICTs (mobile phone, radio and television) alone are not enough to improve livelihoods and alleviate poverty. They should be complemented by other infrastructure and policies required for development such as good governance, mechanized agriculture, clean water supply, improved and reliable transportation network and reliable electricity.

8.5.4 Influence of ICTs on rural communication and information exchange

The use of mobile phones had reduced social visits and face-to-face interactions. Time and cost saved had been used profitably to improve livelihoods. There was no change with respect to the use of letters and post offices, use of newspapers. However, listening to radio and watching television on newspaper reviews had influenced their quest for information and enhanced their general knowledge and awareness. They sometimes obtained information on agricultural and business issues which invariably assisted in improving livelihoods. In spite of the availability of the ICTs, the respondents continued to meet at congregational points, namely: church, mosques, market centre and entertainment centres. At such congregational centres, a lot of information was exchanged since they discussed issues that they watched on television or heard from the radio. It was also a place to discuss social issues thereby removing boredom and improving their social isolation.

8.5.5 Detrimental effects and barriers to effective ICT use

The use of ICTs had been found to be of benefit to the users and communities at large. However, a number of detrimental effects and barriers to their effective use were identified in the course of the study. These were: increased immoral behaviour, exposure to unethical information, making criminal activities sophisticated, and possible health hazards. The collective effect of all these can contribute to increased vulnerabilities of the respondents.

The effective use of ICTs in the study area was found to be hampered by lack of electricity supply, low voltage and erratic power supply, high cost of ICTs and low income. Low income and high costs of ICTs did not only limit access to and use levels but also contributed to reducing household income – potential role of ICTs to rural livelihoods and poverty reduction can be negatively influenced by factors that limit access and use.

8.6 Recommendations

On the basis of the major findings of the study, the following recommendations have been made. It is the view of the researcher that when the recommendations are implemented, they would go a long way to improve access to and use of the ICTs studied (mobile phones, radio and television) to eventually improve livelihoods, well-being and reduce poverty.

8.6.1 Improving quality of service

The network coverage and the quality of mobile phone service in the study area were found to be generally good, but respondents were of the view that this could be improved to ensure they had optimum benefit of the service. For this reason, it is being suggested that

the National Communication Authority should undertake periodic assessment of the telecommunication companies to determine whether or not they meet the minimum quality standards of communication. On the basis of the technical assessment, the telecommunication companies should be advised to improve their services in the first instance. Failure to improve the quality of service without any reasonable explanation should incur a fine. This recommendation is being made in support of punitive measures taken by the NCA in May 2013 by the imposition of Gh¢900,000.00 (\$450,000) fine on five telecommunication companies for poor quality service to their customers. The operational license of telecommunication companies who persistently deliver poor quality service should be revoked for a stated period. The operational license should be withdrawn and in the extreme management and technical personnel should be given custodial sentences.

8.6.2 Improving infrastructure and barriers to ICT use

The study established that the combined effect of lack of and erratic power supply, weak or unreliable network may adversely affect the vulnerability and livelihoods of the respondents. For this reason, it is recommended that the Government of Ghana, through the Electricity Company of Ghana should intensify the rural electrification programme to ensure that there is adequate and reliable supply of electricity at affordable rates to the rural economies. This will have a rippling effect on the rural economy as investors will be encouraged to invest in rural areas, jobs will be created, schools and health facilities will attract qualified and competent personnel. The educational standards and the general well-being (health) of the people will thereby improve. With improved health care and facilities,

the people are more likely to do extra work to generate enough revenue to improve their businesses and thereby their assets improved.

In addition, government should provide tax reliefs and tax rebates to the private sector organizations that invest in rural areas, especially in ICTs development and expansion. This may stem the rural-urban migration in the sense that once jobs are created and people have the requisite training to take up the responsibility, will remain in the rural area to assist in its growth and development.

It is further recommended that intensive educational campaigns should be mounted by the respective Metropolitan, Municipal and District Assemblies in collaboration with the National Commission on Civic Education and Civil Society Organizations to educate the citizens on the negative aspects of ICT use and how to overcome them. Additionally, the Ghana Police Service should intensify their educational talks and community policing to curb the incidence of criminal activities through the use of ICTs.

8.6.3 Rural development strategies incorporating ICTs

The Government of Ghana through the Ministries of Finance and Economic Planning and Local Government and Rural Development and the National Development Planning Commission should consider giving priority to the use of ICTs in rural developmental strategies as the study established the potential benefits of ICTs to development. ICT strategies and policies should be made part of the implementation of rural development efforts in order to make rural people have access to opportunities which will help them

improve on their livelihoods. Some of the strategies and policies that will shape rural ICT initiatives that could be considered are: development of communication and physical infrastructure, development of appropriate content, human resource development and community participation in local governance. It is suggested that an information needs assessment should be undertaken; the basis of which the appropriate design strategies will be put in place.

It should be noted that the study used the SLF to identify the potential role of ICTs in poverty alleviation. This framework can also be used to guide ICT implementation for rural development. ICT initiatives should be geared towards exploiting the assets and capabilities of the rural community and the government institutions that cater for them.

8.6.4 Uniform pricing and fair competition

The study established that majority of the respondents use mobile phones in times of emergencies, to improve communication and share information with friends and family, reduce travelling time and costs. This in effect, had greatly reduced their vulnerability and improved social networks. For this reason, it is suggested that the National Communications Authority should ensure that there is uniform pricing of services and fair competition among the mobile service providers to ensure effective use of mobile services.

They should also ensure that competitive prices are charged and also for the service providers to improve on the quality of their services to encourage more people to use mobile phones which had been found to reduce travel time and save cost. High cost was

also found to be a barrier to effective use of mobile phones. For this reason if the pricing structure is favourable, more people are likely to use mobile services with the attendant benefits.

8.6.5 Establishment of community radio and television

The study established that most of the respondents either listen to radio or watch television stations which are outside the study areas. These stations are commercially-oriented and provide content, broadcast in languages and times that were not suitable for the respondents. Based on this, very few of them listened to or watched programmes that were developmental in nature, that is, agricultural, business, health and other socially-oriented programmes that will assist in improving their livelihoods. It is recommended that the Government of Ghana through the National Communications Authority should encourage the establishment of more Community Radio and Television Stations by the private sector and the Metropolitan, Municipal and District Assemblies to ensure that programmes meet the needs of the rural folk. These stations will be the voice of the people to put through their developmental agenda.

It is further recommended that in order to enhance local content, there is the need for the community radio and television stations to engage with the local community in the production and dissemination of content that will be relevant and reflect issues of livelihoods enhancement and poverty reduction activities.

8.6.6 Social protection policies

The study established that a third of the respondents had no formal education and an equal number had completed JSS. This is an indication of a huge educational gap which is likely to have an effect on their use of ICTs and thereby affecting their well-being. The School Feeding Programme had resulted in increased enrolment figures in most schools. It is suggested that this is expanded to cover a lot more schools in the rural areas so that more people can go to school. This can be tied in with a free compulsory senior secondary school which should be taken seriously by the Ministry of Education through the Ghana Education Service. This will result in increased number of literate personnel and thereby reduce the rate of illiteracy which is an indicator of poverty.

Furthermore, the study established that because most of the respondents were illiterate, they could not use the cheaper option of sending text messages and rather resorted to making calls. In effect because they were illiterate, the transaction cost of using mobile phone was higher. This then calls for a policy intervention by the government through the Ghana Education Service to encourage the citizenry to go to school to at least the senior secondary, technical and vocational level. This should be made the terminal point in education and not the junior secondary as is the case presently.

It is further suggested that the National Health Insurance Scheme should be strengthened and well-organized so that the health needs of rural people are met. When people are sick, they are unlikely to engage in useful social and economic activity thereby reducing their livelihood. Provision of good health facilities and health care will help reduce ill-health

which is an indicator of poverty and thereby encourage people to participate actively in the national economy socially, culturally, politically and economically.

8.7 Suggestions for Further Research

The main purpose of the study was to explore the use of ICTs in poverty alleviation. In other words, it was to find out if the use of ICTs has a role to play in poverty alleviation. The study did not provide in-depth treatment of certain issues. It is, therefore, important that those areas are highlighted so that other researchers can explore them to expand the frontiers of knowledge in the linkage between ICTs, livelihoods and poverty alleviation. The following are some of the other areas that could be explored or investigated further:

The study established that ICTs have a potential role to play in poverty alleviation. It did not, however, delve into the extent or the level to which ICTs have reduced poverty in the study area. It is therefore important for further studies to be undertaken to find out about the extent or the level to which ICTs have reduced poverty.

Furthermore, the results of the present study can be used as a baseline to do further research in the study areas by providing some key ICT interventions to a benefit group and then to assess the impact of this increased access to and use of ICTs. It will therefore involve a benefit group which will be provided with some interventions and a control group without any ICT intervention.

The study revealed the perception of a possible health hazard as a result of continuous use of ICTs, but no empirical research has been conducted to determine that. It would be very beneficial to conduct further research to determine whether or not this is the case.

There would be the need to conduct empirical research to compare the role of the ICTs in improving livelihoods and reducing poverty in urban and rural communities, as most of these studies have been conducted mainly in rural areas.

The purpose of this case study was to explore the use of Information and Communication Technologies (mobile phones, radio and television) in poverty alleviation. The operational definition of poverty alleviation for this study refers to substantial reduction in all the negative aspects of poverty, namely: ill-health, illiteracy, low income and expenditure, education, vulnerability, assets, poverty level, and business turnover. In this study, questionnaire was used to collect quantitative data on the use of mobile phones, radio and television in poverty alleviation by heads of households at the individual and household levels in eighteen rural villages in two districts (Effutu Municipal and Awutu-Senya District) of the Central Region of Ghana. Concurrently, focus group discussions and key informant interviews were conducted to collect qualitative data to complement the information obtained from the questionnaire and also to gain more insight and to have a better understanding of the research questions. The purpose for which the study was conducted has been achieved and areas have been identified for further research.

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APPENDICES

APPENDIX 1

DEPARTMENT OF INFORMATION STUDIES, UNIVERSITY OF GHANA

Dear Sir/Madam,

THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN POVERTY ALLEVIATION IN RURAL COMMUNITIES IN THE CENTRAL REGION OF GHANA

Notes for completing Questionnaire

1. The purpose of this study is to explore the use of Information and Communication Technologies (mobile phones, radio and television) in alleviating poverty in two rural districts of the Central region of Ghana. Successful completion of this study will assist in increasing knowledge and understanding between the use of ICTs and poverty alleviation based on empirical evidence at the individual and household level.
2. The findings and recommendations will assist policy and decision makers and development practitioners in the development and implementation of appropriate ICT policies and strategies on evidence-based research.
3. You are assured that the information provided will be strictly confidential and used purposely for this study.
4. I hereby appeal to all respondents to, please, cooperate with the Research Assistants who will assist you to complete the questionnaire.
5. Thank you.

JOELSAM

PHD STUDENT

Section 1: General Information

- 1.1 Name of town/village.....
- 1.2 Name of electoral area.....
- 1.3 Name of District/Municipal.....
- 1.4 Date of Interview.....
- 1.5 Questionnaire number.....

Section 2: Respondent Data

- 2.1 Name of respondent (Optional)
- 2.2 Age (years) of respondent.....
- 2.3 Gender
- 1 = Male []
- 2 = Female []
- 2.4 Have you had any formal education?
- 1 = Yes []
- 2 = No []
- 2.5 If response to 2.4 is Yes, what is your highest level of education (Tick the appropriate one)
- 1 = Attended literacy classes []
- 2 = Less than Primary school []
- 3 = Completed Primary School []
- 4 = Completed JSS (or Middle school) []
- 5 = Completed SSS (secondary school, technical school) []
- 6 = Completed Tertiary Education (Polytechnic or University) []
- 2.6 If response to 2.4 is No, can you read and write in English?
- 1 = Yes []
- 2 = No []
- 2.7 What is your main occupation or job?.....
- 2.8 Do you do any other job?
- 1 = Yes (please specify).....
- 2 = No []
- 2.9 Relationship of the respondent to the head of the household
- 1 = Head of the household []
- 2 = Spouse []

3 = Other (please specify).....

2.10 How many people live regularly in your house? (Not short time visitors).....

2.11 Give the following data on each member of your family

Table 2.1

M e m b e r	Relationship to head 1=Head 2=Spouse 3=Son/daughter 4=Parent/(in-law) 5=Relative 6=Other unrelated	Sex 1=M 2=F	Age	Education 1=Attended literacy classes 2= Less than Primary school 3=Completed Primary School 4=completed JSS (or Middle school) 5= completed SSS 6= completed Tertiary Education	Occupation 0=none 1=animal rearing 2=crop 3=agricultural trading 4=trading 5=civil servant 6=retired civil servant 7=student 8=artisan(eg carpenter) 9=fishermen/fish monger 10=other (describe)
1					
2					
3					
4					
5					
6					
7					
8					
9					

2.12 How many of these household members are:

- 1 = Dependent on you for financial support []
 2 = Supporting you in cash []
 3 = Supporting you in kind []

2.13 Do members of your immediate family live in other towns outside your community?

1=Yes []

2=No []

2.14 Do members of your immediate family live abroad?

1 =Yes []

2 =No []

2.15 To what extent does your family depend on support from relatives that live outside your community?

1= Not at all []

2= Slight []

3= Moderate []

4= High []

Section 3: Economic Status

3.1 What are your household's three principal sources of income in order of importance?

(Write in the types of occupation and approximate annual income earned from each)

Type of occupation
Annual Income(2010)

Approximate

1.Main source

of income:

Gh¢ -

2. Second

source of income:

Gh¢ -

3.Third

Source of income:

Gh¢ -

3.2 Type of accommodation

1 = Personal Ownership []

2 = Rent []

3 = Rent-free/squatting []

3.3 Housing quality: wall and roof construction material (Observe and tick appropriate box)

1 = Cement walled with corrugated roof []

2 = Mud/Brick walled with corrugated roof []

3 = Wooden walled with corrugated roof []

4 = Mud/brick walled with thatched roof []

5 = Wooden walled with thatched roof []

6 = Bamboo walled with thatched roof []

7 = Other (please specify)

3.4 Does the house have electricity?

1 = Yes [] 2 = No []

3.5 What is your main source of water supply?

1 = River/stream []

2 = Well []

3 = Bore hole []

4 = Pipe borne water []

5 = Other (specify) []

3.6a Do you own any of the following ICT tools? (Tick all that is applicable)

1 = Computer []

2 = Fixed telephone line []

3 = Mobile phone []

4 = Radio []

5 = Television []

3.6b if none give reasons

3.6c Do any other member of your household own any of the following non ICT assets?
(provide number and size(for land own)).

Table 3.1

	Assets	Male	Females
1	Bicycle		
2	Car		
3	Canoe		
4	Fridge		
5	Cloths /Dumas		
6	Motorcycle		
7	Tractor		
8	Savings account		
9	Jewellery		
10	Land owned(size in hectares)		
11	Other (specify)		

3.7 What, if any, type of material support do you receive from family members living elsewhere? (Tick appropriate boxes)

1 = No support received []

2 = Money []

3 = Clothes []

4 = Mobile phone []

5 = Other (please specify) []

3.8 How many of the following livestock do you own? (Tick all that is applicable and fill in the number of each type of livestock)

1 = Cattle [.....]

2 = Goats [.....]

3 = Pigs [.....]

4 = Poultry [.....]

5 = Sheep [.....]

6 =Others (please specify).....

Section 4: Social exclusion and Vulnerability

4.1 Do you belong to any group?

1 =Yes []

2 =No []

4.2 What type is it? (Tick the appropriate one)

1= Credit union []

2= Insurance company []

3= Savings and loans company []

4= Bank []

5= FBO []

6= CBO []

7= Other (specify).....

4.3 What is the size of the group? (Number of members).....

(Put DK if don't know)

4.4 What is the purpose of the group? (eg. pepper growers group)

.....

4.5 What are the main means of communication of the group?

Among the members:.....

With customers:.....

With suppliers of inputs, goods:.....

4.6 What is your role in this group

1= Executive []

- 2= Active member ☐
- 3= Passive member ☐
- 4= Other (please specify).....

4.6a Which of the following have you experienced in the last two years? (Tick all that is applicable and fill in the number)

- 1 = Malaria ☐
- 2 = Guinea worm ☐
- 3 = Bilharzias ☐
- 4 = Cholera ☐
- 5 = Death in the family ☐
- 6 = Drought ☐
- 7 = Flooding ☐
- 8 = Fire outbreak ☐
- 9 = Theft ☐
- 10 = Loss in business/job ☐
- 11 = Other (please specify).....

4.6b Which of the following has any member of your household experienced in the last two years? (Tick all that is applicable and fill in the number)

- 1 = Malaria ☐
- 2 = Guinea worm ☐
- 3 = Bilharzias ☐
- 4 = Cholera ☐
- 5 = Death in the family ☐
- 6 = Drought ☐
- 7 = Flooding ☐
- 8 = Fire outbreak ☐
- 9 = Theft ☐
- 10 = Loss in business/job ☐
- 11 = Other (please specify).....

Section 5: Access and Use of ICTs

5.1 Means of communication and receiving information

5.1.1 What are the three main means/ways that you and other members of your household use frequently for communication and receiving information (Tick three)

- 1 = ☐ Internet service
- 2 = ☐ Mobile phone
- 3 = ☐ Postal service/letters
- 4 = ☐ Radio
- 5 = ☐ Television
- 6 = ☐ Face to face
- 7 = ☐ Other (please specify).....

5.1.2a How many of the following ICTs do you own? (Fill in the number of each ICT)

1 = Mobile phones [.....]

2 = Radio [.....]

3 = Television [.....]

5.1.2b How many of the following ICTs does any member of your household own? (Fill in the number of each ICT)

1 = Mobile phones [.....]

2 = Radio [.....]

3 = Television [.....]

5.2 Access and Use of Mobile phones (for those who use only).

5.2.1 Which company is your mobile phone service provider? (Tick all that is applicable)

1= Airtel []

2= Expresso []

3= MTN []

4= TiGo []

5= Vodafone []

6= Other (please specify).....

5.2.2 What is the level of mobile phone network in your town/village? (Tick applicable box)

Network provider	No network connection	Very weak network connection	Weak network connection	Moderate network connection	Good network connection	Very good network connection
Airtel						
Expresso						
MTN						
TiGo						
Vodafone						

5.2.3 How many SIM cards do you use?.....

Ask Q. 5.2.4, if respondent has more than one SIM card, otherwise move to Q. 5.2.5

5.2.4 Why do you use more than one SIM card? (Tick all that is applicable)

1 = To benefit from promotions []

2 = To save cost on network to network []

3 = To be able to communicate when one network is down []

4 = To be able to communicate at places where usual network has no service []

5 = Lower call rates of service provider []

6 = Other (please specify).....

5.2.5 Out of five times that you use a mobile phone, how do you use it?

1 = To beep/flash []

- 2 = To make calls []
3 = To send SMS (Text message) []
4 = collect call/pay for me []

5.2.6 On the average how much do you spend on mobile phone per week in Ghana Cedis?.....

5.2.7 Which of the following features do you use often if your mobile phone has them? (Tick all that is applicable)

- 1 =Camera []
2 =Radio []
3 =Internet connection []
4 =Television []
5 =Music Player []
6 =Torchlight []
7 =Voice call []
8 =SMS []

5.2.8 When did you first acquire a mobile phone in the household? (Tick that is applicable)

- 1 = More than two years []
2 = Two years ago []
3 = During last year []

5.2.9 If you do not have your own mobile phone, how do you get access to mobile phone anytime that you need to use one? (Tick that is applicable)

- 1=Use mobile pay phone (space-to-space) []
2=Borrow a mobile phone and use it myself []
3=Use other people's handset and insert own SIM card []
4=Ask a mobile phone owner to call a number and then talk []
5 =Other (please specify).....

5.2.10 If you use a mobile phone which is not yours, how much do you pay each time for the following?

- 1 =For beeping/flashing.....
2 =For text message.....
3 = Per minute for call.....

5.2.11 In order of priority, what do you mostly use a mobile phone for?

- 1= Price of product []
2= Market information []
3= Road conditions []
4= Calling suppliers []

- 5= Communication with friends []
 6= Communication with family []
 7= Gaining new technical knowledge []
 8= Emergencies (family) []
 9= Emergencies (friends) []

5.3 Access and Use of Radio

5.3.1 Which of the following radio stations do you listen to frequently? Tick maximum of three and explain why?

	Tick	Radio station	Reason for using station(multiple choice)	
				1 = Agriculture and Rural Development programmes
1		Radio Windy Bay(Winneba)		2 = Business and Economic programmes
2		Radio Peace(Winneba)		3 =Cultural programmes
3		Pink FM(Kasoa)		4=Entertainment and musical programmes
4		Golden Star FM(Swedru)		5 = Environment and health programmes
5		Kantinka FM(Gomoa)		6 = News (local and international)
6		Adom FM(Tema)		7 = Political programmes
7		Oman FM(Madina,Accra)		8 = Religious programmes
8		Peace FM(Accra)		9= Social programmes
9		Other Specify		10 = Other (please specify)

5.3.2 Which of the following are your favourite radio programmes? (Rank all that is applicable)

- 1 = [] Agriculture and Rural Development programmes
 2 = [] Business and Economic programmes
 3 = [] Cultural programmes
 4 = [] Entertainment and musical programmes
 5 = [] Environment and health programmes
 6 = [] News (local and international)
 7 = [] Political programmes
 8 = [] Religious programmes
 9 = [] Other (please specify).....

5.3.3 At what time of the day do you prefer to listen to a radio programme? (Tick all that is applicable)

- 1 = At Dawn []

- 2 = Early Morning []
 3 = Mid-Morning []
 4 = Afternoon []
 5 = Evening []
 6 = At Night []
 7 = Other (please specify).....

5.4 Access and Use of Television

5.4.1 Which of the following Television channels do you watch frequently? Tick maximum of three and explain why?

	Tick	Television Channel	Reason for using Channel	
1		GTV		1 = Agriculture and Rural Development programmes
2		Metro TV		2 = Business and Economic programmes
3		TV Africa		3 = Cultural programmes
4		TV 3		4 = Entertainment and musical programmes
5		Crystal TV		5 = Environment and health programmes
6		Multi TV		6 = News (local and international)
7		DSTV		7 = Political programmes
8		Smart TV		8 = Religious programmes
9		Other specify		9 = Social programmes
				10 = Other (please specify)

5.4.2 Which of the following are your favourite television programmes? (Tick all that is applicable)

- 1 = Agriculture and Rural Development programmes []
 2 = Business and Economic programmes []
 3 = Cultural programmes []
 4 = Entertainment and musical programmes []
 5 = Environment and health programmes []
 6 = News (local and international) []
 7 = Political programmes []
 8 = Religious programmes []
 9 = Other (please specify).....

5.4.3 At what time of the day do you prefer to listen to a television programme? (Tick all that is applicable)

- 1 = At Dawn []
 2 = Early Morning []

- 3 = Mid-Morning []
 4 = Afternoon []
 5 = Evening []
 6 = At Night []
 7 = Other (please specify).....

5.4.4 If you don't own a television set, how much do you spend each time you watch a television programme in Ghana Cedis?.....

Section 6: Influence of ICTs on rural communication and information exchange

6.1 Which of the following places do you visit regularly to exchange information in a week in the town/village? (Tick all that is applicable)

- 1 = Drinking bar []
 2 = Chop bar/Restaurant []
 3 = Market []
 4 = Church/Mosque []
 5 = Work place/office []
 6 = Other (please specify).....

6.2 How has the use of the following means of communication and information exchange changed as a result of using a mobile phone, radio and television? (Tick all that is applicable)

ICT	Communication and information activity	Greatly reduced	Slightly reduced	No change	Slightly increased	Greatly increased
Mobile phone	Government offices					
	Making social visits					
	Use of letters and post office					
	Face to face communication					
	Use of newspapers					
	Consulting middlemen					
Radio	Reading newspapers					
	Visiting congregation points in the village					
	Consulting extension officers					
	Attending local meetings					

Television	Reading newspapers					
	Visiting congregation points in the village					
	Consulting extension officers					
	Attending local meetings					

Section 7: Use of ICTs in Poverty Alleviation

7.1 Indicate the extent to which the use of mobile phones has played a role to each of the following aspects for you or your household over the last two years. (Tick the appropriate box that represents the respondents' experience)

Livelihood and poverty aspects	Negative	No influence	Low influence	Medium influence	High influence
Household income					
Arranging social functions					
Relationship/contacts with friends					
Relationship/contacts with relatives					
Status of your culture					
Status of your business					
Market information for agricultural/livestock produce					
Travelling and transport of goods and services					
Efficiency of your daily activities					
Sending money					
Receiving money					
Sending money (Mobile money)					
Receiving money (Mobile money)					
General security in the neighborhood					
Communication with government departments					
Membership in groups					
Membership in networks					
Assistance in emergencies					

7.2 In what ways have mobile phones improved your household income? (Tick all that apply)

- 1 =Income from selling mobile services []
 2 =Income from reduced travelling []
 3 =Improved business/markets []
 4 =Improved agriculture/livestock keeping activities []
 5 =Other (please specify).....

7.3a Do you sell/undertake any of the following ICT goods and/or services? (Tick all that apply)

- 1 = Selling recharge voucher []
 2 = Selling airtime (making calls, SMS) []
 3 = Charging phone batteries []
 4 = Selling mobile phones []
 5 = Repairing mobile phones, radio, television []
 6 = Television/video shows []
 7 = Other (please specify).....

7.3b Does any family member sell/undertake any of the following ICT goods and/or services? (Tick all that apply)

- 1 = Selling recharge voucher []
 2 = Selling airtime (making calls, SMS) []
 3 = Charging phone batteries []
 4 = Selling mobile phones []
 5 = Repairing mobile phones, radio, television []
 6 = Television/video shows []
 7 = Other (please specify).....

7.4 Indicate the extent to which the use of radio has played a role to each of the following aspects for you over the last two years. (Tick the appropriate box that represents the respondents' experience)

Livelihood and poverty aspects	Negative	No influence	Low influence	Medium influence	High influence
Social relationships					
Access to government policies and regulations					
General level of knowledge/awareness					
Entertainment options					
Household income					
Weather/climate information					

Receiving local news					
Receiving national news					
Receiving international news					
Awareness of financial services					
Status of business					
Household food security					
Awareness of educational opportunities					
Travelling and transport of goods					
Status of agricultural/livestock activities					
Status of culture					
Communication with government departments					
Health information					
Involvement in making community decisions					

7.5 Indicate the extent to which the use of television has played a role to each of the following aspects for you over the last two years. (Tick the appropriate box that represents the respondents' experience)

Livelihood and poverty aspects	Negative	No influence	Low influence	Medium influence	High influence
Social relationships					
Access to government policies and regulations					
General level of knowledge/awareness					
Entertainment options					
Household income					
Weather/climate information					
Receiving local news					
Receiving national news					
Receiving international news					
Awareness of financial services					
Status of business					
Household food security					
Awareness of educational opportunities					

Travelling and transport of goods					
Status of agricultural/livestock activities					
Status of culture					
Communication with government departments					
Health information					
Involvement in making community decisions					

7.6 What in your opinion are the detrimental effects brought about by the use of mobile phones, radio and television?

	Detrimental effect	Mobile phone	Radio	TV
1	Distortion of culture			
2	Health hazards			
3	Time wastage, e.g. Watching TV for long hours			
4	Unnecessary use of money			
5	Social isolation			
6	Exposure to unethical information e.g. pornography			
7	Facilitates crime			
8	Increase immoral behavior in society			
9	Other (please specify)			

Section 8: Constraints of using ICTs

8.1 What constraints do you face when using mobile phones? (Indicate the magnitude of the constraints by ticking the appropriate column)

Constraint	Not a constraint	Somewhat a constraint	Constraint	Major constraint
High cost of ICTs				
Lack of electricity supply				
Weakness/unreliable network				
Location (physical distance) of ICT services from users				
Low income				
Low educational levels				
Fear of using new ICTs				
Lack of necessary skills/knowledge of using ICTs				
Difficulties in getting recharge voucher				
Lack of appropriate features				
Language difficulties (English)				
Other, please specify				

8.2 Do you face any constraints when using radio?

1=Yes []

2=No []

8.2.1 If the answer to 8.2 is yes Tick the appropriate constraint)

1= Lack of clear signal []

2= Expensive batteries []

3= Ownership []

4= Language []

5= Other specify []

8.3 Do you face any constraints when using television?

1=Yes []

2=No []

8.3.1 If the answer to 8.3 is yes Tick the appropriate constraint)

1= Lack of clear reception []

2= Power source []

3= Language []

4= Other specify.....

8.4 What are your general comments regarding access to and use of ICTs for improving rural livelihoods and poverty alleviation?

.....

.....

.....

.....

.....

THANK YOU FOR YOUR TIME AND CONTRIBUTION TO THE SUCCESS OF THE STUDY

APPENDIX 2

DEPARTMENT OF INFORMATION STUDIES, UNIVERSITY OF GHANA

THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN POVERTY ALLEVIATION IN RURAL COMMUNITIES IN THE CENTRAL REGION OF GHANA

Key Informant Interview Guide

1. The purpose of this study is to explore the use of Information and Communication Technologies (mobile phones, radio and television) in alleviating poverty in two rural districts of the Central region of Ghana. Successful completion of this study will assist in increasing knowledge and understanding between the use of ICTs and poverty alleviation based on empirical evidence at the individual and household level.
2. The findings and recommendations will assist policy and decision makers and development practitioners in the development and implementation of appropriate ICT policies and strategies on evidence-based research.
3. You are assured that the information provided will be strictly confidential and used purposely for this study.

Section A: General Information

1. Name of town/village.....
2. District/Municipal.....
3. Date of Interview.....
4. Interview number.....
5. Name of interviewee (Optional).....
6. Age of interviewee.....
7. Gender of interviewee.....
8. Designation/Title of interviewee.....

Section B: Interview Questions

9. What is your highest educational level?

1 = ☐ No formal schooling

2 = ☐ Attended literacy classes

3 = ☐ Completed Primary school

4 = ☐ Completed JSS (or Middle school)

5 = ☐ Completed SSS (secondary school, technical school)

6 = ☐ Completed Tertiary (Polytechnic or University)

10. What do you do for a living/earn income? (Tick all that is applicable)

1 = ☐ Farming/crop cultivation

2 = ☐ Fishing

3 = ☐ Livestock rearing

4 = ☐ Self employed (please specify).....

5 = ☐ Government employee (please specify).....

6 = ☐ Private sector employee (please specify).....

11. Is there a linkage between mobile phones, radio and television and the following sectors in your village/town?

i. Agriculture

ii. Business

iii. Education

iv. Environment

v. Governance

vi. Health

vii. Social/culture

viii. Other, please specify

12. What are the livelihood changes you know in your village/town that can be attributed to the use of mobile phones, radio and television? Give examples. Any success stories or failures?

13. Which of the socio-economic groups in your village in terms of age, gender, economic status, occupations do you think are benefitting more with the use of ICTs and why?

14. What are the constraints that you and your community face as far as access to and use of mobile phones, radio and television is concerned? What should be done to overcome such constraints?
15. What advice will you give to government, private sector, donor community, civil society on what they can do to improve the ICT services in your community?
16. Any other views or comments you would like to share?

THANK YOU FOR YOUR TIME AND CONTRIBUTION TO THE SUCCESS OF THE STUDY

APPENDIX 3

DEPARTMENT OF INFORMATION STUDIES, UNIVERSITY OF GHANA

THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN POVERTY ALLEVIATION IN RURAL COMMUNITIES IN THE CENTRAL REGION OF GHANA

Focus Group Discussion (FGD) Guide

1. The purpose of this study is to explore the use of Information and Communication Technologies (mobile phones, radio and television) in alleviating poverty in two rural districts of the Central region of Ghana. Successful completion of this study will assist in increasing knowledge and understanding between the role of ICTs and poverty alleviation based on empirical evidence at the individual and household level.
2. The findings and recommendations will assist policy and decision makers and development practitioners in the development and implementation of appropriate ICT policies and strategies on evidence-based research.
3. You are assured that the information provided will be strictly confidential and used purposely for this study.

Section A: General Information

1. Name of town/village
2. District/Municipal.....
3. Date of Discussion.....
4. FGD number.....
5. Number of participants.....
6. Age of each participant.....
7. Gender of each participant.....
8. Educational level of each participant.....

Section B: Discussion Questions

9. Is there a linkage between mobile phones, radio and television and the following sectors in your village/town?
- i. Agriculture
 - ii. Business
 - iii. Education
 - iv. Environment
 - v. Governance
 - vi. Health
 - vii. Social/culture
 - viii. Other, please specify
10. What are the livelihood changes you know in your village/town that can be attributed to the use of mobile phones, radio and television? Give examples. Any success stories or failures?
11. Which of the socio-economic groups in your village in terms of age, gender, economic status, occupations do you think are benefitting more with the use of ICTs and why?
12. What are the constraints that you and your community face as far as access to and use of mobile phones, radio and television is concerned? What should be done to overcome such constraints?
13. What advice will you give to government, private sector, donor community, civil society on what they can do to improve the ICT services in your community?
14. Any other views or comments you would like to share?

THANK YOU FOR YOUR TIME AND CONTRIBUTION TO THE SUCCESS OF THE STUDY