APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES FOR DEVELOPMENT (ICT4D) IN A RURAL COMMUNITY IN KENYA

An Ethnographic Approach

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A thesis submitted in partial fulfilment of the requirements for the Degree of Master of Social Practice
UNITEC New Zealand, 2011
DECLARATION

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Is submitted in partial fulfillment for the requirements for the Unitec degree of: Master of Social Practice

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ABSTRACT

There is growing evidence of the positive role ICTs can play in development particularly in rural areas of developing countries through the use of public services in the form of telecentres. Emphasis is now placed on proactive measures to ensure ICTs serve as effective tools for social inclusion and social change and widespread access especially for the poor and disadvantaged communities. This research study explores the application of Information and Communication Technologies for Development (ICT4D) in a rural community in Kenya by evaluating the Nguruman Community Knowledge Center (CKC), which was established in 2003 by a development organization. In order to place this research within the broader development context, the extensive literature review presents a historical overview of development communication, its starting point, theories and current applications in order to provide a platform for examining the role that ICTs can play in the field of development.

This study uses a participatory ethnographic research method that combines participatory techniques and ethnographic research with the potential of feeding into action research. The research makes use the communicative ecology approach developed by J. Tacchi in evaluating communication and ICTs for development. In this study, ICTs, particularly traditional ICTs (radio and television) can significantly contribute to improving people’s living conditions by making information available that will help solve real problems they encounter. The expectations of community members who use these ICTs reflect their level of understanding of the relationship that exists between these tools and the improvement of their living conditions as well as enhancing development efforts. However, the findings of this study showed that development meant different things to the participants, which is also reflected in development related literature. Therefore, development should be looked at as subjective and contextual. The study shows that the context and institutional framework for ICTs in Kenya is changing, which reflects the government’s commitment to prepare, especially, rural communities to be part of the information society. Despite this, a gap exists between the aspirations of policy makers and the reality in rural areas owing to the poor state of ICT and general infrastructure.
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<td>Acquired Immune Deficiency Syndrome</td>
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<td>CCK</td>
<td>Communications Commission of Kenya</td>
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<td>CIC</td>
<td>Community Information Center</td>
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<td>CKC</td>
<td>Community Knowledge Center</td>
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<td>CPA</td>
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<td>EAR</td>
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<td>ECA</td>
<td>Economic Commission for Africa</td>
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<td>ERS</td>
<td>Economic Recovery Strategy</td>
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<td>EWC</td>
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<td>FAO</td>
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<td>FGM</td>
<td>Female Genital Mutilation</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GSM</td>
<td>Global System for Mobile Communication</td>
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<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<td>ICT4D</td>
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<td>ICTs</td>
<td>Information and Communication Technologies</td>
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<td>IDRC</td>
<td>International Development Research Center</td>
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<td>ISPs</td>
<td>Internet Service Providers</td>
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<td>IT</td>
<td>Information Technology</td>
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<td>ITU</td>
<td>International Telecommunication Union</td>
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<td>KANU</td>
<td>Kenya African National Union</td>
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<td>KCA</td>
<td>Kenya Communications Act</td>
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<td>MME</td>
<td>Manager Monitoring and Evaluation</td>
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<td>MRTTT</td>
<td>Ministry of Research, Technical Training and Technology</td>
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<td>NARC</td>
<td>National Rainbow Coalition</td>
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<td>NCS</td>
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<td>PS</td>
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<td>TKL</td>
<td>Telekom Kenya</td>
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<td>Acronym</td>
<td>Full Form</td>
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<td>UK</td>
<td>United Kingdom</td>
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<td>NCAPD</td>
<td>National Coordinating Agency for Population and Development</td>
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<td>UN</td>
<td>United Nations</td>
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<tr>
<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
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<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
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<td>UNDP</td>
<td>United Nations Development Program</td>
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<tr>
<td>UNDG</td>
<td>United Nations Development Group</td>
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<tr>
<td>USA</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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<tr>
<td>VSAT</td>
<td>Very Small Aperture Terminal Satellite Dish</td>
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<td>WCK</td>
<td>World Corps Kenya</td>
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<td>WHO</td>
<td>World Health Organization</td>
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<td>World Summit on the Information Society</td>
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INTRODUCTION

This research investigates the application of Information and Communication Technologies for Development (ICT4D) to rural communities in Kenya and is motivated by the potentially important role that ICTs play in development (Thioune, 2003; Thatchenkery, & Stough, 2006; Best, & Maier, 2007; Tiwari, & Sharmistha, 2008). ICTs are said to be pertinent tools in transforming the social, economic and political life globally such that there is little likelihood for countries to develop without integrating into the information age (Wole, 2008). Development as we will see in the literature review and in the findings of this study is perceived differently by different people depending on their contexts and needs. There is not one definition of development. Nevertheless, the different definitions when amalgamated give one message, that development has to be seen from a holistic perspective.

ICTs are referred to as technologies that can be used to link information technology devices (personal computers and laptops with Internet and email) with communication technologies (telephones and telecommunication networks). When converged on new configurations, ICTs are flexible, adaptable, enabling and capable of transforming organizations and redefining social relations (Chapman & Slaymaker, 2002). ICTs include any communication device such as cell phones, computers, radio, television, satellite systems, analog telecommunication networks as well as the range of services and applications associated with them such as distant learning and video conferencing, communication based on information held in written form such as newspapers, manuals and books (Duncombe, 2007; “ICTs,” 2010).

Information and Communication Technologies for Development (ICT4D) is a broad term that refers to the application of ICTs in the field of socio-economic development and is aimed at bridging the digital divide by ensuring equitable access to current communication technologies (“ICT4D,” 2008).

While the argument stands that ICTs remain an important component of development in developing countries, what calls for consideration is how they can be applied effectively in rural areas. Due to this, the focus of this research project is to determine the impact ICTs for development have in Nguruman a remote, rural community in Kenya, a developing country, in Sub-Saharan Africa, through Nguruman Community Knowledge Centre (CKC). Nguruman CKC is a telecentre that
was established in 2003 by World Corps Kenya, a development organization with the aim of bridging the digital divide by providing access to information and resources including ICTs for development of the community (World Corps Kenya, 2007).

There is an increasing body of literature on the potential benefits accruing to the use of ICTs (Gendall, 2008; African Partnership Forum, 2008; Zhao, 2008; Chapman & Slaymaker, 2002; Gester & Zimmermann, 2003) as a strategic component within the field of Development Communication (Melkote & Steeves, 2001; Servaes, 2007) for alleviating poverty. There has been a growing consensus globally on the positive role ICTs play in development particularly of developing countries. The success story of India’s ICT sector has been highlighted. India is the second fastest growing economy globally and much of its growth is attributed to the rapid expansion of the export-oriented ICT sector however, research into ICTs in the rural sector is at a rudimentary stage (Tiwari & Sharmistha, 2008). In the Global South, successful ICT projects are claimed to contribute to strong initial and sustained training, accessibility of necessary resources, help in expanding the market, offer government and societal support and create good networks in rural communities (Maier, & Nair-Reichert, 2007).

One of the advantages of doing this research project is that there are relevant examples of how effective ICTs for development can be utilized in poverty reduction. ICTs are increasingly supported as key solutions for comprehensive poverty reduction and empowerment of disadvantaged groups such as women and minorities in the global south. ICTs have been described as powerful tools for income generation and empowerment especially in rural areas of developing countries (Maier, & Nair-Reichert, 2007).

There has been a relatively high and rapidly growing use of public services in the form of telecentres (Etta, & Wamahiu, 2003). The growth of telecentres has been driven by the importance of ICT4D and poverty alleviation and the fact that shared access of facilities as those of this telecentres offer the most guarantees for extending the reach of ICTs to the largest number of populations. Telecenters exist in almost every country and people use them as places where they can meet, talk, share information, learn, and access information, access internet facilities, contact family members in distant places, transact businesses and a number of information generation activities for purposes of development (Filip, & Foote, 2007).
Research has already been undertaken to establish the importance of ICTs for development (Adam, & Wood, 1999; Best, & Maier, 2007; Sharma, & Sturges, 2007; Etta, & Parvyn-Wamahiu, 2003; Maier, & Nair-Reichert, 2007) however the researcher seeks to make potential contributions to theorizing ICTs and development in the development communication field. This assisted in assessing the usefulness and whether there are any constraints or challenges of effectively using the benefits derived from ICT4D. The field will provide a basis for demonstrating practical evidence, showing positive contributions of development communication strategies in rural areas of developing nations such as Kenya. This research also intends to provide useful insights into the relationship that exists between Nguruman community and the Nguruman CKC in order to document any successes or failures, challenges or opportunities in implementing and sustaining the initiative.

Aims and Objectives of the Research Project

The aim of the research project was to investigation the application of ICT4D to a rural community in Kenya, in this case, Nguruman community in Magadi Division, Kenya. This research project is underpinned by the following overall question:

What is the impact of the Nguruman Community Knowledge Centre (CKC) on the community and its development?

The following sub questions assisted in answering the main question:

- How does the community view the Nguruman CKC and its potential for development?
- Are there any power structures and biases (family ties, ownership, governance issues) that relate to the use of ICTs within the community?
- Are there determinants required to use ICTs (gender, education, knowledge of ICTs, available help in the CKC, availability of newspapers, among others)?
- Is there dialogue among development providers and the community, and within the recipient group itself that allows successful implementation of ICTs for development?

The research intended to generate information on whether ICTs are accessible and useful to remote rural communities and how they can expand access to information and extend opportunities for knowledge creation from the end user (farmers, health officers, small businesses, women groups, among others). These are the voices of
Nguruman community members on using the CKC and other ICTs, in order to raise an understanding of whether they are effective and empowering tools for communication and development. I also sought to determine the role of development agencies (NGOs and donor organizations) and the government sector in implementing policies, and supporting ICT4D initiatives not only in the Nguruman but also other rural areas in Kenya.

**Methodology**

To provide an in-depth analysis of the impact of the CKC on the Nguruman community, a participatory ethnographic research methodology, which combines participatory techniques and ethnographic approaches was utilized. This approach was used with the potential to feed into action research. I selected certain elements of the Ethnographic Action Research (EAR) developed by Tacchi et al. in 2002 for use in communication and ICTs for development within UNESCO’s programmes. It is important to note that this is not an action research. The methods I used include:

1. Participant observation of relevant events taking place in the CKC and community
2. Research diary for recording daily communication and events, planning, and reviewing my daily research activities in the CKC and community
3. In-depth semi-structured interviews with community users and non-users of the CKC and with key experts in a development organization and government body
4. Focus groups involving targeted community groups such as small business owners, farmers, development workers in the area, women groups, students and youth groups

**Outline of the research**

Chapter one provides the context of the research and illustrates how ICT4D can play an important role in development, in Kenya. The chapter provides a summary of the development issues and obstacles to widespread use of ICTs in Kenya comparing with other countries in Sub-Saharan Africa. The chapter also presents the profile of Nguruman community and the Nguruman Community Knowledge Center in order to provide the reader background information of the focus of the study.

A comprehensive literature review is provided in chapter two that gives an overview of key theoretical models. This chapter reviews the evolution of development communication theories in order to provide a platform for examining the role of ICTs in the field of development. This chapter also reviews and critically examines the
literature on ICT4D in order to explore how ICTs can best contribute to development and reviews literature on telecentres, which is the main focus of the study, in order to ascertain the role of telecentres in rural development.

Chapter three discusses the methodological approach of this research that is informed by the qualitative paradigm and combines participatory techniques and ethnographic approaches with the potential of feeding into action research. Primarily, this is an ethnographic research project and uses the main tools and principles of ethnographic research. However, I have picked certain elements such as the communicative ecology developed by Tacchi et al. in 2002 for use in Ethnographic Action Research (EAR). EAR was developed for use in communication and ICT for development within UNESCO’s programmes.

Chapter four presents the findings from the data collection methods that were used in this study during a seven weeks period in Kenya during the months of June to August 2010. It consists of quotes from the participants in order to ensure their voices are heard and provides data for reflective analysis. As previously mentioned, this study has merged with the EAR approach and through this, there are certain elements such as the communicative ecology I have adapted. This is to illustrate how people communicate, the ICTs they use and how this links to their social networks. This has then been compared in order to understand their social networks and to know whom people communicate with and how they communicate with others in their social networks.

Chapter five focuses on an analysis of the findings presented in the previous chapter, and a discussion in relation to the literature review and other emerging issues. Analysis of the findings was based on my interpretations of what the participants said and was compared to the findings in the literature review. This chapter sought to address the main research question.

Finally, the last chapter brings the research together and provides recommendations and measures to be taken into account in future. This study also provides appendices, which include copies of the documentation used throughout the research process.

Throughout this research I will be referring to ‘the researcher’ and ‘I’ interchangeably. Participants also use the words CKC and CIC interchangeably.
CHAPTER ONE

BACKGROUND

This chapter provides the context of the research and illustrates the role ICTs can play in development, particularly in Kenya. In discussing my case study within the Kenyan context one has to keep in mind that it has to be placed within the Sub-Saharan context because there are certain commonalities when it comes to development issues, the Millennium Development Goals (MDGs) and ICT4D. The first part provides a socio-economic overview of Kenya describing some of the major sectors that have played a key role in development and eradication of poverty. This is followed by a summary of the country’s development issues through the Millennium Development Goals. Like most countries in Sub-Saharan Africa, Kenya recognizes the role ICTs play in social and economic development of the country. Therefore, this chapter presents and discusses the Kenyan ICT policy and strategies crucial to this study. It is becoming increasingly difficult to overlook the Millennium Development Goals when dealing with issues on development and poverty reduction. It is therefore important to include in this discussion the role of ICTs for development in achieving the Millennium Development Goals. Finally, this chapter provides a profile of Nguruman community and the Nguruman Community Knowledge Centre, in order to present the reader some background information and overview of the main focus of the study.

Socio-economic profile of Kenya

Kenya is situated on the East coast of Africa and neighbors Ethiopia and Sudan to the North, Uganda to the West, Tanzania to the South, Somalia to the Northeast and the Indian Ocean to the Southeast. About 80 percent of Kenya’s land area is arid or semi-arid and only 20 percent is cultivable. The country’s physical features are manifold which are its major sources of tourist attraction (Export Processing Zone Authority, 2005; Government of Kenya, 2005a; Kenya National Bureau of Statistics, 2010).

1 See Appendix I Locating Kenya in Africa

2 Kenya is known for its immense plains which are home to world famous game parks and reserves, the Great Rift Valley which runs from the North to the South, Mt. Kenya which is the second highest Mountain in Africa, Lake Victoria which is the largest fresh water lake in Africa that supports the fishing sector across the East African region, The flamingos at Lake Nakuru that have become a major tourist attraction, Lake Magadi which produces soda ash and several major rivers such as Sondu-Miriu, Tana and Athi that are known to generate hydropower resources for the country (Government of Kenya, 2005).
The recently conducted census reflects an increase in the population from 28.7 million in 1999 to 38.6 million in 2009, where 67 percent of the population lives in the rural areas. Nairobi is the capital city with the highest population of 3.1 million (Kenya National Bureau of Statistics, 2010).

During its early years of independence, Kenya’s GDP per capita increased by 38 percent between 1960 and 1980. However, the following two decades recorded a zero increase in its per capita. In 2003, GDP per capita was about US$390, which was lower than in 1990 (Export Processing Zone Authority, 2005; Internet World Statistics, 2010, Kenya National Bureau of Statistics, 2010).

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<tr>
<td><strong>Socio-Economic data</strong></td>
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<tr>
<td>Gross Domestic Product (GDP) growth</td>
<td>1.7 % (2008)</td>
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<td>Provisional (2008) growth rates for real GDP</td>
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<tr>
<td>Total population</td>
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<tr>
<td>Urbanization</td>
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<td>Literacy rate</td>
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<td>Annual average inflation rate</td>
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**Table 1. Key socio-economic data.** Source: Adapted from Waema et al. (2010).

In 2001, poverty increased from 49 percent in 1990 to 55 percent. The country’s social indicators declined together with the economy\(^3\). As a result, the social and economic wellbeing of Kenyans suffered serious reverses. In addition, Kenya is an extremely unequal society with exclusion and disadvantage in terms of gender, class and across the East African region. A study by Government of Kenya and United Nations Development Programme reflect Kenya’s Gini coefficient\(^4\) for household income at 0.57, which is higher than that of its neighbors’ Tanzania (0.38) and Uganda (0.37) (World Bank, 2010c). Kenya has been ranked as one of the 10 most unequal countries in the world and in Africa among the 5 most unequal countries.

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\(^3\) Infant mortality increased from 63 percent in 1990 to 78 percent in 2002; life expectancy decreased from 57 years to 46 years partly due to HIV/AIDS; the persistence of hunger among children is seen in 19 percent of those under 5 years who are under-weight and 31 percent of those who are at the brink of death due to hunger (World Bank, 2006).

\(^4\) Gini coefficient is an inequality indicator. This indicator measures the inequality of income distribution within a country and ranges from zero (perfect equality) with every household earning equally, to 1 (absolute inequality) with a single household earning a country’s total income (Economist, 2010).
Since 1994, when the Gini coefficient was at 0.45, inequality began to increase, consequently, the richest 10 percent of Kenya’s household have control over more than 42 percent of the country’s entire income, while the poorest are left with less than 1 percent. In the rural areas, 47 percent of the population is estimated to have lived below the poverty line in the early 80s with no significant improvement by 1992. In addition, 30 percent of the urban population lived below the poverty line and the unemployment rate had increased to 22 percent, within the same year. The lack of sustained per capita income has therefore been the major contribution of poverty in Kenya (World Bank, 2010c). Half of the population in Kenya is below 15 years of age and as a result, there are high dependency ratios that have placed high demands on social services such as health care and primary education. In addition, the population of Kenya is characterized by increased fertility rates\(^5\), high mortality and death rates especially among infants, low and declining life expectancy, and, declining growth rates\(^6\), which could be as a result of the HIV/AIDS epidemic (Government of Kenya, 2005a).

Presently, Kenya has been experiencing economic, social and political transition with positive indicators in its many sectors. These changes have been boosted by the political shift, which started after the new government – the National Rainbow Coalition (NARC)- took office in 2002 when multi-party democracy was introduced that saw the exit from power of the Kenya African National Union (KANU) that had ruled for 40 years. This resulted to unprecedented optimism that has expanded the democratic space giving Kenyans the ability to enjoy freedoms. With the establishment of a new constitution in August 2010, marked the “birth of the second Kenyan Republic” which in many ways was laid in 2008 during the post election violence that left many dead and a peace agreement forged between the two leaders\(^7\). The former constitution was in place since 1963 after Kenya gained its independence. Kenyans viewed it as a remnant of the colonial epoch. Many provisions in the new constitution will take effect immediately, changes to the governing structure will gradually be phased and the new set of laws will not be fully operational until the 2012 presidential elections have taken place (Onyiengo, 2010).

The peace agreement formed the Government of National Unity that set into motion the process of constitutional reform and will also attempt to right issues that have

\(^5\) The population’s fertility rates have slightly increased from 4.7 children per woman in 1995 – 1998 to 4.8 in 2000 – 2003 (Government of Kenya, 2005a)

\(^6\) The country’s inter-censal population growth rate declined from 3.9 percent per annum in 1969 – 79 to 2.9 percent in 1989 – 99 (Government of Kenya, 2005a)

\(^7\) President Mwai Kibaki and Prime Minister Raila Odinga disputed the results of the December 2007 presidential election which lead to almost two months of tribal violence that swept across the country
been kept underneath the surface such as corruption, graft and ethnic rivalries which have come to the fore (Mungai, 2005; Onyengo, 2010; Brookings Institution, 2009).

The following sectors have played a major role in development and poverty reduction in Kenya:

**Agriculture sector**

Like most countries in Sub-Saharan Africa, agriculture is the backbone of Kenya. It is not only the driver Kenya’s economy but also a means of livelihood for the rural population. The sector has been among the most dynamic and well diversified in Sub-Saharan Africa. The sector directly contributes 26 per cent of the gross domestic product (GDP) and 25 per cent indirectly, on an annual basis. It provides for 70 percent of informal employment in the rural areas and accounts for 65 per cent of the total exports in Kenya. The sector has many players due to its role in Kenya’s economy and its rural-based aspect that meets the livelihoods of many people. The sector consists of six sub-sectors: industrial crop, food crops, horticulture, livestock, fisheries and forestry (African Development Bank Group, 2001; Government of Kenya, 2010).

**Tourism Sector**

Tourism is now regarded as an essential and integral component of economic development strategies not only in most economies of Sub-Saharan Africa but also in other developing countries in the world (United Nations Economic Commission for Africa & African Union, 2007; World Bank, 2006). In Kenya, the sector contributes greatly contributes to the economic performance and accounts for 11 per cent of the GDP through government revenue, foreign exchange earnings, and direct and indirect employment (Ondicho, 2003; Ministry of Tourism, 2010). In a study done by the Ministry of Tourism (2010), statistics reveals a 14 per cent increase in arrival of tourist within half the year 2010. The market share for 2010 in terms of tourist arrivals from selected countries is presented in table two below.
<table>
<thead>
<tr>
<th>Tourist arrivals (countries)</th>
<th>Market share in 2010 (%)</th>
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</thead>
<tbody>
<tr>
<td>United Kingdom (UK)</td>
<td>16</td>
</tr>
<tr>
<td>United States of America (USA)</td>
<td>10</td>
</tr>
<tr>
<td>Italy</td>
<td>7.8</td>
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<tr>
<td>Uganda</td>
<td>2.8</td>
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<tr>
<td>Australia</td>
<td>1.6</td>
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<tr>
<td>Austria</td>
<td>0.7</td>
</tr>
<tr>
<td>India</td>
<td>4.5</td>
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</tbody>
</table>

*Table 2. Market share of tourism activity in Kenya.* Source: Adapted from Ministry of Tourism (2010).

Information and Communications Technologies (ICTs) sector
For over a decade, development partners have advocated the application of ICTs as tools for poverty alleviation in developing countries. Different approaches have been recommended and implemented in several African countries including Kenya (Kariuki, 2009). The growth of Kenya’s ICT sector has been considerably influenced by global developments and can be evaluated in terms of the number of fixed and mobile telephone lines, teledensity, Internet Service Providers (ISPs), internet usage, number of computers and services, broadcasting stations and the market share of each of them (Export Processing Zone Authority, 2005; Government of Kenya, 2006).

Kenya is rapidly gaining a reputation as one of Africa’s antecedents in the development of ICT. It has continuously been at the van of IT developments and is emerging as one of Africa’s front-runner in this sector. In the past decade, the Internet sector has been one of the fastest growing sectors in Kenya. Internet was introduced in 1994 and since then the country has experienced exceptional growth in its use. There are now many Internet hosts, close to 100 licensed ISPs and more than a quarter million Internet user in the country (“Kenya ICT Strategy,” 2006). Some key statistics include:

- 3.6 percent households own at least one computer
- 63.2 percent of households own at least a mobile phone
- As of the year 2010, 10 percent of Kenyan population uses Internet however the penetration rate is at 0.0 percent (Internet World Statistics, 2010; International Telecommunication Union, 2009)
• By the year June 2006, there were approximately 303,905 fixed lines and 6.48 million mobile subscribers which translates to fixed tele-density of 0.91 per 100 inhabitants for fixed line and 19.42 per 100 inhabitants for mobile subscribers.
• In 2003/2005 the number of internet service providers reached a peak of 78 but reduced to 51 in 2005/2006 out of which less than 50 percent are active.
• By the year 2004, there were 16 operational television stations and 24 radio stations. The National broadcaster (Kenya Broadcasting Corporation) had the highest penetration of both television and radio.
• Approximately, 87.2 percent households own a radio set and 17.1 percent own a television (Waema, 2007; Kenya National Bureau of Statistics, 2010).

The central arms of the Kenyan government that deal with ICTs were merged into the Ministry of Information and Communications. However, there are other sections of government that in one way or another deal with ICT. The creation of ICT units in ministries has seen a restructuring of ICT in government and the creation of an Inter-Ministerial Committee to mainstream ICT operations. However, structures for coordination and managing national ICT initiatives and plans have not been formed (Waema, 2007).

The Ministry of Information and Communications was established in June 2004 with the objective of creating a one-stop shop for all ICT-related government activities that include administration of ICTs, policy formulation and implementation, regulatory, infrastructure development and human resource management. The Ministry’s vision is:

“To develop Kenya as a globally competitive and prosperous nation by creating and enabling environment that encourages and enhances the development, expansion and use of Information and Communication Technologies (ICTs)” (Government of Kenya, 2008, p. 1).

Since the Ministry was set up, there has been a high growth rate in numerous ICT market sectors. The Ministry’s main objective during the Economic Recovery Strategy (2003 – 2007) was to create a seamless, efficient and cost effective telecommunication service to encourage social and economic activities for development. As a result, for the government to achieve the goal, drastic policy measures were made that would promote competition and increase both investment and use of ICT within the country (Government of Kenya, 2008).
ICT issues in Kenya are considered under different pieces of legislation namely:

- The Kenya Communications Act of 1998
- The Science and Technology Act, Cap. 250 of 1977
- The Kenya Broadcasting Corporation Act of 1988

The Kenyan ICT sector underwent a liberalization process that was launched in 1999, which saw the separation of the traditional national operator, the Kenya Post and Telecommunications Company into 3 parts namely:

- Postal Corporation of Kenya (Posta), which was created by the Postal Corporation of Kenya Act, 1998. Posta is the public postal licensee with the exclusive role of ensuring universal access of postal services
- Telekom Kenya (TKL), the fixed line operator, which was created as a public telecommunications operator under the Companies Act. TKL was issued with licenses in all areas it is currently operating

The National Communications Secretariat (NCS) was also created in the process to serve as policy advisor of the Government on adoption of a communication policy and all matters pertaining the info-communications sector. Additionally, an Appeals Tribunal was also created from the process for arbitration purposes in cases where disputes may arise between parties under the KCA 1998.

Currently, the sector has been fully liberalized. In addition, the most significant document concerning Kenya’s ICT legislation and regulation has been the recently amended Kenya Communications Act 1998 (KCA 1998) through the Kenya Communications (Amendment) Bill, 2008. The Bill, 2008 addressed some challenges cited in the National ICT policy document and was passed by parliament in December 2008, and consequently signed into law in January 2009. The Act 1998 provides the current structure for regulating the communications sector (Novatech, 2008; Waema, et. al., 2010; Waema, 2007; Export Processing Zone Authority, 2005).
In Kenya, like most developing countries, the current ICT4D policy framework is reflected in the national ICT policies and strategies. This approach tends to follow the ways proscribed by major multi-lateral agencies particularly the World Bank. Policy tends to center on macro issues, which include creating an enabling environment that involves industry regulation and privatization, infrastructure development and human resources; and reducing transaction costs, increasing transparency, efficiency and access to services through e-commerce and e-government. This is evident in the aims of the Ministry of Information and Communications in Kenya. Within this background, specific policy issues such as gender, universal access, government subsidies, equity and local content focus need to be addressed (Vaughan, 2006).

Over the past fifteen years, there have been several attempts to develop a national ICT policy in Kenya. The move to develop the ICT policy was sparked by three major and equally reinforcing factors namely:

- The fast and chaotic growth of information technology that required direction and regulation
- The desire by the Permanent Secretary (PS) in the Ministry of Research, Technical Training and Technology (MRTTT) to develop guidelines for the national ICT policy, which would push the development of ICTs in Kenya so as to address the chaos
- UNESCO was ready to fund the process for a national ICT policy (Waema, 2007; Waema et al., 2010).

By October 2004, the draft national ICT policy for Kenya was complete however it would be subjected to public discussion before its finalization. In January 2006, a first national ICT policy document came to effect in March 2006 however the implementation strategy for the policy has not yet been created. This process encouraged significant public participation and influence, which had never been seen in Kenya’s policy making (Waema et al., 2010, Waema, 2007). As Vaughan, (2006) argues

“It is possible to conceive of an alternative ICT4D framework based on a social paradigm which emphasizes instead a community centered approach to development of national ICT4D policy strategies and which aims for greater sustainability of ICT4D at a community level […] results in greater inclusion and participation of communities […] increased benefits […] for individual communities and the nation collectively” (p. 6).
An ICT master plan was anticipated to quickly follow for implementing the new policy however, persons involved in creating projects to draw up the plans indicated it would take a long time just as it did in developing the policy. Reasons cited were that the Ministry of Information and Communications does not have adequate capacity to spearhead the process, lack of funding and a committed champion, and the apparent interest of key stakeholders positioning themselves to influence the process to serve their own interests (Waema, 2007).

The current ICT policy was published through a special issue of the Kenya Government Gazette (Waema, et. al., 2010; Government of Kenya, 2006) and maintains a human development perspective “focusing on the achievements of benefits for people through the appropriate use of ICTs” (Labelle, 2005, p. 2). The vision of the policy is “A prosperous ICT – driven Kenyan society” and its mission is “to improve the livelihoods of Kenyans by ensuring the availability of accessible, efficient, reliable and affordable ICT services” (Government of Kenya, 2006). This takes a people-centered approach. Labelle, (2005) argues:

“The ICT vision and strategy should focus on people and not just the technology. For this to happen, it is important to develop both the ICT vision and strategy with people in mind and with the input of these very same people” (p. 3)

The national policy and strategy are guided by the goals set out in Kenya’s socio-economic development framework documents that include:

- Poverty Reduction Strategy Paper (PRSP) 2001
- Sessional Paper No. 2 of 2005 on Development of Micro and Small Enterprise for Wealth and Employment Creation for Poverty Reduction

The national ICT policy document is currently being reviewed given the changes that have occurred in the last five years and the anticipated changes (Waema, et. al., 2010).

Vaughan (2006) notes that in any given developing country or even the developed for that matter, access to and benefits of ICTs are still limited to a subset of their populations and in most cases the rural population is usually left out. However,
without a goal towards universal access and effective use, “…decisions relating to ICT4D or e-development will always be based on trade-offs which result in exclusion of some segments of society” (p. 4).

The current ICT policy of Kenya acknowledges the limited access of ICT services in rural areas where majority (about 60%) of the Kenyan population lives. In this view, the policy recommends the need to enhance universal access through:

- Providing adequate resources to the ICT sector
- Developing requisite ICT infrastructure
- Creating incentives for service providers to offer services in rural and under-served areas
- Creating a Universal Service Fund
- Awareness creation of ICTs benefits to the public
- Increasing knowledge-sharing networks at the grassroots level (Government of Kenya, 2006, p. 6).

Many ICT strategies adopt a sectoral approach to implementing ICTs. However, whether ICT policies and strategies are created separate to or incorporated with sectoral policies and strategies, generally, it is agreed that national priorities for poverty reduction should first be created including particular initiatives for pro-poor growth. Broad based participation at all levels should be facilitated in developing the strategies (Vaughan, 2006). While there are many types of ICT strategies to adopt, evidence suggests that an integrated approach to ICT development and deployment is likely to produce human, social and economic development success over a long-term period (Labelle, 2005).

Kenya’s ICT sector is still developing with most of its players operating small-to-medium scale enterprises, most of them concentrating primarily on distributive activities (“Kenya ICT Strategy,” 2006). However, developing the Kenyan ICT sector faces many positive factors and good signs while the opportunities of the sector remain numerous. The sector has continued to grow as a result of the liberalization measures as well as the continued commitment by the government to provide an enabling environment coupled with political stability (Novatech, 2008).

**Development issues in Kenya through the MDGs**

The history of development in Kenya has been unsteady since the country gained its independence in 1963 from Great Britain. During the post-colonial era, Kenya
pursued a development strategy informed by African socialism. Unambiguous emphasis was placed on rapid economic growth rather than on human development. In addition, the assumption was that poverty, unemployment, and income inequality would improve due to a strong economy (Thaxton, 2007)

Kenya has long been viewed as an institutionally strong and democratic country, however, the political violence that sparked the country following the December 2007 elections has shaken the development progress of the country. Nevertheless, the country has recorded some progress over the recent years. Changes to the education system, such as introducing free and compulsory primary education has seen more children enrolled in school with a good gender balance. In addition, HIV prevalence declined from 6.8 percent to 6.1 between 2003 and 2005. By 2005, Kenya’s GDP growth rate had increased to 5.8 percent (see table three). Despite these, Kenya is still faced by tremendous development challenges that have continued to affect its growth rate. As a result, these development issues reflect the enormous challenges to be expected in achieving the Millennium Development Goals (Brookings Institution, 2009; Government of Kenya, 2005; Thaxton, 2007).

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<tr>
<th>Country</th>
<th>2005</th>
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<tr>
<td>Tanzania</td>
<td>6.8</td>
<td>5.7</td>
<td>6.8</td>
</tr>
<tr>
<td>Uganda</td>
<td>6.7</td>
<td>5.4</td>
<td>6.0</td>
</tr>
<tr>
<td>Kenya</td>
<td>5.8</td>
<td>5.0</td>
<td>5.3</td>
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<tr>
<td>Ethiopia</td>
<td>8.7</td>
<td>5.9</td>
<td>6.3</td>
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<tr>
<td>Sudan</td>
<td>7.9</td>
<td>12.1</td>
<td>11.3</td>
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*Table 3. GDP growth rate (%) of selected East African countries in 2005 – 2007. Source: Modified from UNECA (2008).*

In September 2003, Kenya like the rest of the world, adopted the Millennium Declaration and the Millennium Development Goals (MDGs) whose main aim was to identify a common vision for development by 2015. Kenya recognizes that the MDGs offer grand opportunities to address human welfare not only nationally but also globally (Government of Kenya, 2005a, Government of Kenya, 2005b).

In 2003, Kenya witnessed economic growth after the Economic Recovery Strategy (ERS) (founded on the pillars that can be matched to the MDGs) for Employment and Wealth Creation (EWC) was launched. Kenya’s development agenda highlighted in the Kenya Vision 2030 is a long-term development blueprint of the country whose
main goal is to make Kenya “a globally competitive and prosperous country with a high quality of life by 2030”. At the same time the Vision 2030 aims at meeting the MDGs for Kenyans as it seeks to transform Kenya into an industrialized middle income country that provides high quality of life in a clean and secure environment for its citizens (Government of Kenya, 2008). Yet, in spite of the tremendous benefits envisioned in the Vision 2030, Kenya still faces development challenges in almost all its sectors.

ICTs and the Millennium Development Goals (MDGs)

The Millennium Development Goals (MDGs) are eight international development goals adopted by world leaders in the year 2000 built upon a decade of major United Nations (UN) conferences and summits on various development themes. The MDGs are goals that 192 UN member states and at least 23 international organizations have agreed to achieve by the year 2015. The MDGs provide solid, numerical targets for dealing with extreme poverty and its many dimensions. The MDGs also offer a platform for the entire international community to work jointly towards a universal goal. The eight MDGs are broken down into 21 quantifiable targets, which are measured by 60 indicators. The eight MDGs are:

1. Eradicate poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability

Combating extreme poverty lies at the core of the UN's contribution efforts towards development. The UN General Assembly iterates the eradication of poverty is the greatest global challenge facing the world and a central requisite for sustainable development. The progress towards poverty reduction has been uneven and in this view, every opportunity for progress needs to be reviewed (UNCTAD, 2010), ICTs are one of such an opportunity. Further, Gerster & Zimmermann (2005) argue ICTs can create a difference in poverty alleviation and contributing significantly to reaching the MDGs. Moreover, from practical experience and lessons learnt globally, ICTs demonstrate grand potential in enhancing empowerment, opportunities, and security.
however the potential differs with the comparatively moderate impact attributed to ICTs as broad enablers in reaching the MDGs (Gerster & Zimmermann, 2005). Dzidonu (2010) notes, establishing the MDGs is motivated not only by the urgency of problems in developing countries, but also the awareness that the international community has the means, know-how and tools within its reach to make the goals a reality. ICTs are a set of tools that have the potential to transform economies and improve the socio-economic wellbeing of nations particularly those in the less developed world. In addition, ICTs cross over major sectors and thus bring increased efficiency and innovative opportunities to such areas as healthcare, education, small enterprise development and international trade. In addition to this background, the UN Secretary General in a recent report to the General Assembly on the MDGs stressed

“New technology-based solutions that did not exist when the Goals were endorsed can and should be leveraged to allow for rapid scaling up. The most important of these technologies involve the use of mobile telephones, broadband Internet, and other information and communication technologies” (UNCTAD, 2010, p. 2).

Target 18 of the MDGs notably suggests availing the benefits of technology especially ICTs through private participation by raising the number of telephone lines, cellular subscribers, personal computer and Internet users (United Nations Millennium Project, 2006; Tacchi & Kiran, 2008).

**ICTs and the right to information in Kenya: an Information Society**

Development has been defined as “a process of expanding real freedoms that people enjoy” (Sen, 1999). There are two conditions required for people to achieve basic freedom these include the right to information and democracy. However, most of the Kenyan population suffers from information poverty though it has not been quantified or qualified in any report (“ICT Kenya and right to information”, 2010). Information poverty is a situation where individuals do not have the required skills, capability or material means to gain efficient access to information, interpret and apply it appropriately and is further characterized by lack of vital information and an infrastructure that is poorly developed (Britz, 2004).

Kenyans, especially from the rural areas, lack the capacity to gain access to information on issues outside their own lives, they lack news, education, innovation and opportunities all factors influenced by their lack of access to information and ICTs (“ICT Kenya and right to information,” 2010). The World Summit on the
Information Society declared that in order for everyone to benefit from the opportunities that ICTs offer, Governments, civil society, private sector, the United Nations and other international agencies have a vital role and responsibility in the development of an Information Society through ensuring universal, equitable and affordable access to ICT infrastructure, information and knowledge, promoting these by increasing awareness in the use of ICTs, capacity building, creating an enabling environment, developing and increasing ICT applications, respecting cultural diversity, being aware of the role of media, and, encouraging regional and international cooperation (Stauffacher, & Kleinwächter, 2005). The Kenyan Government has made an effort in achieving an all inclusive Information Society by appointing a National WSIS Plan of Action implementation taskforce that is responsible for coordinating the WSIS Plan of Action implementation within the country, among other responsibilities ("Information Society," 2005)

In Kenya, as with the rest of the world, ICTs have the potential to aid the accomplishment of social outcomes such as increased availability of education and healthcare, improved civic dialogue and citizen participation in development processes in the country. However, despite the many challenges facing Kenya and Eastern Africa as a whole, development partners have made ICTs a reality especially through community telecentres. Telecentres, known by various names⁸, are being set up with the aim of transforming and improving the social and economic environments of rural livelihoods as well as empowering citizens in the view of development by opening a pathway for rural communities to freely access information for development which is a grand step in bridging the gap between the information –rich and information – poor (ALIN-EA, 2005; Bailey, 2009).

However, the establishment of telecentres comes with it great challenges such as the availability of affordable technology, use of the facility remains a problem due to security and maintenance, connectivity is a struggle, reliability of affordable power supply, and, weak policies and regulations regarding rural ICT initiatives. It has also been noted that economic, political and social sustainability of telecentres are key issues with important inter-relationships (Jhunjhunwala, 2008; Bailey, 2009).

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⁸ Community Information Centers, Community Knowledge Centres, Maarifa Centres
Nguruman: A Remote Rural Community

This research was undertaken in Nguruman (see fig. 1) a rural Sub-location\(^9\) situated in arid and semi arid land within the Olkiramatian Group ranch about 40 kilometers from Magadi town at the foot of the Nguruman escarpment (Muya, et, al., 2001; Kinyua, et, al., 1997). The Nguruman escarpment forms the western wall of the Rift Valley and its vegetation varies from open woodland to dense thicket towards the lower slopes. Some of the sections in the area are privately leased for development of tourism however, the Maasai community own and farms the land on the escarpment and hills (“Nguruman Escarpments,” 2010).

Figure 1. Locating Nguruman in the South of Kenya. Source: http://www.nationsonline.org/oneworld/map/google_map_kenya.htm

Nguruman is approximately 158 kilometers from Nairobi the capital city (J. Kasio, personal communication, August 2008) and is located in Magadi Division of Kajiado District, Rift Valley Province in Kenya. Nguruman sub-location comprises of Oloibortoto East and West areas (Kinyua, et. al., 1997). Magadi Division is one of the seven administrative Divisions\(^10\) in Kajiado District (Magadi Soda Company, 2004).

\(^9\) The term Sub-location is used to describe a specific smaller subsection of a Location within a District. This description helps to get a clear geographical fix on an area as there are no street addresses (“Sub-location,” 2005) especially in rural Kenya.

\(^10\) Kajiado District is divided into 7 divisions: Magadi, Isinya, Ngong, Central, Namanga, Mashuru and Loitokitok. Kajiado has 47 Locations and 120 Sub-locations and 3 constituencies: Kajiado North, Kajiado Central and Kajiado South (NCAPD, 2005).
Kajiado District is located in the Southern part of Rift Valley Province and is one of the 18 Districts in the Province bordering Tanzania to the Southwest and Nairobi to the Northeast. It is an extensive and sparsely populated region with unequal distribution of social and economic infrastructure (NCAPD, 2005; Kristjanson, et, al., 2005).

Magadi Division covers an area of 2,749 kilometers out of the 21,105 square kilometers covered by the District as a whole (Magadi Soda Company, 2004) and is the poorest in Kajiado with 57 per cent of the population living in poverty (Kajiado District Vision and Strategy, 2005). The pastoral Maasai are the main inhabitants in Magadi with the non-Maasai mainly settling in Nguruman and other trading and market areas. This is due to an increased in-migration and settlement in the last 40 years by neighboring agricultural communities11 (Musyoka, 2007).

By the year 2000, the population in Magadi was estimated to be 20,112 out of a total estimated population of 464,883 people in the whole Kajiado District. Magadi is the least heavily populated area with only 9.5 persons per square kilometer (Magadi Soda Company, 2004; Kajiado District Vision and Strategy 2005) this, however, has changed in the onset of the new population and household report.

Nguruman is linked to Magadi Township with one rocky and dusty road (see fig. 2). The main economic activity in Nguruman is agro-pastoralism dominated by irrigated production of horticultural crops towards agribusiness development12 however, the area plays a major role in food production for its residents and those of neighboring areas. Some of the main crops grown are vegetable-crop and fruits namely: okra, ravaya and aubergines, karela, maize, beans, oranges, pawpaws, lemons, mangoes, watermelons, bananas among others13 (Muya, et, al., 2001; Kinyua, et, al., 1997).

11 The Kikuyu from Central Province, the Kamba from Eastern Province and Chaaga from Tanzania
13 Other crops used especially for household consumption include sweet potatoes, cassava, green grams, sugarcane, cowpeas, onions, gurwer and sorghum; tangerines, avocados and guavas (Kinyua, et, al., 1997).
Nguruman is sparsely populated (see table 4 showing population size compared to other parts of Okiramatian Group ranch) and is predominantly occupied by the Maasai who rear cattle, sheep, goats and donkeys and have not yet fully embraced crop farming into their culture. This fact has made them lease their arable land\textsuperscript{14} to others from farming communities within the area who mostly include the Kikuyu, Kamba, Luo, Somali, and Sonjo’s (from Tanzania) and who mainly involve in small scale trading, fishing and formal employment (teachers, development workers, civil servants among others).

\textsuperscript{14} Most families own an average of 5 – 15 acres, which is an approximation as no title deeds are issued to confirm this (Kinyua, et. al., 1997).
<table>
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<tbody>
<tr>
<td>Olkiramatian</td>
<td>1924</td>
<td>2987</td>
<td>7434</td>
<td>402</td>
<td>1635</td>
<td></td>
</tr>
<tr>
<td>Nguruman</td>
<td>1135</td>
<td>1762</td>
<td>1850</td>
<td>275</td>
<td>376</td>
<td></td>
</tr>
<tr>
<td>Oldorko</td>
<td>816</td>
<td>1267</td>
<td>1113</td>
<td>195</td>
<td>229</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3875</td>
<td>6016</td>
<td>10,397</td>
<td>872</td>
<td>2240</td>
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Table 4. Population and number of household compared to other areas in Olkiramatian Group ranch over different years. Source: Modified from Magadi Soda Company (2004) and Kinyua, et al. (1997).

Nguruman community is influenced by certain cultural and social behaviors, norms and values, which include female genital mutilation (FGM), early marriages, and, moranism. Moranism is a significant and the proudest time in the social organization of the Maasai. It is a stage where young Maasai men (around 12 -16 years) after they are circumcised live together in a remote forest camp for several years as warriors. Their main responsibilities are to protect their people and livestock from raiders and wild animals, provide water for the livestock during drought conditions, looking after the livestock in far grazing conditions, tracking down lost or stolen livestock and other duties determined by the elders. It is a period when the young men hold a privileged position in society (Hauff, 2003; Hodgson, 2004).

Female genital mutilation (FGM) according to WHO (2008) is the “partial or total removal of the clitoris and the labia minora...” Hauff (2003) refers to FGM as “the operation, which is said to remove the ‘dirt’ of childhood and thus transform the girl into an adult, is performed by an elderly woman of the local community” (p. 25). The intent of this procedure is to transform girls into adult women capable of child bearing. This results in the girls’ loss of freedom and entry into strict married life (Hauff, 2003; Njambi, 2004) and restricts their ability to move freely in the community.

Early marriages occur when young girls (around 13 years after circumcision) are offered for marriage normally to older men. Their marriage is usually already arranged by the time they undergo circumcision. In her view, Bunting (2005) identified low socio-economic status and culture as the motivating factors behind early marriage practice. Girls represent wealth in the community. They are exchanged for brief wealth during marriage, which takes the form of immediate payment in terms of money and other gifts determined by the girls’ parents’. Bride
This research focused on the impact of Nguruman Community Knowledge Centre (CKC) on Nguruman community. The Nguruman CKC, formerly known as Nguruman Community Information Centre (CIC), and, E-Center, was established as a significant effort to improve the livelihoods of the community. Nguruman has limited communication, no electricity, the only available source of power is solar available to homesteads that can afford it, the transport system is inefficient, with poor marketing of livestock and farm produce due to lack of information. Therefore, there was the need to address these problems by providing information on markets, prices of commodities, streamline communication between buyers and sellers and generally encourage the use of modern technologies. One attempt to encourage this was through World Corps Kenya, a development organization, which implemented its E-Centers for poverty reduction project (Maruti & Mwallili, 2003; “Nguruman,” 2009).

**Organization’s Profile**

World Corps Kenya (WCK) is a nonprofit, non-governmental organization founded by colleagues from six nations in 1998 and is headquartered in Seattle, Washington, USA. World Corps later expanded to Brazil, Mexico, India, Philippines and Kenya. World Corps Kenya worked under the umbrella of Forest Action Network as its collaborating organization and in February 2004, WCK was officially registered as a non-governmental organization in Kenya (World Corps Kenya, 2007).

WCK is concerned about poverty, particularly the lack of access to energy, information and economic opportunities in rural areas of developing countries. WCK’s mission is to train young adults in rural areas of developing nations to become effective business entrepreneurs, community leaders and global citizens. WCK has continued to bank on young people by developing and supporting unique and innovative programs and is making significant steps towards linking the youth especially from Magadi Division, through training, to new technologies, entrepreneurial skills and environmental awareness (Akedi, 2006).

**E-Centers for Poverty Reduction Project**

The E-Centers for poverty reduction was a one-year pilot project implemented by WCK in collaboration with its partners and local experts within the community. The project started in July 2002 to July 2003. This project trained fifteen youth, at least 7
of whom were women, and imparted them with necessary skills in enterprise
development, computers, renewable energy and community development. This
training enabled the trainees set up 4 Community Information Centers called E-
centers within their communities (Nguruman, Ilparaku, Olkiramatian, Oloika). The
main objective of the project was to train and educate, in a new way, young adults in
the extension of renewable energy and information and communication technologies
and the use of these tools in enterprise development. The young men and women
were also given the necessary community development skills in order to help their
communities address local socio-economic concerns. The project aimed at
empowering the local communities through improving their access to information
Maruti & Mwaili, 2003; Akedi, 2006). Other objectives of the project included:

- Introducing Internet use to streamline access to communication and
  information that would improve the socio-economic conditions of the
  communities
- Using experiential learning to develop the youth into business and social
  entrepreneurs enabling them to mobilize their communities to reduce poverty
  through fine-tuning existing business operation and creating new ones
- Mobilizing the communities to begin using solar energy as an alternative
  energy source and therefore reducing the pressure on the declining natural
  resources as well as supplement the inadequate electricity supply (Akedi,
  2006)

Out of the total population in Magadi, by the end of 2003, about 10,000 people had
visited the centers and on average 1,235 people visited the centers each month to
use one or more services. It houses solar panels, a public telephone, computers,
printer, world space receiver and barber shop all powered by solar energy, and,
library services (school books, story books, dictionaries, encyclopedias, among many
others) (ALIN-EA, 2005).

Nguruman CKC provides a host of services namely:

- Internet and E mail services
- Computer training
- Library resource services
- Information on agriculture, livestock, environment, markets
- Office services including photocopying, printing, phone charging,
- Barber shop services
Within the E-Centers project period, telephone and barber services were the most popular in the centre (ALIN-EA, 2005).

In 2006 World Corps Kenya signed an agreement with ALIN-EA, a nonprofit, non-governmental agency that works to encourage exchange of ideas, information and experience to development by extension. The main aim of the partnership was to provide a legal framework that would allow ALIN-EA to come aboard WCK’s E-Centers’ Project and be hosted at the Nguruman CKC. This saw some of the objectives of the E-Centers project change. However, before this research was undertaken, issues emerged that needed both organizations to review progress independently and/or jointly to determine a way forward in line with each organization’s objectives. However, after the researcher completed her fieldwork, she was notified that the organizations did not renew the agreement and each opened its own Center within Nguruman. This research however, shall present the findings collected in the field on the E-Centers for Poverty reduction project that saw the successful implementation of the Nguruman CKC.

Summary
This chapter provides the context of the research and illustrates the role ICTs can play in development, particularly in Kenya and within the context of Sub-Saharan Africa because of certain commonalities when it comes to development issues, the Millennium Development Goals (MDGs) and ICT4D. Kenya is situated on the East coast of Africa. Throughout the years following independence, Kenya’s economy has fluctuated due to a host of issues ranging from political instability to high levels of poverty and corruption, a decline in the social indicators, high levels of dependency, extreme inequality and exclusion based on gender and class. Majority of the rural population lives below the poverty line yet these areas are rich in agriculture (Export Processing Zone Authority, 2005; Internet World Statistics, 2010, Kenya National Bureau of Statistics, 2010; World Bank, 2010c; Government of Kenya, 2005a). But we also see that at present the country has been experiencing economic, social and political changes boosted by a political shift, which began after the new government (NARC) took office in 2002. This saw the beginning of multi-part democracy. Recently, the new constitution was introduced and is gradually being implemented.

Like most countries in Africa, agriculture and tourism are major sectors that drive the economies and provide livelihoods for people. Over the years, the ICT sector has also come to play an important role in economies not only in Kenya but globally. ICTs have the potential to aid the accomplishment of social outcomes such as increased
availability of education and healthcare, improved civic dialogue and citizen participation in development processes in the country. Kenya has witnessed major growth in its ICT sector over a few years. The Internet and mobile revolution have been the fastest growing sectors in the country. Through this, Kenya has been viewed as a major hub for trade and finance. The Kenyan government recognizes the role ICTs play in social and economic development of the country and through this, all ICT issues in Kenya are considered under different pieces of legislation that have taken effect. Consequently, changes to the sector were seen for instance the liberalization process that was launched in 1999, which saw the separation of the traditional national operator, the Kenya Post and Telecommunications Company into three. The sector is still growing but it faces numerous positive factors and opportunities due to the continued commitment by the government to provide an enabling environment coupled with political stability (Novatech, 2008). This kind of enabling environment is what has provided for the establishment of ICT initiatives like the Nguruman CKC that was established as part of a NGOs project. Nguruman CKC was established as a way to bridge the digital divide and deal with infrastructural issues in the remote rural community of Nguruman. There was the need to address such issues by providing information on markets, prices of commodities, streamline communication between buyers and sellers and generally encourage the use of modern technologies.

For a long time, Kenya has been viewed as an institutionally strong and democratic country but is faced by tremendous development challenges that have continued to affect its growth rate. Issues such as the prevalence of HIV/AIDS, and political violence have continued to affect its development. Nonetheless, the country has recorded some progress over the recent years for instance through introducing free primary education and a decline in the HIV/AIDS prevalence. These development issues reflect the enormous challenges to be expected in achieving the Millennium Development Goals (Brookings Institution, 2009; Government of Kenya, 2005; Thaxton, 2007). The following chapter explores literature on the role that ICTs can play in development and will perhaps shine more light on how ICTs can play a role in achieving the MDGs.
CHAPTER TWO

LITERATURE REVIEW

Introduction
This chapter explores the existing literature on ICTs for development within the relevant theories and key seminal approaches on development and communication. It defines and contextualizes key terms in order to develop an understanding of how ICTs can play a role in rural communities. It lays out the theoretical dimensions of the study and looks at the trend of development communication theories that have evolved over the last 50 years to provide a platform for examining the role of ICTs in the field of development. The discussion is based on literature review of the key theoretical approaches in development communication and focuses more on the literature on ICTs for development and the emerging issues that have been presented in different cases. Finally, the chapter reviews available literature on telecentres, which is the main focus of the study in order to ascertain the role that telecentres can play in rural development.

Defining and contextualizing key terms

Information and Communication Technologies (ICTs)
Efforts to define ICTs often provide a range of descriptions. There is not one agreed definition of ICTs. However, the concept of ICTs has been applied to several situations (poverty reduction, development, empowerment, social change) with circumstances different to each other. More often, ICTs are associated with the Internet, computers and the World Wide Web (Gerster & Zimmermann, 2003).

International Telecommunication Union (ITU) (2003) adapts a service-based definition of ICTs as “the new breed of information technologies generated by the progressive merger between telecommunications and computing” (p. 12) and includes VoIP, the Internet, e-applications such as e-government services, e-business, telemedicine and e-learning. Within this view, ICTs are directed at specific development activities (Gerster & Zimmerman, 2003). Similarly, Economic Commission of Africa (ECA) cited in ALIN-EA (2005) describes ICTs as including “internet service provision, telecommunications equipment and services, information
technology equipment and services …network-based information services and other related information and communication activities (p. 160). While the definitions from the views above adopt an activity-based description, their focus revolves around a technical approach that assumes a provision and production side (Gerster & Zimmermann, 2003) to conceptualizing ICTs.

Generally, within different sectors (health, education, and, agriculture), ICTs have been described as technologies that allow information to be processed, stored and disseminated (Tinio, 2003; Davies, 2006; World Bank, 2002). This view adopts a utility side of conceptualizing ICTs. Chapman & Slaymaker (2002) for instance define ICTs:

“ […] a range of electronic technologies which when converged in new configurations are flexible, adaptable, enabling and capable of transforming organizations and redefining social relations […] ICTs, therefore, are an expanding assembly of technologies that can be used to collect, store and share information between people using multiple media” (p.1).

On the other hand ICTs are as “…electronic means of capturing, processing, storing and communicating information. ICTs are based on digital information […] and comprises computer hardware, software and networks” (Heeks, 1999, p.3).

Convergence as noted above is between new (digital) technologies such as telephones, wireless cellular phones, communication satellites, computers laptops and the Internet, with, old technologies that use traditional media such as radios, television and analog telecommunication networks, and, technologies based on information held in books, newspapers and manuals (Melkote & Steeves, 2001; Duncombe, 2007; “ICT,” 2010; Heeks, 1999). The convergence is what Gerster & Zimmerman (2003) describe as “simply lending old technologies new relevance” (p.7). To a large extent, the scope of ICTs as a tool to promote various development objectives has increasingly been recognized (UNCTAD, 2010). However at this point, it is important to understand what ‘development’ means before exploring how ICTs can best contribute to its goals and objectives.

**Development**

Development means contrasting things to different scholars and practitioners. Development is a protean, catchall concept whose complexity cannot be dealt with comprehensively in a single chapter, however this is just a brief introduction to this concept. The major paradigms of development are discussed later in this chapter.
Development is at times used to describe social, economic and political changes at individual and group levels and other times it is used to describe social and economic indicators such as GDP, GNP, life expectancy, and income levels, among others (Fonchingong, 2005; Melkote & Steeves, 2001). Development is usually understood to involve concepts of ‘progress’ and of ‘growth’ (Unwin, 2009). Further, Melkote & Steeves (2001) state that understandings about development differ significantly. However, most agree that development means improving the society’s living conditions. On the contrary, there is much debate as to what constitutes ‘improved’ and how these conditions should be achieved.

Since WWII, development came to be synonymous with an increased (per capita) income, Gross National Product (GNP) or growth and achieving standards of living equivalent to those of the industrialized nations. National unity, cultural sovereignty and identity, and, development of social infrastructure (in health, agriculture, education, transportation and communication) were integral parts in achieving development in the newly independent developing nations (Servaes, 2007; Melkote & Steeves, 2001; Banerjee & Loo, 2002)

Sen, (1999) defines development as freedom. Freedom in his view is seen as vital to the process of development. Freedom (substantive) is observed as the capabilities an individual has and enjoys in order to lead a kind of life that is of value (Otiso & Moseley, 2009). Development in this view is seen as a process of increasing the real freedoms people benefit from and this is in contrast with the narrower understanding of development as industrialization, rise in personal incomes, social modernization or technological advance. In this view, issues such as poverty, poor economic opportunities, tyranny, and, systematic social deprivation among other cases of unfreedom deny basic freedoms to a vast number of people (Sen, 1999; Banerjee & Loo, 2002).

**Information and Communication Technologies for Development (ICT4D)**

As with ICTs, drawing a clear line as to what ICT4D is has proved somewhat difficult. Acacia, (2003) describe ICT4D as a situation where “…the intended impact of using ICTs as tools is to help alleviate poverty and improve communities’ wellbeing”. Arguably, Sreekumar & Sanchez, (2008) note that ICT4D is a strategic component of ICT expansion and suggest that it is “a loosely defined inter-disciplinary field which assumed a unidirectional relationship between ICTs and development” (p.160).
Generally, ICT4D is a broad term that refers to the application of ICTs in the field of socio-economic development and is aimed at bridging the digital divide by ensuring equitable access to current communication technologies (“ICT4D,” 2008).

**Development communication - Setting common ground for development and communication**

Communication and development have been viewed as closely intertwined where one is believed to guarantee the other (Sosale, 2007). Yet, historically, systematic use of communication for development has been underutilized. Arguably, development and communication according to Mefalopulos (2008) “… are two terms heavily loaded with different conceptions and a richness of uses and functions shaped by their various theoretical underpinnings” (p.39). For many years, the development community has acknowledged the importance of communication in the development process citing the most essential component of good communication as putting people at the centre of the communication process (Deane, 2004; FAO, 2007; Singh, 2005).

Communication according to Servaes (2007) is crucial in the development process such that “…development programmes cannot produce change without an on going, culturally and socially relevant communication dialogue among development providers and clientele, and within the recipient group itself” (p.15). Communication has been seen as a crucial component in initiatives that require voluntary behavior change. Most efforts put into development communication involve assisting people to develop themselves and their communities, which certainly require voluntary actions (Colle, 2007; Nobuya, 2007).

For many in the development communication field, the concept of communication implies the use of media (Melkote & Steeves, 2001; Servaes, 2000; Servaes & Malikhao, 2007; Servaes & Malikhao, 2005) such as radio or television programs, printed material, and, educational videos, among others in information dissemination activities which were considered to be indicators of development (Bessette, 2004; Sosale, 2007; Melkote & Steeves, 2001). However, although development strategies in developing countries vary widely, the models of communication used assume a relatively linear process, mainly as a message going from sender to receiver (Melkote & Steeves, 2001; Servaes & Malikhao, 2005).
Communication media have been hailed at being significant especially in raising awareness and knowledge about a given problem, generating public interest and demand, placing the problem on the public agenda and gathering social support, and, generally to support development-oriented projects (Servaes, 2000; Waisbord, 2005). Moreover, some development communication practitioners according to Nobuya (2007) have begun recognizing communication as the objective in and of itself as it plays an important role in empowering people, enabling expression and dialogue, raising awareness of socio-structural issues, and, fostering self-reflection among marginalized and disadvantaged communities.

Mefalopulos (2008) argues that the broader field of communication describes a process and its related methods, techniques, and media. However, he argues that “A challenge for development communication experts is the lack of clarity, and at times the confusion, that many development managers display in their failure to differentiate among the various areas of communication, especially between this field of study and others […] (p.3).

Suggestions have been made that communication for development is interpersonal and that mass communication is something else. Others frame their discussions as mediated communication versus face-to-face communication, which is perhaps not the best approach. Communication within this view entails both mediated and non-mediated approaches, as they are particularly effective with the growing importance of new ICTs that cannot be easily classified entirely as mass or interpersonal communication (Colle, 2007). Since the 1950s and 1960s, much has happened when the early communication theories were being developed. Flaws have been revealed pointing out the need for significant improvement (Melkote & Steeves, 2001).

**So what is Development Communication?**

Development communication can be traced back to the 1940s and has come a long way since it began as mainly associated with a systems model of communication, functioning as a science to produce effective messages as an add-on to agricultural extension programs. Development communication was conceived primarily as a tool of top-down development programs (Waisbord, 2005; Ritchie, 2007).

In contemporary times, development communication is varied theoretically and in meaning and has become an umbrella term for a range of communication programs and research such as communication for development, communication for social change, information, education and communication, behavior change
communication, participatory communication, and strategic communication (Mefalopulos, 2008; Servaes, 2007; Wasibord, 2005; Nobuya, 2007). The concept of development communication has been interpreted and applied in different ways at research and theory, and, policy-making, planning and implementation levels. However, there is a lot of confusion and endless questions about similarities and differences within this field. There have been attempts to clarify this continuing confusion (Wasibord, 2005; Servaes, 2007; Servaes & Malikhao, 2007; Melkote & Steeves, 2001). One attempt was through the Roundtable on Development Communication meetings\textsuperscript{15} by the UN specialized Agencies, communication professionals and academics who changed the field’s domain as the phrase “communication and development” (Colle, 2007).

McPhail (2009) defines development communication as:

“...the process of intervening in a systematic or strategic manner with either media (print, radio, tele-phony, video, and the Internet), or education (training, literacy, schooling) for the purpose of positive social change. The change would be economic, personal, as in spiritual, social, cultural, or political (p.3)

Consistent with this definition, Servaes (2007) describes development communication as sharing knowledge with the aim of reaching a consensus for action that takes into consideration the interests, needs and capabilities of all the people concerned. Emphasis is put on media as tools in achieving this process but their use is not a goal in itself, interpersonal communication must play a significant role too. Ritchie (2007) asserts that development communication involves taking into account the different opinions and capacities of the intended recipients in a development initiative, mobilizing them to participate in the development activities, ensuring the flow of information between all the stakeholders, and extending access and impact of the training programs

Therefore, for purposes of this research project, development communication shall be viewed as a social activity that takes into consideration the interests, needs and capabilities of community members, ensuring their participation in development activities through the application of communication strategies.

\textsuperscript{15} The United Nation (UN) inter-agency Round Table on Development Communication was created as a significant mechanism that meets bi-annually since 1988 to “ensure understanding among UN agencies regarding the implementation of programs and projects that contribute to communication for development or use that specific approach to resolve development-related issues” (UNDG, 2010; Servaes, 2007:483).
Theoretical trends in development communication

There are many theories in the development communication field but to detail all of them in one chapter would be quite complex. However, there are key theoretical approaches that have informed the development communication field namely the modernization theory [dominant paradigm], the dependency and underdevelopment theory and the multiplicity/another theory (Servaes, 2007; Mefalopulos, 2008; Servaes, 2000; Servaes & Malikhao, 2007a; Servaes & Malikhao, 2007b; Servaes & Malikhao, 2005; Waisbord, 2000, Singh, 2005; Nobuya, 2007; Stevenson, 1992; McPhail, 2009).

There has been a huge change in development communication thinking over recent decades from the modernization approach to today where the focus is more on development communication for social change. The highly top-down focus on mass media and technology transfer as a way of improving people’s lives has evolved to a bottom-up approach for development. Emphasis here is put on dialogical communication processes and participation for development (Servaes, 2007a; Waisbord, 2000; Melkote & Steeves, 2001; Singh, 2005; Ritchie, 2007; Nobuya, 2007; Servaes & Malikhao, 2007a; Mefalopulos, 2008; Rogers, 2003; Petersone, 2005; Carlsson, 2003; Jacobson & Storey, 2004). Presently, we have a combination of different approaches as discussed further down.

During the 1970s, critics of the modernization and diffusion theories proposed a range of development models that placed emphasis on understanding specific cultural environments of intended beneficiaries. These development models are collectively called “participatory approach” (Nobuya, 2007, p.7; Ritchie, 2007) to development communication. These approaches emerged from the multiplicity or ‘another’ theory (Servaes & Malikhao, 2005; Servaes & Malikhao, 2007a; Servaes & Malikhao, 2007b; Servaes, 2000; Ritchie, 2007).

The participatory model emerged based on the theories of Paulo Freire and other experiments with communication alternatives that came into view in the late 1960s and 1970s (Servaes & Malikhao, 2007a). The model is more rooted in cultural realities of development rather than on political-economic dimension (Mefalopulos, 2008; Servaes, 2000; Servaes & Malikhao, 2007a; Servaes & Malikhao, 2007b). Development in this viewpoint is seen as the “…examination of changes from ‘bottom-up’, from the self-development of the local community […] (Servaes & Malikhao, 2007a, p.14).
Central to Freire’s thinking was the importance of getting stakeholders involved in the development process and determining the outcome rather than imposing an outcome already decided by external actors. From the onset, participatory communication focused on dialogical communication rather than on one-way communication. The model emphasized on participatory and combined processes in research, problem identification, decision making, implementation and change evaluation (Tufle, 2009). It is the right of everyone to individually and collectively speak his or her word. Reciprocal collaboration throughout all levels of participation is emphasized (Servaes & Malikhao, 2007b; Servaes, 2000).

The communication process as viewed in the participatory model is closely related to the social and political factors necessary for development. Freire maintained the transfer of knowledge by external sources to the recipient did not help promote peoples’ growth because they did not take into account the independent and critical conscience of individuals, which is capable of influencing and changing society. For development communication to be efficient, emphasis should be placed not only on the process of acquiring technical knowledge and skills but to raising peoples’ awareness, politicization and organization processes among members of the social system (Bessette, & Rajasunderam, 1996).

The participatory approach emphasizes the planning of communication initiatives as support to development projects focusing on dialogue rather than one-way communication with the aim of producing a common understanding among all stakeholders in development initiatives. Emphasis is placed on the facilitation of exchange of opinions among the various stakeholders involved in the development project and aims at taking into account the grassroots perceptions in the planning of the project and mobilizing them in the development activities. By including opinions of the marginalized, underprivileged and poorest sectors ensures that communication processes are more inclusive and open-ended and provides a setting to address not only immediate issues but also structural problems (Bessette, & Rajasunderam, 1996; Nobuya, 2007; Servaes; 2008; Tufle, 2009).

In this view, the drastic shift towards participatory development should also include participatory approaches to communication, which are described as a process of creating and encouraging understanding as the basis for development rather than information transmission (Singh, 2005; Waisbord, 2000, p.18). Therefore, as Bessette, & Rajasunderam, (1996) assert that “participation, by putting the emphasis
on the needs and the viewpoint of the individuals and groups, becomes the key concept of development communication” (p.18).

The participatory theory has also been subject to criticism. Despite its benefits, participation has remained a highly praised term but a poorly adopted one owing to controversial issues surrounding the concept of ‘participation’ (Waisbord, 2000; Nobuya, 2007; Mefalopulos, 2008; Singh, 2005; Morris, 2005; Tufle, 2009). An abundance of literature shows a general agreement that there is as lack of a standard definition of the term ‘participation’ (Mefalopulos, 2008; Nobuya, 2007; Singh, 2005; Melkote, & Steeves, 2001; Tufle, 2009). Various development practitioners have their own understanding of participation but most would agree today that it has multiple definitions that are very much related to the context. These different views determine what it truly entails and how it should be applied or implemented. One approach promotes vigorous participation in development from the grassroots level but the other approach specifically rejects its general application (Mefalopulos, 2008; Singh, 2005).

McPhail (2009) argues applying participatory communication to existing projects becomes an obstacle given the subjective, non-quantifiable terms that describe the approach. Consequently, implementation and evaluation become difficult when dealing with real practicalities. Some participation approaches are relatively strategic and the genuineness of intentions to involve the indigenous population is questionable due to the lack of a fundamental definition of the term ‘participation’ (Jacobson, & Storey, 2004). According to Tufle (2009), there is no agreed definition for participation. However, the varied definition of participation represents two major perspectives, a social movement view that defines participation as mobilizing people to reduce inequalities (knowledge, power and economic distribution) and a project-based or institutional view that defines it as “the reach and inclusion of inputs by relevant groups in the design and implementation of a development project ” (p. 4). In addition, critiques of participatory model according to Ritchie (2007) claim that:

“[…] while credible positions have been argued at a theoretical level, clear guidelines have not been provided for practice. It is largely due to these constraints at the field level that the participation model has not completely replaced the diffusion model […]” (p. 65).

Despite these practical impediments, there is clear evidence that the participatory model of development communication has achieved the mainstream significance
among recent empirical literature. It is the preferred communication model that attempts to build mutual understanding among the different stakeholders in development projects (Nobuya, 2007; Servaes & Malikhao, 2007a; Servaes & Malikhao, 2007b; Bessette, 2004; Tufle, 2009; Ritchie, 2007).

**Integrating the participatory model and diffusion of innovation model**

Current debate and research on development communication have been divided between diffusion of innovations and participatory development communication that show differing results for the role of communication in improving the lives of people in developing nations (Nobuya, 2007; Petersone, 2005; Servaes & Malikhao, 2007; Servaes & Malikhao, 2005; Morris, 2005; Wasibord, 2000; Mefalopulos, 2008). Morris (cited in Petersone, 2005) suggests an integration of both approaches to achieve development goals citing that “[…] diffusion of innovations may be a helpful reactive tool, whereas participatory communication may initiate pro-active health behaviors” (p. 14).

According to Hermann (2007) there is a new group of development communication scholars that recommend approaches combining the two models. These approaches are referred by Adam Rogers, Chief of Communications and Public Information at the UN Capital Development Fund, as “participatory diffusion” (p. 15). Morris (2005) argues even though participatory communication is more often than not defined differently to the traditional diffusion model, the two are not poles apart. The diffusion model has evolved in a participatory course since its original formulation, and participatory projects unavoidably involve some amount of information transfer.

However, Mefalopulos (2008) purports that “…none of the approaches related to the two models are universally applicable nor are they mutually exclusive. Each approach should be applied selectively according to the objectives of the communication intervention...” (p.60). Despite the different scenarios and choices, there is a growing consensus that approaches which combine ‘top-down’ and ‘bottom-up’ interventions are advocated (Wasibord, 2000; Mefalopulos, 2008).
Information and communication Technologies for development (ICT4D)

Amidst the growing evidence that ICTs can play a positive role in development (World Bank, 2002; World Bank, 2009; McNamara, 2003; Thioune, 2003; Chapman & Slaymaker, 2002; Gerster & Zimmermann, 2005; Thatchenkery, & Stough, 2006; Best, & Maier, 2007; Tiwari, & Sharmistha, 2008; UNCTAD, 2010), this research project explores the impact of ICT growth for rural development in Kenya.

Since the mid 1970s, the growth of ICTs and their application in development has been gradually rising. Development practitioners have shown increasing interest in the role played by ICTs in development. The potential of ICTs for reducing poverty and promoting growth especially in developing countries has increased rapidly. However, the spread of ICTs has increased globalization and brought in new complexities and challenges to the field of development communication in terms of power shifts where the network society continues to widen the gap between the information haves and have-nots and those that can access and use the new electronic network of information also known as the digital divide (Melkote & Steeves, 2001; Ogan, et, al., 2009; Chapman & Slaymaker, 2002; Thioune, 2003).

ICTs have been claimed as important components in advancing economic growth and reducing poverty. In the 1960s and 70s, research showed how telecommunications played a significant role in strengthening economic productivity and distribution, public service delivery, and government administration. During the 1990s, ICTs were made critical to competitiveness and growth as a result of globalization, increasing information intensity of economic activities and rapid technological change and demand growth (Guislain, et. al., 2006).

In recent years, the rapid development and dissemination of new ICTs has been at the forefront of debates in developed countries and has also generated a wave of enthusiasm among developing countries not only as a medium of communication but also an enabler of development and an opportunity for the countries to access the global information infrastructure and participate in the knowledge economy. There is a growing consensus that for countries to strengthen their investment climate, improvement in ICTs access and quality should be made a priority (Levy & Banerjee, 2008; Zhao, 2008; Melkote & Steeves, 2001; Guislain, et. al., 2006). However, it is important to note that when it comes to development, ‘one size does not fit all’. The application of ICTs as tools for economic growth and poverty reduction varies widely across developing countries (McNamara, 2003).
ICTs are said to serve as effective tools in transforming the social, economic and political life globally such that there is little chance for countries or regions to develop without integrating into the information age. However, looking at the opportunities and risks that ICTs have as instruments of poverty reduction would seem to be an exceptional task. “If the Millennium Development Goals are taken seriously, the contribution of ICTs to poverty reduction should be a major issue in the international debates (Wole, 2008; Gester & Zimmermann, 2003, p.7).

Further, ICTs play a significant role in developed countries as they have been linked closely to the power and economic boom. There has been a strong correlation between the levels of development and the adaptation of increasingly complex technologies of developed countries. The emphasis on the use and impact of ICTs is determined by the social context in which they are introduced and implemented. Technologies are not only useful innovations for economic growth but can be utilized to support development as well. Countries with strong information infrastructure and use of information technology innovations enjoy taking advantage of sustained economic growth and social development (World Bank, 2002; Thioune, 2003). In addition, ICTs play a crucial role to sustainable poverty reduction since it makes economies more efficient and globally competitive, improves health and education and, creates innovative sources of income and employment for poor people (Guislain, et. al., 2006).

Servaes (2007) argues although ICTs are important tools for sharing information, they often cannot solve development problems caused by social, economic and political issues nor can they change existing power structures as the information available needs to be received by people in the form of knowledge. However, it is important to note the current notion of development is determined, to a certain extent, by the ability to create a synergetic relation between technological innovation and human values. Within this view, Nwagwu (2006) asserts that:

“... the rapid rate at which ICTs have evolved since the middle 20th century, the convergence phenomenon in which all existing technologies have been homogenized by ICTs, in addition to their pervasiveness and intrusiveness in all areas of human activity, gives ICT a leading edge in development and globalization” (p.167).
ICTs and their application to development have been increasingly seen as central to rapid development of ‘lower-income’ regions, particularly Africa. Experience over the past decade reveals that a vibrant and competitive ICT sector is required for developing countries such as in Africa (Otiso & Moseley, 2009; Guislain, et. al., 2006). International organizations share and foster the widespread belief of the benefits ICTs have in the developmental context. This is shown in the increase of programmes and initiatives in this field especially in Africa which have considerable influence not only to the implementation of specific programmes but also by supporting policy formulation processes (Nulens & Van Audenhove, 1999; Granqvist, 2005).

The recent spread and use of ICT in poverty reduction and development in Africa is a function of infrastructure (availability, operation and maintenance), access (public access facilities existing relevant information content, sufficient capacity at different levels nationally, regionally and globally) and supportive-enabling environments (including certain regulatory frameworks and an overall policy framework that supports clear economic and political governance). However, these factors need to be addressed at all levels by all the stakeholders (African Partnership Forum, 2008).

Africa has emerged as one of the most dynamic regions in the growth of ICTs. However the continent’s absolute figures as well as penetration rates remain low. Unlike the strong ICT investments and adoption of new technologies in the rest of the world, Africa remains far behind especially in ICT penetration levels, although it has made impressive gains. Given the potential for ICTs to cause transformation, development analysts believe these tools can play an important role in the development process (International Telecommunications Union, 2009; Thioune, 2003; Tiwari, & Sharmistha, 2008; African Partnership Forum, 2008).

ICTs are said to be effective transformers of African countries. However, one of the major development challenges that Africa faces is its ability to develop capacities, strategies and mechanisms necessary to take maximum advantage of these new technologies and their opportunities. Other challenges such as of adapting the ICTs to local conditions and understanding the innovations to suite their development needs remain (Thioune, 2003).

The World Bank (2002) notes the growth of new ICTs has reinforced the relation between knowledge and broad-based development in terms of economic growth,
greater competitiveness, access to basic services, improved health, improved education outcomes, greater empowerment. As a result, African countries have now begun gradually implementing strategies of including new ICTs on their development agenda towards the development process (Thioune, 2003). The development process is determined based on how the varieties of ICTs operate and the unique effects that are derived from the way in which they are utilized (Grace, Kenny, & Qiang, 2003).

There is a noticeable lack of analysis on the impact of ICTs for development in Kenya. Most of the documentation I was able to source was mostly on policy and very little on ICT4D. On the contrary, there is a plethora of official and legal documentation of policies. This may be an indication that the government is making all the steps in formulating policies but has not looked at the real impact of ICTs for development especially in remote rural areas.

**ICT access and social exclusion – A social practice view of the digital divide**

For several years international agencies such as the UN have identified the existence of global, regional and national inequalities in ICT access (digital divide). There is no universally accepted definition of the digital divide concept. Many of the widely accepted definitions share a common origin. The term ‘digital divide’ originally referred to the imbalances between developed and developing countries with regard to the inadequacy of telecommunication infrastructure and affordability of access to existing ICTs among individuals. The view of a divide between the information ‘rich and information ‘poor’ emerged in the United States from discussions on information policy and the need for equal access to electronic resources. The ‘gap’ in access has been historically defined as a divide between the information ‘haves’ and the information ‘have-nots’. Although ICTs have become effective in transforming the social, economic and political life globally such that there is little chance for countries or regions to develop without integrating into the information age, more concern is being shown about the impact between the information ‘haves’ and ‘have-nots’. The gap between the developed and developing countries and between the urban and rural areas continues to widen in terms of spreading ICTs and distributing their benefits (Gebremichael & Jackson, 2006; Wole, 2008; Zhao, 2008; Watson, 2007, Odame, 2005; DiMaggio & Hargittai, 2001).

Hargittai (2003) defines the digital divide as inequalities in Internet access and notes:
“...a refined understanding of the “digital divide” to include a discussion of different dimensions of the divide focusing on such details as quality of equipment, autonomy of use, the presence of social support networks, experience and online skill [...]” (p. 3).

In line with this definition, the digital divide in developing countries according to Rao (2005) is most evident at the phase of connectivity (lack of affordable and widespread ICTs for the common citizen), content (useful content for daily use of individuals), community (social support networks to discuss ICTs and other issues of concern), commerce (technical and legal infrastructure for e-commerce, businesses and government), capacity (ability to effectively harness ICTs for individual daily use), culture (at the level of policymakers, businesses, citizens to open up access to ICTs and harness them), cooperation (between citizens, businesses, academics, organizations to create a climate favorable for ICT use), and capital (financial resources to invest in ICT infrastructure and education).

This view focuses on the supply-side issues and tends to divert attention from the wider structures of communication in the lives of people and the connections between these and supply-side issues. Further more, the notion of a ‘divide’ accordingly takes up a bipolar societal split of haves and have-nots (Watson, 2007). Flew (2005) raises the issue of the digital divide based on broader social inequalities of access to ICTs:

“The question of the digital, or the inequalities of access to ICTs that arise from broader social inequalities based on social class and income, gender, race, and ethnicity, geographical location (especially urban/rural divides), nationality, is central [...]” (p. 71).

Additionally, Ghatak (2007) argues that the major determinants of the digital divide include level of education, gender, rural-urban divide/location, ethnicity, household or individual income, infrastructure and cost of accessibility, and, legal frameworks and institutions. According Odame (2005) the ‘digital divide’ concept needs to be viewed from a different stance where emphasis is placed on social inclusion to analyze technology access. This notion would be able to encompass a variety of physical, digital, human and social resources, which meaningful access to ICTs entails. Yet, there is the risk that the gender gap remains

“...this bias is evident in three ways: (1) women are rarely involved in the needs assessment of ICTs for development; (2) attitudes that high-end information technology ‘is not for women’ who are still being treated as
passive recipients of information and not active information users and communicators; and (3) there is considerable delay in addressing the limitations faced by women in accessing supposedly ‘public’ information spaces, or even private sector initiatives such as cyber cafes” (p. 16).

The issue of access and exclusion to ICTs is important particularly with regard to socio-economic factors. It is important to note that technology, including ICTs, is not an automatic force for opportunities and social inclusion. ICTs can intensify and reinforce existing economic, political and social inequalities depending on how they are designed, deployed and accessed. Further, they serve as tools to stimulate prejudice and stir up social tensions. In addition, governments need to take proactive measures in ensuring ICTs serve as effective tools for social inclusion through widespread access especially for the poor and disadvantaged to benefit (McNamara, 2003; Watson, 2007).

Women especially in developing countries are in the deepest part of the digital divide further removed from the information age than the men. In order to ensure the whole population reaps the benefits on new ICTs for development, a clear understanding of the specific needs of women and other disadvantaged groups is crucial. Due to systematic gender biases, it is important to ensure women understand the significance of ICTs and use them for purposes of achieving their economic and social development, and human rights. An inability to engage in ICTs will leave them further marginalized in their countries and the world and will further disadvantage and disable them and reinforce the status quo power structure (Wole, 2008; Megwa, 2007; Odame, 2005; Best & Maier, 2007).

Inequalities in ICT access according to Tacchi & Martin (2008), arises from broader social inequalities based on gender and formal education. Within their view, social inclusion and exclusion is understood in the context of participation. In an example given, a researcher working in a village in Nepal noted a high turnout of female participants in the community library’s basic computer courses. Reasons for this were the women felt comfortable being taught by a female teacher and also felt comfortable attending a class session run by a woman. Further, the high female turn out was also attributed to the fact that a large number of housewives had been forced to give up their education and career thoughts, after marriage. Through the skills training programmes especially those involving ICTs, the women wanted to improve themselves as these are seen as highly relevant in modern day life.
Now it is no longer about women’s exclusion from formal education but inclusion of women in community-based learning programmes in village Nepal.

Gender is a significant element of the challenge in ensuring widespread access and use of ICTs. It is worth mentioning that some of the MDGs focus mainly on increasing opportunities and reducing vulnerabilities faced by women. However, for a wide range of reasons, women have often been prevented from securing equal access to, and benefits from ICTs. Therefore particular efforts need to be made in order to provide access opportunities, tools, and content suited to the priority needs of women. In this way, ICTs will serve as effective tools for social inclusion, empowerment and economic opportunity for women (McNamara, 2003; Gill et al., 2010).

The use of new information technology, production, acquisition and flow of knowledge driving the current economy questions the existing power structures and inequality patterns as well as questions progress towards social economic justice. The digital divide is proof of the ability of technology to increase inequality yet at the same time technology can promote and connect people to a variety of opportunities through education and organization efforts (Servon, 2007).

**Telecentres**

One of the most significant approaches in bridging the digital divide within nations and between nations as well as increasing ICT access especially in rural, urban and peri-urban areas, has been the creation of telecentres (McNamara, 2003; Rogers & Shukla, 2001). Telecentres came to the international scene less than 25 years ago. However, they only began attracting the interest of academics recently. The first computer sharing technology emerged in the 1980s particularly with the introduction of the telecottage in Scandinavia. The main purpose of the telecottages at that time was to fight marginalization of remote rural communities in the anticipated information society. In 1990s, with the emergence of the Internet, many were able to get their own computers and connections to the digital world however many others depended on a sort of shared access. As a result a new kind of public access came to light. By 2002, cybercafés, information access points (IAP) and telecentres had emerged (Rega, 2010; Roman & Colle, 2002a).

A telecentre is a shared structured ICT facility that contains a combination of new and old ICTs (television, telephone, books, computers with internet connectivity,
video, and facsimile). It is a public place where people can access ICTs that enable them to gather information, create, learn and communicate while developing essential digital skills. They offer community members the ability to use and publicly share ICTs to support community, economic, educational, cultural and social development through reducing bridging the digital divide, creating economic opportunities, promoting health and other development issues. Over the years, they have been given and are referred to by different names in terms of geography and purpose. They are also differentiated by their funding models and goals (Fillip, & Foote, 2007; Etta & Parvyn-Wamahi, 2003; Rega, 2010; Rothenberg-Aalami & Pal, 2005).

Attempts to define and classify telecentres have adopted different criterion (Owen & Darkwa, 2000; Roman & Colle, 2002c; Gomez et al., 1999; Colle, 2000; Jensen, 2001). Townsend et al. (2001) assert, “telecentres may differ in terms of size, services offered, technology used, and available infrastructure, as well as location, ownership and relationship with other public facilities” (p. 2). In this classification attempt, the telecentre models consider various levels of local development for instance available infrastructure, and economic development, and also consider community necessities and the available resources in different settings in the country (Townsend et al., 2001).

Another attempt was by Gomez et al. (1999) who identify five types of telecentres:

- Basic telecentre that is normally located in rural areas where there is limited access to basic services and where training of potential users is a general service with Internet access as an addition.
- Telecentre franchise is a chain of interconnected telecentres that are independently owned and managed. They are usually under supervision by a local organization that offers financial support occasionally as well as technical support.
- A civil center is one opened by public organizations such as a university and offers say computers for use by the public and telecentre services tend to be an addition to the other daily organizational activities.
- A cybercafé is commercial and usually located in major towns and cities.

16 Village Knowledge Centre, Community Technology Centre, Telecottage, Telekiosk, Teleboutique, Phoneshop, Telehaus, Infocentre, Multi-purpose access centre, Multi-purpose community telecentre (MCT), Community Access Centre, Multi-purpose community centre (MPCC), Community Media Centre (CMC), Community Learning Centre (CLC), Community Knowledge Centre (CKC), Community Information Centre (CIC), and E-Centres, Maarifa Centre.
The multi-purpose community center is a newer model offering specialized services such as tele-medicine. This classification according to Etta & Parvyn-Wamahiu (2003) is quite difficult to comprehend because at one point it is based on the location and on another it based on the nature of ownership and types of services. However, ‘the classification attempted by Colle (2000) shows the complexity and identify the dimensions that any taxonomy would do well to consider” (p. 6). This classification is considered the most efficient way of distinguishing telecentres (Rega, 2010; Etta & Parvyn-Wamahiu, 2003). The following variables distinguish telecentre types on the basis of their classification (Colle, 2000):

- Independent vs. networked: some telecentres are established as independent units. Others are established as part of broader projects. The experiences of the telecentres are generally shared within the network
- Urban vs. rural: Wherever telecentres are established, they are either in the rural or urban areas
- Publicly vs. privately funded by different bodies such as local or international NGOs, governments, corporate entities and private charities
- Stand alone vs. attached: there are telecentres that are stand alone units and others are part of other community institutions such as schools, health centers, government offices, and libraries
- Community vs. establishment-based: Some telecentres are locally owned and managed by the community in which they are set up. Others are owned and managed by organizations (NGOs, government, and businesses)
- Thematic vs. universal: some telecentres act in response to specific community needs such as in health and education. Other telecentres meet information needs of the whole community
- Narrow-focus vs. Multi-purpose: Some telecentre basically offer individual access to IT while others offer a wide range of services such as access to ICTs, training on ICTs for groups, information on health, farming and other social issues, and, distance learning
- Profit vs. service oriented: For some telecentres, it is all about business and their main aim is to make a profit form services offered. Other telecentres are mainly committed to providing services to the community
- Commercial (fee-based) vs. free: Some telecentres charge users for the services. Others offer services for free (Nguruman CKC is an example)
A recent analysis of telecentre definitions by Rega, (2010) brought to light two commonalities in the view of the different classification:

“(1) Telecentres are community development instruments [...] have a community development purpose for people living in rural disadvantaged areas; (2) Telecentres provide communication services which are relevant for the local community; telecentres use a range of both digital and non-digital information and communication technologies and offer a range of services related to those technologies which, [...] can be defined – communication services and which vary from basic training on the computer and internet to more sophisticated services such as information and education services related to matters of interest for the local community and community based services such as library or meeting place facilities” (p. 17).

Further, Roman & Colle (2002a) identified that telecentres tend to be run by governmental or non-governmental organizations (NGOs), provide for low-income clientele, and are community development driven. In addition, a typical telecentre offers a wide range of communication services related to the community’s needs, some of which are free or subsidized by external organizations in this case governmental organizations or NGOs. Initial telecentre projects were almost exclusively donor-managed and consequently, issues of financial and social sustainability arose (Bailur, 2008). This is the case with some telecentres to date.

Arguably, Etta & Parvyn-Wamahiu (2003) argue that there is still a lot to be done in order to arrive at an agreeable and comprehensive classification of telecentres. In addition, while there seems to be a general agreement about the basic functions of telecentres, debates around the nature of ownership, management and operations remain. Suggestions have been made that ownership, management and operations evolve overtime and three stages have been described. Fuchs (as cited in Etta & Parvyn-Wamahiu, 2003) identifies the three stages as: investment, contract and user fee where:

- The investment stage characterizes the early status of the telecentre where a non-profit making organization forms collaboration with a local community in an effort to develop community capacity through supporting people to participate in the information society. The organization finances the telecentre, supplies equipment and provides training for local partners, key people and teams as a way of demonstrating practical utility
The contract stage signifies the telecentre has gained autonomy from the organization and begins to make contractual arrangements with other organizations such as government departments and other institutions such as schools, health centers, for building clientele for providing services and technical support in setting their facilities.

The user fee stage implies that donor dependency is a thing of the past because at this point, the community would be aware of the products and benefits of the telecentre and will be willing to pay for the services (p. 7).

The evolutionary view implies that it only takes a matter of time for telecentres to become independent and self-sustaining. However, the preoccupation with sustainability and economic independence of telecentres evolving through these stages still dominates discussions in part due to the current insistence on the market logic and the business model. Furthermore, the reality of numerous failed telecentres draws attention to the importance of economic viability. Questions remain on how to achieve this.

Over the years, efforts to promote universal access to ICTs in the form of community telecentres has become a policy goal for many African governments and international organizations as ICTs are seen as a vital element of the newly emerging global information society (Parkinson, 2005; Etta & Parvyn-Wamahiu, 2003).

In 1990s the first wave of telecentres was experienced in Africa all of which were started as pilot projects by International Telecommunications Union, IDRC, UNESCO, the World Bank Group and USAID. Numerous telecentres sprung up in countries such as Mali, Tanzania, Uganda and South Africa. The rapid increase of telecentres in Africa was attributed to the potential of these facilities to provide universal access to ICTs for development. Over the years, organizations, technology and applications have developed significantly and this has helped increase efficiency and relevance of telecentres in the rural areas. More and more telecentres particularly in Kenya, Rwanda, Egypt, Botswana, Uganda, South Africa, Ghana and Tunisia are now being supported with local resources (Mayanja, 2009).

Kumar & Best (2006) argue most telecentre evaluations have focused more on their functional aspects such as the technical, financial and sustainability rather than their social impact. On the other hand, those that have focused on the social impact of telecentres have looked at it through anecdotal evidence and others on poverty
reduction. There exists no agreed upon evaluation of the impact of telecentres given the variety of experiences and communities served by these telecentres (Rothenberg-Aalami & Pal, 2005).

Arguably, Bailur (2008) notes there seems to be three main viewpoints on the impact of telecentres: a utopian, dystopian and intermediary perspective.

“The utopian perspective appears to reflect the modernization view of development with a positivist view of technology. It emphasizes […] the role of telecentres in development […] argues that telecentres represent ‘a new symbol of hope for community development’ with the ability to bring about a new social order […] The dystopian view appears to take on the neo-dependency view of development that […] connectivity and access leading to development is one manipulated by corporate giants and development agencies to maintain the dependency of developing countries on the West” […] The third […] acknowledges that while access to ICTs might not directly lead equitably to development, they may be necessary […] to be part of global economic activity or as a strategic national infrastructure (p. 3 - 4).

Moreover, Rothenberg-Aalami & Pal (2005) identified that more supporters along with their considerable resources for promoting ICT4D are acknowledging telecentres as ways to gauge the benefits of access. This is a prime reason impact assessments are becoming even more necessary.

**Telecentres as ways of adopting a participatory approach to development**

Participation according to Colle (2001) has very useful value for telecentre initiatives. With the widespread interest in bridging the digital divide, issues of broad-based community participation may become a major component in telecentre mandates (Roman & Colle, 2002b). However, if there is a genuine demand and if people perceive the services offered as important, only then will participation work (Conroy, 2006).

Studies done by several researchers on telecentre evaluations (cited in McConnell, 2001) reveal that the success of the facilities is closely related to the level of support from the community. One study in particular highlights the link that exists between smaller communities of less than 2000 people and telecentre initiatives and reveals that the community valued the initiative more as compared to communities with a
larger population. Members of the small isolated communities felt empowered to participate in the information society.

In essence, telecentres are public facilities that are shared and provide telecommunication services to people who do not have them available individually due to various reasons. However, ensuring that communities understand, value and use telecentres remains a challenge. Telecentres are the most visible tools for bridging not only technological gaps but educational, economic and social divides as well, all of which are precisely at the heart of the obstacles to participation in telecentre initiatives (Roman & Colle, 2002b).

Roman & Colle (2001) argue it is important to note that the concept of participation is multi-dimensional. When dealing with telecentre development, every layer of the concept is considered and analyzed. Further they identify individual participation and collective participation as important approaches in telecentre initiatives. Individual participation entails the use of the telecentre by a specific community and involvement of the community members in the telecentre activities. Collective participation on the other hand entails determining who will be involved in the planning and management of the telecentre. Generally this involves community ownership and there are community steering committees that have the responsibility of setting direction of the telecentres and supervising the work of the centers managers. This occurs in a few countries like South Africa and Canada.

Conscientious attention to participation is called for because it yields benefits in assessment of information needs, planning and operations (Roman & Colle, 2002c; Bailur, 2008). It gives a sense of community ownership, it provides indigenous wisdom, it helps community values and needs to be reflected on, and it provides important resources at favorable costs such as volunteers or technical expertise. Further, Kanungo (cited in Bailur, 2008) states collective ownership implies that everyone has access to the telecentre initiatives regardless of their social status. Conroy (2006) suggests that:

“At least in the case of Non-For-Profit (NFP) initiatives, a high level of community participation and ownership in the operation and use of a telecentre has major bearing on its success and sustainability […] and it has been recommended that telecentre management need to develop an explicit participation strategy in the planning stages […] one guiding principle proposed […] is a people-centered programme based on community ownership. The community as a whole must endorse it” (p. 4).
Challenges to Participation in Telecentre Initiatives

Challenges to participation in telecentres according to Roman & Colle (2001) fall under both individual and collective participation. There are many obstacles to the two kinds of participation as discussed below and further in Chapter four and five.

Social obstacles revolve around gender, age, cultural issues, literacy and education, language, locality, and technophobia (Roman and Colle, 2001; Prado, 2009). The perceived role of women in society impede their access to and use of ICTs initiatives. These barriers exist widely however they are more severe among African women as well as in some parts of Asia and Latin America where they are more often resilient to change (Roman & Colle, 2002b).

In many telecentre initiatives throughout the world, the youth are the largest part of the population using computers and Internet opportunities. An IDRC telecentre study in Latin America, Uganda and Mozambique (cited in McConnell, 2006) shows that most of the users were students and between the age of 15 and 34 years and majority of these were male while the minority was female (McConnell, 2006; Etta & Parvyn-Wamahiu, 2003). Arguably, Colle (2001) identified that women in many parts of the world “…do not feel welcome in telecentres because of the “maleness” of the environment and the accompanying intimidation” (p. 12). Intimidation impedes participation of both groups in the telecentre initiative (Roman & Colle, 2002a). In yet another study done by Etta & Parvyn-Wamahiu (2003), telecentre users in Africa have been disadvantaged on the basis of gender, age, education, literacy levels and socio-economic status. Strikingly, the absence of the elderly and disabled population at the telecentres was observed. In their study, fewer women use the telecentre services, which confirmed the poor standing of African women in science and technology. This issue is also a familiar reality in Kenya.

Odame (2005) argues, for feminists, the history of activities relating to ICT4D has been perceptive given the potential for manipulation of propaganda messages and male-dominance of media structures. Furthermore, ICTs are not unique in the sense that women are lacking relative to men in access to all modern types of technology. Women especially those in the rural areas are said to have less education, time, income, mobility and experience religious or cultural limitations that hinder their access and use of technology. In Nguruman CKC, for instance, the majority of the users are young men and this impeded participation by women (old and young). Separate locations or rooms were suggested for the women because they feel
intimidated in the presence of the young men and it is deemed culturally inappropriate to mix with young men.

Technophobia according to Roman & Colle (2001) is a major obstacle that prevents people from getting involved in telecentre activities and directly benefiting from the use of ICTs. This is partly due to lack of training of individuals on the use of technologies. There is therefore the need to put emphasis on value addition to the potential services provided by the ICTs. In addition, the community needs to know that the telecentre exists and the telecentre activities should be able to offer what is relevant to the community as well as meet their communication and information needs.

Rural populations particularly in Africa face a set of challenges that impede their access and use of telecentre initiatives. Establishment of telecentres comes with it great challenges such as availability of affordable technology, use of the facility remains a problem due to security and maintenance, connectivity is a struggle, reliability of affordable power supply, and, weak policies and regulations regarding rural ICT initiatives. It has also been noted that economic, political and social sustainability of telecentres are key issues with important inter-relationships (Jhunjhunwala, 2008; Bailey, 2009). In Nguruman for instance, there is no electricity though solar power is available in homesteads that can afford, it is linked to the nearest township with one dusty road that is in poor condition, the transport system is inefficient, and it is prone to natural catastrophes such as the flooding of its river sources (Maruti & Mwalili, 2003).

Political obstacles to participation can create power struggles as identified by Roman & Colle (2001) and this restrains participation of some people. A clear example is the operation and ownership wrangles between World Corps Kenya and ALIN-EA about Nguruman CKC that has left community members wondering whether the center is there to support the community or for benefiting the organizations in terms of more donors funding. This is discussed further in Chapter four and five. Other factors noted by Prado (2009) limit the optimal adoption of ICT initiatives and stem from telecommunication infrastructures, which do not reliably support the connectivity, there is scarce skilled personnel on the ground capable of operating and maintaining the technology, and limited affordability of ICT among poor populations.
Sustainability of telecentre initiatives

Throughout the world, telecentres are struggling to survive and over the last ten years sustainability of telecentres has been at the forefront of debates among practitioners and academics in the development discourse (Bailey, 2009; Rega, 2010). Sustainability can be described as “…the ability of a project or intervention to continue in existence after the implementing agency has departed” (Bailey, 2009, p. 1; Rega, 2010, p. 36). Further, in sparsely populated areas, sustainability is difficult to accomplish since infrastructure may be lacking and local demand is scattered and has inadequate purchasing power. Arguably, for telecentres to achieve and gain tangible benefits for the poor, both in rural or urban settings, state subsidies will be essential for the start-up phase, and subsequent governmental funding of public services will be required (Proenza, 2001).

Fillip & Foote (2007) purport sustainability issues are more often cast on financial sustainability in terms of the ability of the telecentre to generate enough funds to cover its expenses. In addition, social, cultural, political and technical sustainability should also be taken into consideration. Financial and social sustainability of telecentres remain key obstacles of digital inclusion projects. However, “whether telecentres remain an influential component in the community development agenda in the long run however, depends on how they respond to the urgent need to build social and financial sustainability capacities” (Mayanja, 2006, p. 2; Bailey, 2009).

Recently, the issue of sustainability has come to be seen as more complex and multi-dimensional “dependent on more than just the availability of financial resources”. Further, issues commonly associated with sustainability of telecentres include the operating environment, ownership and management styles, community participation, relevance of the services and content (Rega, 2010, p. 37; Etta & Paryvn-Wamahiu, 2003).

Ariyabandu (2009) argues that the present challenge is developing the telecentres further into sustainable knowledge centers with the involvement of NGOs, government and other key stakeholders. Telecentres may have been in existence for many years in the development field but knowledge seems to be underutilized for sustainable development. Ariyabandu further argues that many stand-alone telecentres “have not been able to adequately share information and experience, especially among the poor and the disadvantage communities. This has reduced the demand and sustainability of ICT access points to continue serving the poor” (p. 1).
Fillip & Foote (2007) argue that providing locally relevant services should form the basis for sustainability. This should be based on assessing the community’s needs, specific services, content and developing the business models and applications.

**Summary**

This chapter set out to explore the role of Information and Communication Technologies (ICTs) in development especially in rural communities where telecentres can play a significant role. However, drawing a clear line in defining the key terms and concepts has proved academically difficult. Communication and development have been viewed as closely intertwined (Sosale, 2007). It has emerged that communication is an important component in the development process by ensuring people participate in the communication process (Deane, 2004; FAO, 2007; Singh, 2005).

The aim of this chapter was to lay the theoretical dimensions of the research study and look at the trend of development communication theories that have evolved over the last 50 years to provide a platform for examining the role of ICTs in the field of development. The review has shown that development communication is varied theoretically and in meaning and has become an umbrella term for a range of communication programs and research. However, presently, debates on whether to have development communication as a single sector resulted in the change of the field’s domain as the phrase “communication and development”. Nevertheless, one of the more significant findings to emerge from this is the debate and division between diffusion of innovations and participatory development communication that show differing results on the role of communication in improving the peoples lives. The review suggests a combination of both interventions to achieve this.

This chapter has given an account of and the reasons for widespread use of ICTs in the form of telecentres for development and poverty reduction especially in developing countries (Melkote & Steeves, 2001; Ogan, et, al., 2009; Chapman & Slaymaker, 2002; Thioune, 2003). This review has shown that telecentres have been used as effective ways for adopting participatory development as well as bridging the digital divide (Colle, 2001; Roman & Colle, 2002b; McConnell, 2001; Bailur, 2008; Conroy, 2006).

It is evident from the review that interventions need to be taken into account in ensuring sustainability of telecentres, which are the focus of this research. It is hoped
that this research will enable rich data to be fed back into the CKC for sustainability as well as make potential contributions to theorizing ICTs for development in the development and communication field.
CHAPTER THREE

METHODOLOGY

Introduction
This chapter discusses the methodological approach of my research. The participatory ethnographic approach is informed by the qualitative paradigm and combines participatory techniques with ethnographic approaches with the potential of feeding into action research. Primarily, this is an ethnographic research project and uses the main tools and principles of ethnographic research. However, I picked certain elements from the Ethnographic Action Research (EAR) developed by Tacchi et al in 2002 for use in communication and ICT for development within UNESCO’s programmes. It is important to note that this is not an action research nevertheless there are certain elements such as the communicative ecology from EAR that benefited my own research project and were very helpful for various reasons. This is discussed below. The key ethnographic methods used include: participant observation, field notes, interviews and focus groups. I have also presented my research design in order to show how I recruited my participants and research assistants. A brief description of the locations, time and profile of my participants is provided here. These are further discussed in the methods section.

I have also used a range of mapping techniques, which include communicative ecology maps and a community/village map. Communicative ecology maps provide a visual representation of relationships in terms of their social networks. They also provide an understanding of the experiences and perceptions of the participants in the use and access to ICTs for development. The focus of the community/village map is to describe the patterns of habitation, the nature of housing and social infrastructure (schools, hospitals, chief’s office, roads, rivers, etc). These participatory techniques have been used to complement the other research tools utilized.

Finally, data analysis is discussed and some ethical issues and limitations the researcher encountered in the research study.

A qualitative research paradigm
This research project is informed by the qualitative paradigm in an attempt to “make sense of, or interpret phenomenon in terms of the meaning people bring to them”
According to Ezzy (2002), the issue of ‘life’ is emphasized. “Life is found in relationships, real and imagined. Describing the social processes that make life meaningful is at the heart of a good qualitative research” (p. xii). As a researcher, my life is no different from the people in Nguruman and within this view, starting relationships with people, places and performances according to Mathie & Carnozzi (2005) is meaningful for qualitative research. By being able to develop an understanding of an individual’s lived experience, discovering how they interpret the world around them and how this influences their actions builds on the ideas of Chilisa and Preece (2005) and provided the basis for this qualitative research.

Qualitative research is often described by the methods most associated with it for instance participant observation, in-depth interviews or case studies. In this view, qualitative research is essentially multi-method in focus. However, qualitative research privileges no methodological practice over another, and has no distinct set of methods or practices that are exclusively its own (Mathie, & Carnozzi, 2005; Denzin, & Lincoln, 2008). Servaes (2001) a leading scholar in development communication notes, more often, qualitative approaches may be preferable when exploring significant facts in this field. This approach, according to Servaes (2007), livens up data and makes statistical pictures more concrete. The underlying methodological assumptions of the qualitative paradigm provide a basis for its strengths. Collis & Hussey (2003) assert that the complexity of views can be captured since a variety of research methods are applied in qualitative research. According to Denzin & Lincoln (2008) “the use of multiple methods reflects an attempt to secure an in-depth understanding of the phenomenon...and is best understood as a strategy that adds rigor, breadth, complexity, richness, and depth to inquiry” (p. 7). The qualitative methods used in this research project include focus groups, interviews, research diary/field notes, and participant observation all of which provided the participants and myself with the opportunity to ask and clarify questions and issues whenever they emerged.

Challenges to qualitative research are numerous (Denzin & Lincoln, 2008; Malterud, 2001). It is important to note all research is unavoidably fraught with complexity and sources of bias and inaccuracy (Mayoux, 2006) as I discovered and will discuss in later sections of this chapter. As a result, it was important to have ethical considerations in my research design rather than only in the outcomes as suggested by Mayoux (2006).
An Ethnographic Approach

There is a growing re-appreciation of the ethnographic approach not only in development (Donge, 2006) but also in the context of media and communication initiatives for development (Tacchi, Foth & Hearn, 2009; Tacchi & Kiran, 2008) because it is considered as an innovative approach for studying the impact of ICTs. In addition, due to dissatisfaction with “quick and dirty research methods” and a “growing awareness of the unexpected effects resulting from development interventions”, development organizations have “increasingly commissioned ethnographic-style research” (Donge, 2006, p. 181).

Some authors (see Gobo, 2008; Atkinson & Hammersely, 1998) argue that defining ethnography is particularly difficult because it is increasingly ambiguous in meaning and has been subject to controversy. Nonetheless, Centeno, et al. (2007) maintains that ethnography refers to “the systematic, qualitative study of culture, including the cultural bases of linguistic skills and communicative contexts”. In addition, ethnography according to Goldbart and Hustler, (2005):

“[…] revolves around the notion of people as meaning-makers, around an emphasis on understanding how people interpret their worlds, and the need to understand the particular cultural worlds in which people live and which they both construct and utilize” (p. 16, italics in original context)

It is important to note ethnography is a research approach and is not one specific method. It is in fact a multi-method approach as researchers use and adapt whatever mixture of methods appropriate to their situation. “Ethnography tries to integrate different methods into one holistic study” (Tacchi, et al., 2003a, p. 12). Nevertheless, several authors (Atkinson & Hammerley, 1998; Crang & Cook, 2007; Tacchi, et al., 2003a; Coffey, 2002; Donge, 2006) give priority to observation, as the primary source of information for an ethnographic research and this was therefore the main reasons for choosing participatory observation for this research.

Chilisa & Preece (2005) state that ethnographers aim to “understand and describe a group of people’s way of life, their cultural patterns and perspectives in their natural settings” (p. 143). According Tacchi et al. (2003a) “the ethnographer participates in the community being studied (i.e. lives amongst those people) yet retains an analytical or observational position so that through reflection and analysis the
ethnographer can describe and interpret the subject of the study ... look at patterns, describe local relationships, understandings and meanings” (p. 9; Emphasis: mine).

An ethnographic research approach aims at understanding the whole range of social relationships and processes through the work of a project. These social relationships and processed include:

- How the immediate circle of staff and participants are organized, carry out their work, and how the project fits into their daily lives
- Users of the project services, their day-to-day lives and ways of doing things not only in the project but also with their jobs, social networks, friends, families and other members of the community
- The broader social context of the project for example language issues, social and cultural resources, local economy, social division within, issues of power and institutions within the community
- Social constructions and processes above the community such as government policies, infrastructure, economic development and so forth (Tacchi, et al., 2003a, p. 10)

A holistic approach to the CKC, for example, includes a description of the building, ICT equipment in the center, resources and services offered, staff and volunteers, community users, and the community where the center is located. This helped me understand the different influences on the use and nature of access at the CKC as well as understanding the relationship that exist between the community and the CKC. In this view, as an ethnographer, I was required to aim at every feature of the community and the CKC in relation to the bigger picture and not just looking at the telecentre in isolation. This meant that as an ethnographer I had to position myself in a way I would be able to focus more on actual processes, for example, how using the internet fits into the various ways community members pass on information about education, health, and agriculture (adopted from Tacchi, et al., 2003a).

**A Participatory approach**

This research also has certain elements of participatory research that are important in providing ways to meet the needs of the community and promote participation, which is often associated with social change (Roman & Blattman, 2001; Mayoux, 2006; Kemmis & McTaggart, 2008). The aim of a participatory approach is to give ‘voice’ to groups in society, which are most vulnerable and marginalized in decision-making and implementation of development (Tacchi, et. al., 2009; Mayoux, 2006). In
addition, emphasis is put on knowledge generation from the views of persons being researched, rather than from the researcher’s standpoint. This approach aids in identifying and responding to the local, cultural, historical, socio-economic, geographical, and political aspects that influence community actions and practices (Beazley & Ennew, 2006).

Further, the participatory approach emphasizes an involvement of the researcher with the “researchees” rather than the researcher as observer and research as “subject” (Ehn, 1993). This approach requires a shared form of life, socio-cultural background and language (Tacchi, & Watkins, 2007). This research involved the community in determining needs, which would develop new ways for community knowledge and contribute to the development process of the community and the CKC as discussed in the recommendations in Chapter Six.

Research Design
The fieldwork took place over a period of seven weeks between June and August 2010 in Nguruman, which is located in Magadi division of Kajiado District in Kenya. This research focused on the impact of Nguruman CKC on the community. The Nguruman CKC was established through the E-Centers for Poverty Reduction Project by World Corps Kenya, a development organization. The project was established as a significant effort to improve the livelihoods of the community through training youth in enterprise development, renewable energy and community development. Like the other three centers in the project, the aim of establishing Nguruman CKC was to provide a remote rural community with access to communication facilities like telephone, fax and email as well as assist the community get access to information on market prices for their products, health information and development oriented information. This would then assist them make informed decisions with regard to their businesses, appropriate technologies and education. The trained youth were responsible for creating awareness on renewable resources to provide alternatives to supplement the diminishing wood fuel reserves in the community (Maruti & Mwalili, 2003).

As mentioned in earlier chapters, Nguruman is connected to the nearest township with one rocky and dusty road. There is only one public service vehicle that transports people there in the evening at 5 p.m. but you will also find private cars (from development organizations, middle-men and some residents) who help a few to get to Nguruman. At one point I missed the bus and so I had to wait till the
following day to catch it or get a Good Samaritan to ferry me there. I was fortunate enough to get the latter and therefore did not wait until 5 p.m. for the bus. Accommodation in Nguruman is plentiful. Some residents have built rooms to let out within their home enclosure. I arranged for my accommodation when I arrived in Kenya in June 2010 in order to ensure I got a safe, comfortable and quiet place. I was fortunate to be hosted by a wonderful family.

Due to the fact that I previously worked in the area for three years, gaining community entry was not difficult. However, it was important to let the leaders know why I was there and what my intentions were because I was there in the capacity of a researcher and not development worker. I arranged to meet the Senior Chief and an assistant Chief whom I briefed about my research. They both gave verbal consent and offered to support me in any way.

Since I had worked in Nguruman for three years, especially at the CKC, it was not difficult to get research assistants. My plan was to recruit those who had been formerly trained by WCK based on their knowledge of the area, language, and most of all those who had an interest in my research. It did not take long to get two young men whom I had previously met and had volunteered at the Center some while back. The research assistants provided support in developing a plan to identify and recruit potential participants for the study and throughout the research process. They also took notes and helped in translating some of my questions used during the focus group discussions and community interviews. I also had a research assistant who had also completed a similar study in a remote rural community in Kenya and she provided a sounding board in the crucial first phase of my fieldwork.

The most challenging issue here was training and maintaining them as research assistants due to the time frame of the research and the fact that they had their own plans and activities to do. Nonetheless, they both received all the research information needed for consent in written form and they provided a documented informed consent to participate. I informed them that participation as assistant was voluntary and they may withdraw within five days of the fieldwork. Training them was a continuous process throughout the research study through meetings and using material from EAR.
Data was collected from participant observation in Nguruman during June and July 2010. Relevant formal and informal events taking place in the CKC and the community were observed. These related to:

- Who uses the CKC (Men, women)?
- For what purposes (training, business, events planning, notice boards, getting together etc)?
- When (timing) is it frequently used?
- How many people come in daily?
- How many staffs are available each day?
- What were they saying?
- Conversations with some users
- Interaction with CKC staff and other users
- Other daily communication practices-information exchanges within the community

I kept a research diary and field notes which included my daily records on relevant communication and actions/events in the CKC and community, planning and reviewing my day-to-day research activities in the community. I also kept a personal diary, which included my daily personal records of my emotions and feelings during my fieldwork. This was therapeutic to me because it was not easy being away from my immediate family. This is further discussed in the later sections of this chapter.

I facilitated four focus groups during the month of July 2010. My main aim was to recruit participants from pre-existing social groups such as small business organizations, women self-help groups, farmer cooperative members, youth groups and church groups. This was made possible on June 25, when I attended an open field day even that was organized by the Ministry of Agriculture office in Nguruman. This event brought together different groups within the area (self-help groups, youth groups, development workers, provincial administration and government representatives from the agricultural Ministry) to showcase their projects. During this time, I took particular interest in four groups. A brief profile of the groups is provided in Chapter Four. By taking an interest in their projects, I created an atmosphere of acceptance and through this I was able to brief them on my research and make arrangements to meet with them at a later date in order to discuss further. The location and timing of the focus group meetings was considered as discussed in the later sections of this chapter. Nevertheless, for the women groups, we met under trees or in a farm after they had completed their activities and this would mainly be between 10 am and 11 am in the morning.
I conducted six in-depth semi-structured interviews in July 2010 with community members who use the CKC as well as those who do not use the telecentre. Participants from a community-users and non-user perspective were volunteered from the focus groups based on volunteerism. Their personal experiences helped in building on the topics and discussions that emerged from the focus groups.

I also conducted two in-depth semi-structured interviews in August 2010 with key informants responsible for policymaking and implementing ICT initiatives in rural areas. The snowballing technique was used in recruiting key informants from the development organizations and government sector. This can be very helpful when there are no clear records of members within an organization or village residents (Willis, 2006). As discussed in Chapter four, the two key informants included: a project manager of ALIN-EA, a development agency involved at the CKC and, the manager, monitoring and evaluation of the Communications Commission of Kenya, established by the Ministry of Information and Communications.

Social mapping and developing Communicative ecology in ICT research

Like in most rural communities in Kenya, Nguruman people are the natives of the area where they live. They have lived in the area for many years and therefore have a clear picture of the area. They also have the ability to diagrammatically illustrate their surroundings very accurately irrespective of their literacy level. By continuously interacting with their environment and village surroundings provides a clear mental picture, which can easily be transferred onto the ground in the form of a map (adopted from Narayanasamy, 2008). Schensul (1999) asserts that maps are seen as one of the main categories of cultural material for ethnographic research and are tremendous stores of data. This is an aspect also supported by Narayanasamy (2008) who states that they are an effective and immediate source of communication. In addition, “maps in their simplest form are used to identify the comparative location and importance of different resources within an area” (p. 42). The reasons why I chose to use maps in this research was because they are indeed an effective way to aid communication and great way of promoting community cohesion and self-actualization as supported by Nararyanasamy (2008).

Maps are of different types, but those used in participatory research are broadly categorized into two: social maps and resource maps (Narayanasamy, 2008; Kumar, 2002). According to Kumar (2002), social mapping is quite an effective method
especially in participatory research because it seeks to explore the spatial dimensions of individuals’ realities. The emphasis is put on the presenting the patterns of habitation, the nature of housing and social infrastructure such as roads, schools, and drinking-water facilities, among others. The most important aspect about social mapping is that the local people make it, not the experts. It shows what the locals believe to be important to them and therefore “reflects their perceptions of the social dimensions of their reality with a high degree of authenticity” (p. 54). This is another reason why I chose to use social mapping in this study.

Social maps are different from a resource map, which identify the existing natural resources (land, water sources, the flora and fauna) (Kumar, 2002; Narayanasamy, 2008). Resource maps can be very effectively used together with social maps (Kumar, 2002; Narayanasamy, 2008). Because Nguruman has diverse settlement patterns, I chose to combine the two types of maps in order to gain an understanding of the area, to identify and assess the existing resources (natural and social) and to ascertain whether there are any opportunities or drawbacks associated with their use towards enhancing communication and development of Nguruman (see figure 2 below) (adopted from Narayanasamy, 2008).

In order to understand the impact of ICTs in any given situation, I needed to look at a holistic view of the information and communication structure in people’s everyday lives. Communication and information in this case takes place within an already existing ‘communicative ecology’, which is unique to each community (Tacchi & Kiran, 2007; Tacchi, et al., 2003a; Tacchi, et. al., 2003b; Watson, 2007).

Communicative ecologies are the day-to-day intricate network of information and communication in a person’s life. Yet, in any part, and among different groups of people, information and communication flows differ considerably. Some individuals’ use media for example radio and television to find out what is happening in their community, country, and world, others depend on face-to-face communication because they do not have these communication and information channels. Therefore, the ability to understand and describe “how information flows, and who uses what communication technologies and why”, enables a researcher to get a clear picture of communication in the area, which in turn helps the ICT initiative to become relevant and effective (Tacchi & Kiran, 2008).

In order to understand the local communicative ecology, I needed to know:

- What kinds of activities the local people engage in (or would like)
• What communication resources are available to them (media content, technologies, skills)
• How they understand ways in which these resources can be used
• Who they communicate with and why (adopted from Tacchi et al., 2007).

Through this, I began to understand the complexity of the local content and the impacts or possibilities of particular ICTs and how communication fits into people’s every day lives (Tacchi, et al., 2003a; Tacchi, & Watkins, 2007). Figure 3 shows an example of the communicative ecology model used in EAR and figure 4 shows the communicative ecology model I used for my research. An individual’s communicative ecology according to Tacchi, et al. (2007) can show what, how, where and why a person communicated different kinds of information in their day-to-day lives. When I began to map a person’s communicative ecology, I then began to understand the various reasons and channels for communication within a particular context.

**Figure 3.** Communicative ecology model developed for use in EAR. Source: Tacchi et al. (2007).
Based on the fieldwork, this research project theorized that in the case of ICTs where the aim is to determine the impact of ICTs through the use of community telecentres to promote individual and community development, it is important to focus on the complete picture and social networks (adopted from Watson, 2007). As I began to comprehend the communicative ecologies of the community members, I was able to understand individual media uses and communication needs and how the telecentre might be able to improve the situation. Understanding the local communicative ecologies ensures that the ICT initiative becomes an important part of the community and supports the community’s information and communication needs (Tacchi & Kiran, 2008). However, it is important to be aware that women and men, young and old have different social networks, different nature of ICT access, and understand ICTs in different ways. Consequently, their patterns of communication may vary. Nevertheless, researchers will be able to work effectively with each of the networks and groups only if they understand the specific aims and problems each of them face (Tacchi & Kiran, 2008; Watson, 2007).
In this study, using the communicative ecology model meant I needed to map the community’s participation as actors in their networks of association so as to understand the social processes and structures most relevant to reducing disadvantages of remote rural communities, and how ICTs can be effective in this regard (adopted from Watson, 2007; emphasis mine).

**Methods of data collection**

The focus of this study was research on an NGO initiative, therefore, the expert opinion of the NGO staff and partners, telecentre staff, policy implementers (government representatives), beneficiaries of the telecentre (the users and non-users of the telecentre) was needed. Mercer (2006) notes that when carrying out research on NGOs, most studies use qualitative methods to gather data. There are certain methods that are likely to be helpful in undertaking research on NGOs according to Mercer, namely: interviews with key informants such as staff, project leaders, donor staff, local leaders from government among others; focus groups with project beneficiaries; surveys; participatory appraisal; and document analysis.

For this research project participant observation, research diary and field notes, focus groups and in-depth semi-structured interviews, were used. Integrating these different methods into one whole study ensured triangulation across methods, sources of data, time and space (Chilisa, & Preece, 2005).

**Participant observation**

Participant observation in this research project occurred throughout the fieldwork (in June and July 2010). This involved observing the relevant formal and informal events taking place in the community knowledge centre (CKC) and the community as well. This gave me the opportunity to write field notes on relevant communication and events as they took place.

Crang & Cook (2007) state that on the one hand being a participant in a culture means immersing myself into the daily routines and rhythms of the community, developing a relationship with persons who can show and tell me what is happening there and through this “an experience of a whole range of relationships and emotional states that such a process must inevitably involve” (p. 37). On the other hand, being an observer of a culture means detaching and sitting back to watch activities as they unfold and simply recording these on-goings in field notes, photographs and other forms of material.
Tacchi et al. (2003a) describe participant observation as actively participating in social situations and in the process learning about what is going on and at the same time building strong informative relationships with the people. I engaged with community members in as many different situations as possible and I was able to look at what people actually do at the CKC and the community and hear what they say they do. The central idea in ethnographic fieldwork is that ‘everything is material’. “Any conversation or encounter can be a source of insight (it does not matter if it did not happen in a formal ‘research situation’). Even the most apparently trivial detail can help develop your understanding as you fit it into the evolving picture” (Tacchi, et al., 2003a, p. 52).

The relevance of observation is to check and deepen representations through watching community members and situations, taking notice of informal conversations and the different opinions of people therefore becoming evident (Donge, 2006). Participant observation not only allows events to be studied as they occur, but also offers the researcher the opportunity to obtain additional insights through experiencing the phenomena for themselves (Ritchie et al., 2003). Within this view, participant observation is not always a matter of spending years living in a remote community (Crang & Cook, 2007) to achieve this, from my experience I found that observation could occur over a relatively short period of time because I had spent time working in that community prior to my research.

In terms of gaining access to the community, Crang & Cook (2007) argue that it is important for a researcher to think about this early on in a research project. However, for many doing research projects, there is an already existing relationship to particular social groups and, first or second-hand experience to issues and/or access to particular places, which provide the spark and motivation for doing ethnographic research projects. I had an already existing relationship with the community and access to the CKC. Therefore, for my research project, I was able to gain community entry and access without difficulty because people knew who I was.

However, gaining access to the field can be the most difficult phase in the entire ethnographic research process (Gobo, 2008). Since going to Nguruman was on the basis of research and not development work, it was important to determine whom to first contact and explain the project to in the process of negotiating access. After a number of initial inquiries, I was advised that the appropriate person to contact was the senior Chief of the area. This took a few days, as the Chief was not available but
I was able to meet with one of the Assistant Chiefs. Through these enquiries “a researcher will have had the chance to hone her/his ‘purposes’ in order to properly word any formal or informal application for access” (Crang & Cook, 2007). I found this to be the case as I clarified the project through discussing it with and explaining it to the Chiefs.

Gobo (2008) notes that gaining access means devoting a great deal of energy and time in order to win the trust of the community and be able to maintain this trust throughout the research. “Otherwise, he or she will meet strong resistance, and his or her understanding of the phenomena observed will be deficient as a consequence” (p. 118). From my experience, winning the trust of the community took a relatively short period of time and energy because I had previously worked in Nguruman. However, I needed to develop relationships with community members to participate in the research using the other methods and so the way in which I presented my views in the negotiating process was particularly important during participant observation. This builds on what Crang & Cook (2007) suggest that during participant observation, what the researcher says is significant for developing relationships with respondents using other methods.

Participant observation is susceptible to reliability and validity issues. Validity problems emerge from the attached meanings of observed actions, which might infer different meaning to both the researcher and participants. In this view, I needed to be careful in limiting bias. Nevertheless, through the use of mixed methods, I was able to triangulate the material from observation. Risks were inevitable as the behaviors of some participants changed due to my presence therefore affecting reliability. To deal with reliability issues I needed to adopt systematic sampling techniques and most importantly, recording my data carefully through the use of field notes as suggested by Guthrie (2010).

**Research Diary and Field Notes**

Ethnographic research relies heavily on detailed field notes (Tacchi, et al., 2003a), which should be highly descriptive (Merriam, 2009). “What is written down or mechanically recorded from a period of observation becomes the raw data from which the study findings eventually emerge” (Merriam, 2009, p. 128). Overtime, these notes build into a rich and valuable archive for ethnographic research (Tacchi, et al., 2007). Crang & Cook (2007) point out that the main data generated by a participant observer is that which fills their field diary or notebook. In addition, noting
down observations of, and participation in, the everyday lives of a research community should entail both attempting to describe the scope of things (for instance making sense of an event, together with everything and everyone involved in it from start to end) and focusing in on what appears to be most important.

Writing a diary while in the field can be quite empowering to some and to others, therapeutic, enabling writers to think through the issues they record. This is a way of tapping into individual creativity and allows for personal expression (McGregor, 2006). In the field I kept a personal diary, and, a set of field notes in my research diary. My personal diary I found was therapeutic when I encountered unexpected obstacles and when I was missing my family. My field notes I found were empowering because I was able to reflect and think through the issues that I recorded and interpret my daily observations and activities. I also used my field notes for planning and reviewing my day-to-day research activities in the community (Beazley, & Ennew, 2006). According to Crang & Cook (2007) through this, the researcher becomes transformed making her/him more self-conscious and anxious because new identities (personal and professional) begin to emerge, often with difficulty and with the help of the self-reflective writing which is what I discovered.

Tacchi et al. (2007) suggest that sometimes it may not always be appropriate for a researcher to take out their notebooks and write down because it may interfere or stop the flow of conversations, or it may intimidate and make individuals feel uncomfortable. Therefore, I wrote my field notes on a regular basis, mostly every evening. I made sure to device techniques for remembering and later recording what I observed as suggested by Tacchi, et al. (2007). Looking for key words that stood out in what people said and mentally playing back settings during conversation and observation breaks were the most helpful techniques (Merriam, 2009). The aim of this was to note down everything in detail. According to Tacchi et al (2003a), issues that at first may seem less important may later become of interest to the research. Keeping detailed notes ensured that I was able to have access to earlier research ideas and observations and could use them not only at a particular time but also for future purposes (Tacchi et al., 2007). Table 5 shows a sample excerpt from my field notes.

**Friday, July 02, 2010**

My day begun at 7.50am. I got up and prepared, had breakfast and left for the CKC at around 8.45am. It was quite hot today and very dusty too. I got to the CKC and found the
staff reading a newspaper and there were three more young guys seated, two were using the computers and one was reading a newspaper. So I began talking to the staff asking him about the services of the CKC [...]. As I talked with him, I looked around the center and one thing particularly caught my attention, a basic computer-learning timetable [...] Again I asked why women do not visit the CKC. He said it was a cultural issue and that when women come and see the young men in the CKC, they prefer standing outside, as it is “culturally appropriate”. He gave an example that if the District Commissioner was to visit the center at that moment and there were women in, they would flock in one corner while the men take up the front sections. The strategy he has in mind is to [...] I talked to one of the guys in the center asking him why he was at the CKC. He said he had come to learn how to print. He said he was able to type documents but he wanted to learn how to print so that one day if he gets to work somewhere in an office he could do it himself. He also said he comes often to check email. I was also informed that most of the young guys who use the center use the internet for social purposes visiting social networks such as Facebook, where most of them have accounts. The young man has just completed high school. I asked another young guy what he was doing at the CKC and he said he had come to read the newspaper, specifically the sports pages. The CKC gets newspapers daily in the evening. […] The transcript continues

Table 5. Sample excerpt of field notes of Rosabel Githinji, July 02, 2010.

Focus groups
Four focus groups were conducted with targeted community groups that included small business owners, farmers, and development workers in the area, women groups, students and youth. The Focus groups were used to ascertain information on collective views to determine the relationship between the community and CKC in terms of their attitudes, perceptions, beliefs and feelings on the use of the CKC. This was also a way of helping me determine if the CKC is addressing the original aims of the implementing organization (World Corps Kenya).

Evans (2006) points out that this is an excellent tool for exploring the behavior of the group, its norms and interactions. The objective is similar to individual in-depth interviews, to gather rich and often exploratory information (Tacchi, et al., 2003a). Furthermore, this method “allows the researcher to understand, determine the range of responses and gain insight into how people perceive a situation” (Chilisa & Preece, 2005, p. 151). Within the African context, this method is similar to group discussions that many communities use when there are problems and concerns to be addressed. In addition conducting focus groups within the African context
embraces community production of knowledge and are therefore easily adaptable (Chilisa & Preece, 2005).

I recruited participants from pre-existing social groups such as small business organizations, women groups, farmers' cooperatives, youth groups and church groups. I first met with the already formed group in order to create an atmosphere of acceptance. The location, day and timing for the group interviews were also considered (Evans, 2006; Chilisa, & Preece, 2005).

Evans (2006) notes that focus groups can be organized on a wide range of social aspects such as age, gender, ethnicity, occupation, religion shared interests or geography. Due to the cultural/ethnic background of the community, this research considered issues of power and social status and therefore did not have mixed gendered groups for the older men and women. However, for the youth, I had to have a mixed gendered group because there were only two women. Despite the few women in the group, this diversity encouraged debate.

Initially, I intended to have two focus groups comprising eight women, each, of all ages while the other two comprising eight men, each, of all ages, grouping them in terms of their ages. This would ensure that participants are comfortable among their peer groups in terms of their level of experience (Evans, 2006) and was deemed culturally appropriate for the community. However, this was not the case when I got to the ground. I did not manage to have a focus group with the older men for several reasons. First, being a female researcher, it was culturally inappropriate for me to sit with older men. The presence of a male research assistant did not help either because he was too young. Secondly, my fieldwork coincided with the run-up to the National referendum on the revision of the Constitution of Kenya. Because of the level of public interest the community was often dominated by referendum debates making people unavailable. Conducting a focus group among the older men would have meant conflict and contradiction, as there would have been rival political groups. This would in turn have failed to produce any meaningful discussions and may even result to confrontational behavior (Evans, 2006). Instead of conducting two group discussions with the older men, I decided to conduct in-depth interviews with them. However, even this was not successful. I was only able to interview two older men. Consequently, my fieldwork involved one youth group comprising of ten participants and three women groups comprising of six to eight women each.
During the group interviews I acted as the facilitator and my research assistant took notes so as to indicate who said what. Using a digital recorder backed this process. Table 6 shows a sample excerpt of notes taken by my assistant during one of the focus groups.

<table>
<thead>
<tr>
<th>July, 06, 2010</th>
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<tr>
<td>Nasaruk Women’s group</td>
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<td>Field notes by James</td>
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</table>

Met Nasaruk women group at mama X’s farm under a mango tree. We got there early and met two women tilling the farm. A while later the vice chair lady arrived and sat with us while the other women continued to work. I requested her to get milk so we can make tea but she declined saying that we should not be the ones providing tea for them but their responsibility to host us. She was kind and very hospitable. Roza began talking about her research and asked when the group was formed […] Since only one woman in the group was able to read and write a little, Roza and I opted to translate the information sheet and read it to them in Kiswahili. This was fairly easy. A verbal consent was given and we went on to talk about the women’s group […] Roza had prepared guiding questions for the group. Since there were only six women, she asked them to feel free to talk about the issues. The discussion lasted for close to two hours.

**What is development in your opinion?**

*Participant 1:* development is having working together, gather or pooling resources together, sharing experience and activities, learning from one another e.g. Digging, planting soya beans.

*Participant 2:* development is pooling resources together, coming up with new projects for others to learn from and see […]

**In your opinion, is Nguruman developed?**

*Participant 3:* Yes Nguruman is developed, in 1974 the population of Nguruman was very low, the place was dominated by wild animals, the road from Entasopia was made by a “Mzungu” white man called Sage, she added that now the population is high, we don’t do a lot of farm protection, we can comfortably have good sleep at night in our houses. Schools have come up, and churches are available too. A certain sub location was vacant with nobody stay there, the place was bushy with only animals living in. A lady was killed by a buffalo while protecting her farm from wild animals. There was not even a single house roofed with iron sheets, all the houses were thatched with grass. The whole area was without a radio, there was nothing like listening to news since even if someone wanted to listen to news there was no radio at all. Health care was obtained from Magadi. There was no hospital, no health center or even a dispensary within the area of Nguruman. There was no means of transport except a tractor. The tractor was available once in a week, only in the weekend. Mzee Daudi bought the first vehicle many years later.

*Participant 4:* the nearest hospital was at Olkiramatian, a sick person will go to Olkiramatian for treatment, Olkiramatian is approx 17 kilometer, but the sick person will walk for medical
Table 6. Sample excerpt of notes from focus group, July 06, 2010.

There were several ways I used to stimulate discussions and relax the participants especially for the youth focus group. Using a paired interview exercise (Pretty, et al., 2009, p. 131) I paired the participants and had the following questions to guide them:

1. What is your name? What is your background and experience (academic and professional)?
2. In light of the information given about the research what would you want to gain from it?
3. Name two good things that happened to you in the past year

This exercise was used for several purposes:

1. Introduction and icebreaking
2. Determining demographic information (gender, age, level of education, professional background)
3. Getting participants view of what they would want to benefit from this research

As Tacchi et al. (2007) points out once the interview gets going, it is necessary for the researcher to:

- Note down key points on a white board or large sheet of paper at the same time requesting verification from the participants
- Request participants to draw diagrams to illustrate their points
- Ensure ever participant takes part in the discussion, asking each to comment on the issues being raised as well as the topic
- Dealing sensitively with the participants
- Ensuring that some participants do not dominate the discussion

During the youth focus group, I found it necessary to have the participants draw diagrams to illustrate some of the issues we were discussing for instance I asked them to draw a picture depicting their understanding of what ICTs were and from the pictures the participants explained what was drawn and what they meant by the drawing. This ensured participation from everyone even the less confident ones. A white board and flip charts were used to note down the key points and I made sure to ask whether the participants agreed with the points.
Social mapping and developing a communicative ecology with the participants

These methods were used during the focus group to break up the discussions and let the participants relax. In consultation with the participants, my research assistants and I fixed the location and time that was central and convenient for them for the social mapping exercise. I explained that the purpose of the exercise was to develop a broad understanding of the physical and social characteristics of the community’s life as well as provide an opportunity for discussion in which to unravel the different features of social life (Kumar, 2002). The village map was also used to locate where is the CKC was in order to determine whether it has been accessible to the community. The intention was to map on the ground but this was difficult because the location of the exercise had been swept clean therefore we could not get the material we needed. Nonetheless, we opted to map on paper because the material was readily available. The participants used a flip chart and colored markers, which I gave them and mapped on top of a pool table that was outside of our meeting room. Figure 6 illustrates a social map of Nguruman mapped out by the youth focus group participants.
My role was limited to facilitation and I only intervened when the participants could not agree on symbols to represent certain structures in the community. The symbols according to Narayanasamy (2008) are of great significance because the participants discuss among themselves and decide which symbols to be used where. Nonetheless, I watched the process and listened to the discussions as they unfolded. I took notes about the process as it got underway. On the areas I was not clear about, I asked the participants for information (adopted from Kumar, 2002). The participants started by drawing the main road and river and then included major landmarks such as churches and schools and the Nguruman escarpments. After the exercise was done I thanked them for their participation. I made sure to triangulate the information generated from the map as suggested by Kumar (2002) and Narayanasamy (2008) with my research assistants.

Just like the social mapping exercise, I explained to the participants that the communicative ecology exercise was to know:

- What kinds of activities the local people engage in (or would like)
• What communication resources are available to them (media content, technologies, skills)
• How they understand ways in which these resources can be used
• Who they communicate with and why (adopted from Tacchi et al., 2007).

Through this we would all understand
• The effects of an information and communication technology once we understand the context it is situated and is being used,
• How the CKC can better to improve the existing communication patterns
• How the CKC can better support the local information and communication patterns
• How communication processes are changing overtime and how the CKC has played and effective role towards this process (adopted from Tacchi et al., 2007)

The exercise was done indoors using flip charts, a white board and markers Several participants were willing to participate in this exercise but at the end of the exercise, I noticed that all the other participants had done their own private communicative ecologies. Figure 7 below shows a participant developing his communicative ecology.

*Figure 7. Developing a communicative ecology. Source: Personal collection of Rosabel Githinji, 2010.*
For the women’s focus groups, discussions were mostly conducted outdoors under trees or in their farms during their working hours. Consequently I joined in their activities, because this was a way to create rapport and become accepted as a researcher. This was helpful because I was able to observe and be slightly involved in their activities (observer as participant) (Chilisa & Preece, 2005; Merriam, 2009). Chilisa & Preece (2005) note that observer as participant:

“[…] is marginally involved in the situation. The advantage of this type of observation is that the observer can develop rapport with the research participants and can be accepted as a colleague and researcher who is free to ask questions” (p. 156).

Figure 8. Farm activities I took part in. Source: Personal collection of Rosabel Githinji, 2010.

However, like the other methods I used, there were limitations in this technique. Timing for the discussions with the women was very important. They preferred meeting between 10 am and 11 am after their farm activities. At one point, I arrived late because I got lost and we eventually had to postpone the focus group because some women had already left to prepare food for their school-going children. In addition I found myself in a complex position when I realized that the women thought
I was a trainer/extension officer. This is further discussed in the ethical issues and limitations sections later in this chapter.

**Interviews**

Merriam (2009) notes that in every type of qualitative research, a number of and occasionally all the data are collected through interviews. DeMarrias (cited in Merriam, 2009) defines an interview as “a process in which a researcher and participant engage in a conversation focused on questions related to the research study” (p.87) There are several kinds of research interviews that range from informal chats to formal conversations. Some are structured with a fixed list of questions for every informant, some are unstructured with a range of topics to explore and others are semi-structured with a topic and a list of questions to guide the conversation encouraging the informant to tell their story (Tacchi, et al., 2007). This research study used semi-structured interviews and also involved formal and informal conversations with community members and key informants.

As previously mentioned, the structure of the CKC and its guiding principles are mostly tied to those of an NGO. Mercer (2006) suggests that when undertaking research on NGOs, interviews with the staff, donor staff, project beneficiaries, local leaders, business and religious institutions among others, are likely to be the most helpful. Six in-depth semi-structured interviews (see profiles in Chapter four) were conducted in the community to gather information on people’s attitudes and perception from an ICT user and non-user perspective. These included the challenges and/or opportunities from using the CKC, use and nature of access, communication and information patterns among community members, and the potential of the CKC towards development of the community among other issues. Two in-depth semi-structured interviews (again profiles in Chapter four) were conducted with experts from a development organization and government sector perspectives on how rural communities in Kenya have responded to ICTs. I used a list of questions in an attempt to cover these issues (see Appendix E).

I used my questions to guide both the in-depth interviews and the focus groups with the community users and non-users of the CKC. Table 7 below shows a sample excerpt from an interview with a community member. The aim of the list of questions was to guide the conversation as I encouraged the informant to tell her/his story in their personal words. This gave me an opportunity to explore unexpected topics that emerged (Tacchi, et al., 2007; Tacchi, et al., 2003a).
My interviewee was a senior teacher at a church-funded primary school in Nguruman. 

[R is for researcher and P is for participant]

July 7, 2010

3.00 p.m.

Our Lady of Mt. Caramel Primary School

R. Could you please introduce yourself and tell us a little about yourself?

P. My name is Cxxx, I am 30 years of age, I work with our lady of Mt. Carmel. I am an O’level graduate but I have attended a number of refresher courses. My wife has done CPA, my brother is in Kenyatta university.

R. When did you come to Nguruman?

P. I came to Nguruman in 2000 but started working in 2006. From 2000 I was in Magadi, I also stayed in Ngong before.

R. Were you working in Ngong?

P. No was not working in Ngong. A Catholic father called Fr. Pxxx introduced me to Nguruman. I am not employed by the teacher service commission but employed by the church.

R. As a teacher is education important?

P. Education is the key to everything. Education brings development. Education is the key to progress. Our lady of Mt. Carmel has undergone a number challenges some of them include nomad students coming to school few days in a week. The institution being a private institution, performance and attendance is very low since there is a public school around which does not charge any school fees.

R. What is the population of the school?

P. The total population is 130 pupils. Out of this total figure the number of girls are 76. I am the one in charge of administration, I am very much ready and willing to support girl child in their education since girls are discriminated in the families. I had personally found myself in a problem after buying school uniform to a needy girl child. Her mother wanted to get direct help in terms of money she never wanted the help to go to the child. Seminars workshop and barazas were held to promote girl child education. These work shops were held in Shompole, Loika, Magadi and Ilparakuo but the exercise was not successful in areas like Oldorko and Musenge.

R. Do you have other business apart from class work?

P. I use the CKC for borrowing books. Mr. Sxxx was giving me textbooks for schools. I volunteered helping the community on repairing phones. I repair items like mouthpiece, unlocking phone, and fixing of some broken parts. I charge less fee for my service. The fee may range from shillings 100 – 200. I don’t charge much than shillings 200.

R. In your opinion, what do you think the potential of the CKC is?

P. CKC is more or less of a resource center. I’ve learned a lot from the CKC. I am a member

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17 Baraza is a Kiswahili word means a public meeting.
of the CKC. In the CKC there is availability of Internet, another advantage is that the Internet is free of charge. A large percentage of email addresses were signed up at the CKC. There are library books in the CKC that can go a long way in helping our children and even us adults.

R. Do you think there is equal access to the CKC in terms of gender?
P. Men visit the center more frequently than female. With the cultural factor, the community excludes female to access the facility. CKC being a place of modern technology, the aged and the illiterate are sieved out. [... The transcript continues]

Table 7. Sample excerpt of notes from interview, July 07, 2010.

Tacchi, et al. (2003a) note that ethnographic researchers are likely to do several types of in-depth interviews namely:

- Household interviews whereby individuals are interviewed in their homes where they are relaxed, and where one can observe and converse with them in their own space
- Interviews with key informants or community figures such as teachers, political figures, religious figures, and business people. These may take place in a formal setting such as offices. The aim is to determine their understanding of the community and its issues from a professional view
- Interviews with the staff and users with the aim of finding out how they relate to and use the initiative and how it fits into and affects their everyday lives (p. 62)

I conducted four household interviews with both users and non-users of the CKC. The aim was to find out personal experiences about how they relate to and use the centre and how this fits into their day-to-day lives. These generated much more personal information from the participants as they were comfortable enough to talk about their family relationships, business and aspirations (Tacchi, et al., 2003a). Willis (2006) notes that in many cases, a researcher may not have a choice in picking a location to conduct the interview, which is what I discovered. I conducted two interviews in a formal setting (school) because it was the choice of the participants due to their nature of work. Nevertheless, Willis (2006) further notes that one needs to think about how the chosen location may affect the data gathered the dynamics of the interview and the way the researcher presents her/himself to the potential interviewee. In my study, the nature of the location did not affect the data I gathered in any way.

I conduced two interviews with key experts from ALIN-EA and the Communications Commission of Kenya. The interviews took place in an office set-up with the aim to
find out, from a professional perspective, how they understood rural communities in Kenya and how these have responded to ICTs, and number of other issues relating to ICT4D in Kenya (see appendices for the list of guiding questions).

Mercer (2006) notes that there are several good reasons why working with NGOs can be a good idea for researchers whether or not they are directly researching them or not. In this research study, linking myself with the NGO I worked with facilitated community acceptance of my research and myself. This also helped gain access to the key informants from the government sector more quickly than otherwise would have been possible. Background information about other ICT initiatives in rural areas of Kenya was also given for me to use and these were extremely helpful. Nevertheless, as Mercer (2006) notes, research collaborations with NGOs are not always glossy and problems may arise. Due to the fact that ALIN-EA and WCK were entangled in ownership issues, I was faced with a complex dilemma of maintaining a position of impartiality towards my former employer. This is further discussed in the ethical issues and limitations of my research later in this chapter. Due to the ongoing ownership issues and the fact that my research coincided with the run-up to the National referendum for Kenya’s new Constitution, several key participants were unavailable. These limitations are further discussed in the later sections of this chapter. Only two participants agreed to take part in the research.

I conducted all the interviews with community-users and non-user of the CKC perspective while my research assistant took the notes. In addition, a digital recorder was used to record the interviews. Willis (2006) notes that direct recording of interviews has advantages. It allows the researcher to concentrate fully without having to worry about taking the notes or trying to remember points to write up later. In addition, recording “provides an accurate, verbatim record of the interview, capturing the language used by the participant including their hesitations and tone in far more detail than would ever be possible with note taking” (Legard, Keegan & Ward, 2003). It was important in my research study to have my research assistant take the notes as a way of translating (Willis, 2006) some of the issues addressed in Maa language because I was not fully confident in it.

**Data Analysis**

Documentation of research is a primary component of the ethnographic research process. This is achieved by keeping a clear and detailed record of all the data gathered in the form of field notes, transcripts, diagrams, maps, charts and other
material. Consequently, analysis is a continuous part of the research process that can extend indefinitely and involves coding, organizing and exploring the data collected (Tacchi, et al., 2007; Tacchi, et al., 2003a; Merriam, 2009).

Merriam (2009) states that data analysis is a process that entails:

“[…] making sense out of the data. And making sense out of data involves consolidating, reducing, and interpreting what people have said and what the researcher has seen and read – it is the process of making meaning […] the process used to answer your research question(s)” (p. 175).

Data analysis in this study occurred throughout the research process, during documentation (writing field notes daily, organizing notes and reading notes regularly). This entailed reading and reflecting on my field notes daily in order:

- To see if there are any significant common themes, ideas, issues or questions (and/or any variations on themes) emerging,
- Develop ideas and interpretations for further research, and,
- Explore ideas from the information being gathered (Tacchi, et al., 2007).

Through exploration and interpretation of the collected material, I was able to identify particular codes, create definitions and look at relationships. An example of some of the codes I used include, descriptive codes such as: type of service used, frequency of use, technology problems; analytical codes such as: power issues, conflict of interest, people’s perceptions of the value of the CKC, literacies, sustainability of CKC among others. Codes are a significant component of the interpretation and exploration process and it is therefore important to have a clear idea of what they mean and how they will be used. Including definitions of codes is also crucial to analysis (Tacchi, et al., 2007; Tacchi, et al., 2003a).

Table 8 gives a sample of coded data from my notes. My field notes are placed on the left and the codes are placed on the right.

<table>
<thead>
<tr>
<th>Friday, July 02, 2010</th>
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<tbody>
<tr>
<td>My day begun at 7.50am. I got up and prepared, had breakfast and left for the CKC at around 8.45am. It was quite hot today and very dusty too. I got to the CKC and found the staff reading a newspaper and there were three more young guys seated, two were using the computers and one was reading a newspaper. So I began talking to the</td>
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<th>Types of services at CKC</th>
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<tr>
<td>Uses of ICTs</td>
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<td>ICTs and communicative ecology</td>
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staff asking him about the services of the CKC [...].

As I talked with him, I looked around the center and one thing particularly caught my attention, a basic computer-learning timetable [...]

Again I asked why women do not visit the CKC. He said it was a cultural issue and that when women come and see the young men in the CKC, they prefer standing outside, as it is “culturally appropriate”. He gave an example that if the District Commissioner was to visit the center at that moment and there were women in, they would flock in one corner while the men take up the front sections. The strategy he has in mind is to [...]

I talked to one of the guys in the center asking him why he was at the CKC. He said he had come to learn how to print. He said he was able to type documents but he wanted to learn how to print so that one day if he gets to work somewhere in an office he could do it himself. He also said he comes often to check email. I was also informed that most of the young guys who use the center use the internet for social purposes visiting social networks such as facebook, which most of them have accounts. The young man has just completed high school. I asked another young guy what he was doing at the CKC and he said he had come to read the newspaper, specifically the sports pages. The CKC gets newspapers daily in the evening. [...The transcript continues]

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<th>Computer classes</th>
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<td>Cultural issues</td>
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<tr>
<td>Types of services at CKC</td>
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<tr>
<td>ICTs and communicative ecology</td>
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</tbody>
</table>

Table 8. Sample of coded data from my notes. July 02, 2010. Source: Researcher (Adapted from Tacchi et al., 2003).

I coded my raw data (interview transcripts and field notes from observation) according to the various themes and categories that emerged in my literature review. However, due to the fact that I did not put any limit on emerging categories, this led to a large number of categories to deal with it. This builds on what Emerson et al (1995) notes, that “through initial coding and memoing the ethnographer identifies many more ideas and themes that [one] will actually be able to pursue in one paper…Hence one must decide which ideas to explore further and which to put on the back, at least for the moment” (p. 157). At some point this process proved to be discouraging because I kept coding again and again and the list grew longer and longer. I then decided to print my raw data and go over it again to carry out a more
detailed and focused coding and through this process I edited my codes using colored markers to highlight possible categories and relationships.

Data management in most analytical approaches according to Ritchie et al. (2003) involves deciding upon themes or concepts, which data is collected, will be labeled, sorted and compared. Tacchi et al. (2007) note that themes are what a researcher comes up with when coding begins. In order to give my themes meaning to the research, I ensured that the thematic analysis was considered in the analysis process bearing in mind my research questions and the findings of the literature review. Table 9 gives an example of some of the themes I came up with while in the field.

Sunday, July 11, 2010
Finally a day to rest! Well not exactly! I went for a short walk to refresh my mind and this was just what I needed despite the hot sun. Then there it was, the perfect spot for me to sit and read through my notes and most of all make sense of it. It is quite interesting reading my notes and seeing the issues that have emerged. Throughout the research, even now, I keep wondering and asking, what if I do not find anything? Or, what if I have not collected enough data? [... Transcript continues]
Some of the emerging themes I found are:

**Age and gender in CKC use**
I found several issues relating to age and gender of community members using the CKC. Mostly during my observation at the CKC, the majority of its users were young men either recently out of school or in tertiary institutions. I met only one older man one day, probably above 60 years going into the center to borrow agricultural magazines. In the course of the observation, only one woman came in to bring her phone to be charged. No woman, well other than myself, came in at any point to use the other services of the center other than to charge phones. In the FGD one woman says that she believes the CKC is just for the youth [...]

**Women’s participation and access to CKC**
Issues relating to women and their participation in community and in accessing the CKC were numerous! During the focus groups with the women, I identified two kinds of participation from the women especially when it came to community issues. There were the active women those who had higher positions in the groups and who took part in community activities and were also involved, to some extent, in the decision-making processes of the community, and, there were the passive ones who are willing to take part in different community activities but could not due to various barriers [...]
Cultural limitation was a major contributor to women participation and access to the CKC. I remember the staff giving the example of the District Commissioners visit at the CKC and
how the women would flock into one corner of the room to let the men take the front. Another issue was that it was culturally inappropriate for the women to go into the center while the young men were in […]


The findings of the data gathered were then compared with the literature findings. I was able to analyze events that recurred, different assertions, and opinions that supported specific findings on the impact of ICT4D in rural areas in Kenya, and the general literature findings. Conclusions made during the data analysis process were merged to ensure a comprehensive analysis process.

**Ethical issues**

During the different phases of the ethnographic research process, a researcher, in her/his capacity, must ensure decisions are made in regard to her/his code of ethics (Gobo, 2008). It was important for this research to be conducted in a moral and ethical manner due to the nature and methodology used. Furthermore, because this research involved working with people, ethics approval needed to be obtained through the Unitec Research Ethics Committee. The application for ethics approval was granted in June 2010 (see appendix A).

It was important for me personally to behave in an ethical way. Because of my previous work in the community I had built trust with community members and I wished to retain that.

I informed the community members about the research in a way they could understand. In order to achieve first hand consent from the participants according to Gobo (2008), “ethical codes prescribe that the participants must be given complete information about the aims of the research” (p. 137). The initial step that was to be used for approaching the community was through distributing information sheets, advertisements or brochures through the CKC. However this was not possible due to ongoing organizational issues at the CKC. Nonetheless, Plan B was to take advantage of a social event (open field day) that was held in one of the farms in Nguruman, which saw several formal and informal groups and development workers come together to showcase their projects.

Each research participant in this study received detailed information about the research project, the contribution that the individual may make to the research, and the nature and extent of their involvement (see Appendix C – Information Sheet).
Potential conflict of interest was managed by ensuring voluntary participation. Participants were invited to take part in the focus groups and interviews and were asked to sign a consent form (see Appendix D – Consent form) before being asked to participate during scheduled meeting times. However, for some participants, I needed to read the forms for those who could not read or write, or, I let them read for themselves so that they may not feel intimidated from the documented informed consent forms, this being a rural community where the literacy level is low. Nevertheless, participants were made aware that they could withdraw their participation or any information they would provide within two weeks of completion of the data collection. “As ethnographers do their field work, they may learn personal details about participants or be privy to confidences from them” (Gobo, 2008, p. 139). It was therefore important for me to inform and assure the participants that they would not be identified. Where required, a pseudonym was adopted for participant in order to maintain anonymity.

The principles of informed and organizational consent, and confidentiality of participating organizations, were also applied (Appendix E - Research Consent letter for use by organizations). Participating informants from organizations were given the opportunity to withdraw their participation or any information they had provided within two weeks of completion of the data collection if they so wished. Although I got verbal consent from my key informants, I did not get a signed one (which was one of the prerequisites for getting approval for this research) because they did not think it was necessary. The interviews were recorded.

In most cases, an ethnographic researcher “should maintain a position of impartiality towards all the participants they meet in the course of the research. This principle, too, is obviously impossible to apply in practice” (Gobo, 2008, p. 141). My emotions and inclinations made me prefer some relationships to others. I found the women’s groups more likeable than all the other participants. At one point I was faced by an awkward dilemma when I realized that all the women groups I interviewed thought I was in Nguruman in the capacity of a trainer/extension worker, sent by a development organization. Most of the women wanted to know how I could ‘help’ them in their projects. ‘Help’ in this case was more on financial support. According to Apentiik & Parpart (2006), the researcher should be aware that when undertaking development research, “many communities will perceive him/her as a representative of either a national or international donor agency” (p. 37). Many government and non-government organizations doing development research projects in especially
remote rural communities have contributed to the view that research projects usually come with tangible benefits. Nguruman has a long history of involvement with NGOs and other development activities and consequently this belief is particularly strong among its community members.

Nonetheless, this brought in the issue on beneficence, which Gobo (2008) defines as “the advantage that accrues to the organization or group from permitting the researcher to study it” (p. 142). According to Gobo, a range of beneficences can be offered, much of which depends on the creativity of the ethnographer. Nevertheless, “not all of them will be suitable for the participants, and care should be taken to ensure that the beneficence is appropriate to them and the setting” (p. 143). In my case, organizing a future event, based on my expertise and my findings, and inviting the implementing organization to provide training to the participants, was deemed as the best beneficence to be offered.

Since this research study focused on a particular NGO project, it was important for me to “bear in mind the broader context within which the NGO [project I] was studying [was] situated” (Mercer, 2006, p. 96). I had to consider the NGO’s relationship with other organizations working in the area as well as the community in order to “gain a broader understanding of the social and political implications of the NGO project” (Mercer, 2006, p. 96). It was important for me to be sensitive to the fact that the project’s implementing organization (World Corps Kenya) and the collaborating organization (ALIN-EA) were entangled in an ownership debate, which brought them into a relationship of conflict. Nevertheless, linking myself to the implementing organization facilitated community acceptance helping me to gain access to participants and other information quickly and easily. However, I was again faced with a complex dilemma, trying to convince especially some gatekeepers that I was there in the capacity of a student researcher and not as a development worker. Furthermore, maintaining a position of impartiality towards World Corps Kenya, which I worked with for four years, was quite difficult. In most cases I found myself entangled within the contentions of ALIN-EA and World Corps Kenya by trying to act as ‘mediator in the field’ in order to deal with the project ownership issues that had unfolded. Mercer (2006) notes “[a researcher] will no doubt have to grapple with issues of positionality during the course of [the] research…[A researcher] should remain alert to the shifting balances of power during [the] fieldwork and try to remain transparent in your dealings…”(p.100).
Nonetheless, there was no harm associated, or anticipated, with this research. Culture and ethnicity was respected within all of the research contexts and with the research participants. It is hoped that the findings will enable rich data to be fed back into the CKC as well as make potential contributions to theorizing ICTs for development in the development and communication field in Kenya and beyond.

**Limitations of the research**

While in the ground, there were unforeseen issues that emerged, which had an impact on the findings:

**The young female researcher**

Apentiik & Parpart (2006) argue that fieldwork in development research involves professional, social and personal relationships between the researcher and the participants. However, these relationships may be affected by several factors such that the assigned identity of the researcher based on age, gender, and other fixed identities are essentially out of the researcher's control. Nonetheless, their impact can at times be projected in advance. My positionality in terms of gender and age influenced the data gathering. The age and gender difference between older men in the community and myself caused problems that were not immediately apparent to my assistant and I. “Being aware of these sensitivities helps the researchers to adapt different strategies” (Apentiik & Parpart, 2006, p. 36). During the initial stages of my research, the presence of a male research assistant was deemed necessary for me to undertake focus groups with the older men in the community. However, this did not work out because he was considered too young, as earlier mentioned.

**Timing of the fieldwork**

Binns (2006) argues that the timing of research can be very important and should be based on a researcher’s acquired and managed local knowledge. Nevertheless, being on a New Zealand government scholarship meant that there was a certain time to fit in the research, doing the writing and preparations in New Zealand and the fieldwork in Kenya. Further, my fieldwork coincided with the run-up to the National referendum for the new Constitution of Kenya, which influenced my data gathering because public debate in the community was often dominated by the referendum. Furthermore, most key informants were unavailable because they had travelled to their native homes to participate in the referendum. This resulted in fewer interviews among key informants than otherwise anticipated. Nevertheless, continuous communication with Unitec research supervisors was done through email.
Logistical issues
Throughout the fieldwork, I found myself being assisted by good Samaritans to get to Nguruman. As previously mentioned, Nguruman is connected to the nearest township by one rough and dusty road. Furthermore, there is only one bus used to transport people to the area. I missed the bus on several occasions, which meant looking for other means to get there. The options I had were either getting into a vegetable truck headed there (in the back), or waiting till the next day to catch the bus in the evening, or waiting for someone (in their personal car) headed there. Luckily, at no point did I find myself travelling on the vegetable trucks but one day I ended up waiting till the following day to travel, which impacted on the timing of a meeting I had with one of the groups. Nevertheless, before embarking on my fieldwork, I made sure I had found a place to live in, which was comfortable and safe. In addition, due to the relationship conflict between WCK and ALIN-EA, the CKC was often closed and this was quite a critical factor in influencing data gathered through observation. Finally, Brydon (2006) argues that “it is crucially important in all research that involves social interaction, the recording by whatever means of social events, interviews of any kind, focus groups or participation, to realize that there is no perfect formula, no absolutely ‘right’ way of doing things. There is a range of different strategies … [that] will vary according to the ‘context’ (p. 29). I needed to be adaptable even though I had an outlined design I needed to adapt it to the context as I met it almost on a daily basis.

Summary
Qualitative research is often described by the methods most associated with it and is essentially multi-method in focus. We see that using multiple methods reflects and attempts to secure a detailed understanding of the event and is a strategy that adds rigor, breadth, complexity, richness, and depth to an investigation (Mathie, & Carozzi, 2005; Denzin, & Lincoln, 2008; Collis & Hussey, 2003). The qualitative methods used in this research project include focus groups, in-depth interviews, research diary and field notes, and participant observation. Challenges to qualitative research are numerous (Denzin & Lincoln, 2008; Malterud, 2001; Mayoux, 2006). Like other research, this research study was unavoidably fraught with complexity and sources of bias and inaccuracy as I discussed. It was therefore important for me to have ethical considerations in my research design as has been suggested by several authors.
The main reason for choosing to do an ethnographic research was due to the growing re-appreciation of the ethnographic approach not only in development (Donge, 2006) but also in the context of media and communication initiatives for development (Tacchi, Foth & Hearn, 2009; Tacchi & Kiran, 2008) because it is considered as an innovative approach for studying the impact of ICTs. I picked certain elements from EAR but this was certainly not an action research. I found it useful to use key elements from the approach that were relevant for my study such as the communicative ecology. As seen, an ethnographic research approach aims at understanding the whole range of social relationships and processes through the work of an ICT project (Tacchi, et al., 2003a). As an ethnographer, I was therefore required to aim at every feature of the community and the CKC in relation to the bigger picture and not just looking at the telecentre in isolation.

This research also has certain elements of participatory research that are important in providing ways to meet the needs of the community and promote participation, often associated with social change (Roman & Blattman, 2001; Mayoux, 2007; Kemmis & McTaggart, 2008). Emphasis is placed on what the marginalized and most vulnerable have to say (voice) in the decision-making processes and development of the community (Tacchi, et. al., 2009; Mayoux, 2006). This research involved the community in determining needs, which would develop new ways for community knowledge and contribute to the development process of the community and the CKC.

In order to add to my ethnographic research material and understand the impact of ICTs in any given situation, I chose to use social mapping and develop communicative ecologies in collaboration with my participants. The mapping exercises were used to complement the other methods I used in this research and were not therefore used in isolation for instance the social mapping exercise was done during the youth focus group to break the discussions and let the participants relax.

My research design has provided an overview of the research and gives a brief description of the location of the research, and the CKC. Also discussed are the logistical plans I made when I arrived in Kenya and the field. I collected data from participant observation on relevant formal and informal events related to several issues, and I kept a research diary. I facilitated four focus groups in the community and eight in-depth interviews with community users and non-users of the CKC and
key informants from ALIN-EA and the Communications Commission of Kenya. Analysis was a continuous part of the research process that extended indefinitely and involved coding, organizing and exploring the data collected (Tacchi, et al., 2007; Tacchi, et al., 2003a; Merriam, 2009). Finally, it was important for me to behave in an ethical way and therefore ethical issues were taken into consideration in preparation for this research project. Like any other research, there were unforeseen issues that emerged in my research, which had an impact on the findings. This chapter has discussed the limitations I encountered in this research.
CHAPTER FOUR

PRESENTATION OF FINDINGS

Introduction
This chapter presents the findings from the data collected using participant observation, research diary/field notes, in-depth semi-structured interviews and focus groups. A field trip to Kenya enabled data collection over a period of seven weeks in June to August 2010. The findings are organized in two sections: findings from the community users and non-users of the CKC from the interviews and the focus groups and the findings from the interviews with the key informants. Findings from community members are presented to provide individual and collective views on the impact of the CKC on the lives of the people. The findings from key informants are presented to provide the perceptions of policy and decision makers and an overview of the current state of ICTs for development in Kenya.

Although presenting the findings from the key informants at the beginning would have provided a much more clear context of ICTs for development in Kenya, doing so risked to defocus the emphasis from the community voice. I intentionally privileged the voice of the community because usually, this is silenced. However, we need to keep in mind that they give contrasting information. This stark contrast between the perspectives of the key informants and the community members are picked up and discussed in Chapter five. The key informants provide a lot of contextual information to understand what the community telecentre is doing. This is also picked up and discussed in Chapter five.

The concept of communicative ecology has been applied to individual respondents in order to illustrate their communication patterns, their use of ICTs and how this links to their social networks. Comparison between the communicative ecologies of the respondents in the two groups was done to understand their social networks and to know whom they communicate with and how they communicate with others in their social networks. Through this, I was able to build up a bigger picture to understand the impacts and possibilities of particular ICT mediums and how communication using these particular mediums fitted in the other activities of the respondents. By comparing the communicative ecologies of the users and non-users of the CKC, I
was able to see how different social networks are formed and gain insights into their differences (Tacchi, et al., 2007).

It is important to note that my observations from my research diary and field notes are woven throughout this chapter in order to provide additional insights and details to the findings from the other data collection methods. The demographic information of participants and groups is also presented.

Findings from Nguruman community

Profiles of and findings from non-users (NU) of the CKC

The table below presents the profile of the three non-user of the CKC interviewed for this research. They consisted of two females and one male. Two non-users are originally from Nguruman.

<table>
<thead>
<tr>
<th>Participants</th>
<th>Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>NU1</td>
<td>30-year-old male who has lived in Nguruman all his life. He is a farmer who grows papayas and bananas, which he sells. He holds an upper primary (class 4 – 8) level of education. The challenges he has experienced in his business include: lack of capital, transportation, fluctuation of crop prices, pests, market for Asian vegetables, which are grown in the area and production of the vegetables due to high prices on pesticides (In-depth interview, July 05, 2010).</td>
</tr>
<tr>
<td>NU2</td>
<td>28-year-old female who has lived in Nguruman for five years. Prior to moving into Nguruman, she was a student at Magadi Secondary School. She is a lower primary (class 1 – 3) schoolteacher at a primary school owned by a Catholic church in the area. Her job entails teaching class one pupils to read and write. This role, she says, comes with it challenges in terms of interacting with the students and teachers in terms of dealing with the different characters of students and teachers. This makes interaction and relationships between us as teachers and between the students difficult. There is also lack enough teaching material (In-depth interview, July 06, 2010).</td>
</tr>
<tr>
<td>NU3</td>
<td>An older female who did not say her age though I could tell she was above 50 years of age. She has lived in Nguruman since 1958. She is a farmer and a self-help group member (In-depth interview, July 07, 2010).</td>
</tr>
</tbody>
</table>

Table 6. Profile of non-users of the CKC

Perceptions of development and the state of development in Nguruman

NU1 understands development as the ability to utilize the available resources effectively. He believes Nguruman is developed when he compares it with the way it was a couple of years back:

“…due to the current changes such that earlier times we were lagging behind but now I feel we have reached a different level. We have a better road than before, we had no hospital now we have a health center, we had no vehicles
to transport us now we these have increased and no we have network coverage so we can be able to buy and use phones” (In-depth interview July 05, 2010).

NU3 also took us back to when she moved into Nguruman in 1958 and stated that it is currently developed. According to her there was no infrastructure such as a shopping center, no transport facilities, no schools, no hospital and would have to walk a long way to Magadi township to get health services. She mentioned how people would break water pipes in order to get a Magadi Soda company service vehicle to come so that they could take their sick to hospital. For NU3 there are many shops now, schools have been built there is a health center and also a machine for grinding maize.

NU2 on the other hand understood development as growth, availability of communication services and good infrastructure. She mentioned how there are more mobile phones in Nguruman now, which has made communication easier. However, for NU2 Nguruman is far from developed and mentioned how the infrastructure of Nguruman is terrible. She also stressed on the issue of culture and believes that if the community would move away from the retrogressive cultural practices and change their attitudes especially about women then development would occur.

**Emerging community development issues**

NU2 stressed the issue of cultural practices and argued that for development to occur, the community has to change their stance on certain cultural practices and especially those that involve women. Some of the cultural practices she mentioned were early marriages, female circumcision and moranism. According to NU2 Nguruman is not developed because the community still practices these cultural beliefs and stated “In my view, Nguruman is not yet developed since there are no educators to teach people and help them change their attitudes towards some cultural practices” (In-depth interview July 06, 2010). She also stressed that the community should stop tribalism in order to develop.

NU3 stressed that it is important for her children to be educated because in today’s world a person cannot be employed without education “even the person who is employed to till land needs education because now in this world you cannot go anywhere without education” (In-depth interview July 07, 2010). According to the respondent boys were more likely to go to school during early times but now she says this has changed and there are more girls in school. When asked about the
preference for boys she stressed that girls were a source of wealth and if they were to be educated they would refuse to get married. In addition, she mentioned that it is believed educating a girl is a waste of time and therefore funds are channeled for boys’ education instead. For NU3 most households would have half the children going to school and the other half remaining at home to look after the family’s livestock.

NU2 stressed that the lack of development in Nguruman is because there are no educators to teach them about development. She suggested that people should be taught how to do business and get exposure through visiting other communities to learn from them and in turn bring development to Nguruman.

**Understanding what the CKC is about**

NU1 described the center as a place where one can learn how to use the computer, use the Internet, charge a phone and borrow books for free. However, he has only visited the center once when it was established. Nevertheless, the only time he did visit the center he was able to learn a little about the computer:

“...I went when it was started but I stopped going there. I was able to learn a little about the computer and it helped in terms of gaining knowledge of using the computer as it makes your workload easier”

The respondent also mentioned that he borrowed a book from the CKC to help his son with schoolwork.

NU2 and NU3 have never been to the center but have heard about it from family, friends and staff. For NU2, she heard about the CKC from a friend and understands the CKC as a place for communication, information email and also learning through the use of Internet. For NU2 the services offered at the CKC are good but she feels it needs to be better equipped in order to cater for the information needs of the community members. NU3 mentioned that she had heard about the CKC from the former staff but does not know what it is all about and what he did there. She has never been to the center because she heard it is for the youth. She mentioned that she would like to go there and learn too.

**Users of and access to the CKC**

NU1 pointed out that everyone, whether male or female can access and use the center. According to the respondent anyone can visit and use the services of the CKC. He also believes that one does not need to know how to use a computer to go to the CKC neither does one need to be educated to use the center and stressed that
“...you do not need to be educated to use the CIC. The center can educate you as well ...everyone can visit the center. You will see all coming some will come to charge their phones and would benefit from it. My wife knows about the CIC but has not visited it but I would want her to go and benefit from it” (In-depth interview, July 05, 2010).

Interestingly, for NU2 and NU3, young men mostly frequent the CKC only. According to NU2 the youth are the ones who mostly use the center and she stressed that the issue of fewer or no women accessing the center may be their choice or lack of interest:

“On the issue of fewer women utilizing the services at the CKC, I cannot blame the facility maybe it is the women who are not interested in visiting the facility” (In-depth interview July 06, 2010).

NU3 also pointed out that the CKC is mainly used by the youth stating, “I was aware that it was just a place for the youth and I saw that I would not benefit from it” (In-depth interview July 07, 2010).

Nonetheless, NU2 again stressed that the cultural issue is a possible obstacle for women to access the center stating, “There are also cultural factors that one needs to consider here. If I am visiting the center my husband will think that I am going there to waste time” (In-depth interview July 06, 2010). NU2 also pointed out that a person’s level of education should not hinder him/her to access the CKC services. For NU3 age was a barrier for women to use the center arguing that if a woman her age would go to the center and find young men she would not get in because it would not be appropriate.

**Potential benefit of the CKC for development**

For NU1 the CKC has been useful for development of the community. He pointed out that the services offered at the CKC are beneficial to everyone even the farmers. In addition, the CKC according to the respondent has the ability to teach people and educate their children. He admits that the services offered especially in such a remote place have not only benefited himself but the whole community as well “when it started it was just offering phone services but now there are more computers we can use to learn so it is of benefit to me too” (In-depth interview July 05, 2010).

According to NU2 the CKC has a lot of potential in spearheading development in Nguruman “It provides employment opportunities for the youth. From the information it provides it can change the attitudes and practices of the community. Its role in
development is to provide information like job opportunities, business and agriculture” (In-depth interview July 06, 2010).

It was difficult for NU3 to respond to this section because she had never visited the CKC. Nevertheless, she prefers her children and grand children to go to the CKC and learn and in turn tell her what they learn.

Communication and information activities

Non-user 1

NU1 mentioned he has a phone, radio and television. He listens to the radio at least three times a day but watches television only in the evening. He listens and watches national and international news and for entertainment. All are solar-powered and he uses a generator to power them up. He has been able to implement an income generating initiative he heard about while listening on his radio. He mentioned that this was a success and wishes the community would know of this. He uses his phone solely for communication purposes with family, friends and other farmers and buyers of his produce.

In addition NU1 pointed out that he had been shown how to use a computer and could only type but with difficulty. When asked to describe a computer, the respondent described it as “an information technology. I would describe it as modern technology that carries all, that one does not need to write by hand, for storing documents, listening to music or watching something and the Internet, all these are found in a computer” (In-depth Interview, July 05, 2010). On asked about the Internet, NU1 described it as “communication in the air for communicating with friends, getting information from different parts of the world” (In-depth Interview, July 05, 2010). For NU1 it is important to know how to use the computer and the Internet because to him the world is becoming revolutionized such that everything is becoming computerized. He uses his phone to communicate with immediate family members and other community members included in his social network. Below is the communicative ecology of NU1.
Non-user 2

NU2 mentioned that she owns a mobile phone, which she uses solely for communication with immediate family members and other community members in her social network such as teachers and friends she has made in Nguruman. She has a television and radio which she uses everyday at home. She listens to spiritual programmes, national and international news and national debates on radio only in the evening and watches television for national and international news and entertainment for instance movies, soap operas. She has used a computer before when she was in college but has not had the opportunity to use it again in Nguruman. NU2 stressed the importance of the computer because it makes work easier. When asked about the Internet, the respondent said she did not really know about it but has heard from people that it helps in communicating with people who are far for instance through email. She mentioned that only one of her family members has used the Internet and stressed that she would gain a lot of information for instance on examination dates at her college if she got the opportunity to use the Internet.
 NU3 mentioned that she owns a phone, which she uses to communicate to family, friends and the self-help group members. However, it was interesting to note that she also gives her phone to other women in her group who had no phones in order for them to stay in touch with their children and family members without charging a fee for this. She has a radio but listens very few times citing she has no time to listen. She pointed out that her children use the radio for educational programmes, which helps them prepare for their school examinations.
Analysis of the Non-users’ communicative ecologies

Access to new communicative technologies: From this data we can see that the communicative ecologies include ICTs in the form of radio, television and phone. The non-users’ do not have access to new ICTs such as the computer, Internet, and, network hardware and software. However, they do not use these ICTs in isolation for instance they use face-to-face communication and the phone as an appropriate mix for their communication needs. Nevertheless, they access and understand these ICTs differently thus presenting different presentations of their communication and information needs. The importance of these ICTs lies in their ability to create greater access to the information and communication needs of these non-users.

Social networks: This data also reveals that the non-users’ social networks are connected to and communicate with a different range of people mainly immediate family members and other groups of people in the community. Nevertheless being members of other groups in the community impacts on their social networks for instance NU1 who is a farmer includes other farmers in his social network, NU2 who is a teacher includes other teachers in her social network and NU3 who is a self-help group member includes other women in her social network. It is apparent that their
social networks grow by including other people other than immediate family members whom they mainly communicate with. This data then reveals how the phone and face-to-face communication fit into their every day lives in order to meet their communication and information needs. This ensures that their social networks continue to exist, which is important to them because they are able to receive more practical information on how to get involved in community issues.

**Different communication and information activities:** When we compare the non-users communicative ecologies it is apparent that their communication patterns and needs differ thus presenting different meanings and possibilities of the ICTs they use. From this data we can also see that their communication and information processes are less advanced than the users.

**Profiles of and findings from Users (U) of the CKC**

The table below presents the profile of the three users of the CKC interviewed for this research. They consisted of two males and one female. All the users are outsiders of Nguruman but one has lived there for many years.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U1</strong></td>
<td>26-year-old female who has lived in Nguruman for four (4) years. She is a trained primary school teacher at Entasopia primary school, which is a government institution. She was a farmer but decided to stop her farming business because it was expensive and time consuming (In-depth interview, July 07, 2010).</td>
</tr>
<tr>
<td><strong>U2</strong></td>
<td>An older man who did not say his age. He seems to be in his early 50s. He is self-employed as a farmer doing subsistence and horticultural farming. He is a focal group member, which is a group of community members and community development workers all from the same geographical area, recruited by ALIN-EA to generate articles for the CKC and act as a bridge between the community and the CKC (Personal communication June 23, 2010). He is also a livestock farmer and has three cows, 45 goats and keeps poultry. He has lived in Nguruman for 33 years. Prior to his move to Nguruman he worked as a teacher in Central Kenya for two years. The major obstacle in his farming business is financial ability to develop to the level required by the Ministry of Agriculture. Ministry of Agriculture office holds seminars for the farmers to be trained on new farming techniques but for the respondent implementing these is quite difficult due to the lack of finances to purchase the material required (In-depth interview, July 07, 2010).</td>
</tr>
<tr>
<td><strong>U3</strong></td>
<td>30-year-old male who has lived in Nguruman for five years. He is a senior teacher at a Church owned primary school. His main responsibility is dealing with needy students in the school and community. He is an O level graduate and has been attending short-term training in several colleges. He is also an electrician, a trade he gained interest and learnt in Nairobi four years ago. He has helped install solar panels in the community and repair broken</td>
</tr>
</tbody>
</table>

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phones, which he charges a fee (In-depth interview July 07, 2010).

Table 11. Profile of the users of the CKC

Perceptions of development and the state of development in Nguruman

U2 understands development, as initiating projects that can be sustainable for the community for instance the farmers were advised by the Ministry of Agriculture to grow the ‘modern’ mangoes and passion fruits for local and international markets. However, production is very low, because some community members do not have the financial capacity to sustain this venture. For U2 Nguruman is underdeveloped when compared to other parts of Kenya from information he has seen at the CKC and the Ministry of Agriculture. The respondent mentioned that Nguruman has poor infrastructure, high levels of illiteracy to effectively implement development initiatives from Ministry of Agriculture and the lack of good schools for students who perform well. Parents are forced to send their children to schools and colleges that are in other parts of Kenya. Education in his view plays an important role towards development. Educating children according to U2 brings the community closer to achieving development.

According to U1 Nguruman is relatively developed when she compares it to several years back. She pointed out the availability of Internet for her to do her research instead of going to Nairobi to do it. She also mentioned that the road to Nguruman is better than it used to be when she moved there. In addition U3 mentioned that enhanced communication has played a key role in relatively developing Nguruman “Since 2003 to 2008 we have gotten a phone signal booster to enhance communication. Life was difficult without it and communication was very limited” (In-depth interview, July 07, 2010).

Emerging community development issues

U1 pointed out that the only way for ensuring equal access among men and women was to deal with gender disparity. According to U1 women will only benefit from the CKC “if the men stop down playing them” (In-depth interview, July 07, 2010). She also stressed that there should be no gender preference for children to go to school citing that girls should also be educated and not married off for wealth. As a teacher she says they motivate parents to let their girls go to school by giving examples of women, mostly from the Maasai community, who can be role models. She mentioned that they have encountered resistance in trying to deal with cultural practices in the
community but the government plays a central role in eradicating some of these practices such as early marriages and female circumcision.

U3 stated that cultural issues such as female circumcision, moranism and early marriages impacted on the education of children in Nguruman. When asked what the church is doing in dealing with these cultural practices, the respondent mentioned that it has been working in collaboration with development organizations to provide seminars and public meetings to educate people against such practices and promote girls education. Nevertheless, U3 mentioned that their efforts have encountered resistance from some community members.

For U2 not all the community members access the CKC. The respondent mentioned that since Nguruman is a cosmopolitan community, those from other tribes (Kikuyu, Kamba, Luo and others from different tribal groups) relocating there to do business do not count themselves as community members and as such do not access the CKC. To him the word ‘community’ thus becomes complicated stating that “Most people here are outsiders coming to invest and thus do not come to the CIC because they do not have time and again they are not residents as they claim. They also have the mentality that the CIC is for Nguruman community. The term community is also a complicated issue such that if I am from a different tribe who has come from another area to Nguruman to invest, I would not regard myself as a community member. But the term community includes them… when there are services being offered … you will not find these people coming” (In-depth interview, July 07, 2010).

The respondent pointed out that for sustainability of the CKC everyone in the community needs to fully utilize it.

U3 believes education is the key to everything “without education we cannot go anywhere. This is when development will take place. It has brought me up and I am still in need of education. It is the key to building life, to progress in my life” (In-depth interview, July 07, 2010). Nevertheless, for U3 educating children from a pastoralist community has been difficult especially because of their nomadic nature. The respondent mentioned that most children miss out of school because they keep moving to different areas in search of pasture for livestock. So through the church, the community is encouraged to bring their children to school. Another issue he pointed out was that some community members do not understand why his privately owned school charges school fees for their children yet the public schools offer free primary education. This he said impacted on the financial sustainability of the school.
Understanding what the CKC is about

U1 presented the CKC as a place where she used the computer to draw up her curriculum vitae (CV). Using the CKC also enabled her to get her workload easier with the help of its staff “First when I came to Nguruman I did not have a CV, a printed one. Sxx and Txx helped me to do my CV at the center. Then after knowing the center and the computers, I was able to draw up a list of my students and save it such that after they have done their exams, instead of tiring myself to add their scores by writing them down, I just type them up at the center and my work is easier” (In-depth interview July 07, 2010).

Interestingly, for U1 the services at the CKC have helped her gain more computer skills in a personalized way unlike when she was in college “…when I was in college we were so many like 800 and we were sharing only 10 computers so I had not learnt a lot on computers but I now came to assist myself with the computers at the CIC and at least I have gained a lot on skills I had not known well” (In-depth interview July 07, 2010). For U3 the CKC acts as a resource center, which he uses to learn. He described it as a place where he borrowed books to provide tuition for pupils and was able to access free Internet:

“When I was posted here in 2006 the school was young and we had limited number of pupils and resources. I borrowed some text books from the CKC and I used them for coaching and tuition because most of the children here did not have textbooks” (In-depth interview July 07, 2010).

The respondent mentioned that most teachers in his school opened email addresses for the first time at the CKC. To him, the CKC is a meeting place for the youth. However, U1 stressed the need to have the center equipped more in order to cater for the needs of the community and especially school going children and teachers:

“I think the CIC has helped us a lot and if only we could get enough computers to serve everyone. Coz sometimes we can go there 10 or 12 teachers at a the same time and there are only 4 computers. So you find that those who are still behind in learning computers do not get the opportunity for personalized service because they have to share yet they just want to know how it feels to touch a computer doing it by themselves. And even when we start the computer classes for our students it will be a bit hard for us because there are so many students. Like in class … they may be 60 students, it will not be easy for everyone to have a touch of the computer. So if only we could have enough even if not more just enough” (In-depth interview July 07, 2010).
Being a focal group member, U2 is familiar with most of the services offered at the CKC. Nevertheless, he mentioned that he had been newly appointed as a member and was therefore not able to say what the focal group had done to improve the services offered by the CKC. He could not identify any activities at the CKC that had been implemented by the previous focal group. The staff of the CKC supported this during one of my conversations with him. It was revealed that the previous focal group had been dormant for three years and the current group had been recruited three months prior to my research. U2 presented the CKC as a place where he can get information about farming, get library services, use the computer to learn and access the Internet for markets for his produce.

**Users of and access to the CKC**

According to all the users, the young men of the community mostly frequent the CKC. U1 stressed that there is unequal access between the men and the women such that men mostly access the CKC. According to the respondent, the reason for this is that most women in the community are illiterate. Furthermore, as U1 revealed, most of the women would question what the ICTs were for. She stressed that being literate and knowing how to use ICTs played a significant role in a person's ability to use the CKC “…for example the youth now as they go there they know there is something like the Internet they are going to enjoy and when you are illiterate someone tells you about Internet and you will not know what that is…” (In-depth interview, July 07, 2010). U2 on the other hand stressed that the CKC is open to everyone and there is no need for one to have a specific level of education to access the center. For U2 it all depends with an individual's reason for visiting the center “Membership if the CIC is open to everyone whether you are young or old, educated or not. It all depends with whether you understand why you are there” (In-depth interview, July 07, 2010). However, he pointed out that illiterate members of the community believe the CKC is a place only for those who can read and write “You know someone who is not educated will fail to understand the reason why he/she should go to the CIC, unless they have been introduced by a focal group member who understands the role of the CIC in the community” (In-depth interview, July 07, 2010). For U3 the youth use the CKC more than the older people do and with this the center is viewed as a facility for the youth. U3 believes that everyone should be able to use the center for them to benefit and not be left out “The CIC being a place of modern technology, the older people and the illiterate are sieved out” (In-depth interview, July 07, 2010). The respondent stressed that the lack of education or being
illiterate brings the fear of the unknown. For the respondent, the users of the center need to know what they are going to do at the center.

Interestingly, U2 mentioned that there is no equal access due to cultural issues. He revealed that women need approval from their husbands to visit the center. However, he suggested that this might be different in other communities. For U3 the reason why there are more men than women visiting the center is directly related to their strong cultural background. According to U3, “the community influences the gender issues because being in a community with a strong cultural background, the community excludes women to access the facility” (In-depth interview, July 07, 2010). U2 stressed on the need to address the gender issue in order for the CKC to achieve its goals. Nonetheless, according to U1 women in the community visit the center only to charge their phone batteries or getting them fixed.

U1 mentioned that when the CKC was established, many people knew it as a place only for the youth and therefore it hindered them from using the facility but when one of her colleagues begun going there most of them gained interest and learnt of the importance of the services offered at the CKC. In addition, U2 believes that out-of-school youth are the ones who would benefit most from the CKC services. However, they have not utilized it as much as he thought they would. According to the respondent, his role as a focal group member then is to ensure that everyone understands the CKC as a community center.

U2 stressed that it is important for the community members to allow their school going children to visit the CKC. The respondent mentioned that the focal group encourages the community to allow their children to visit the center because “one may not be educated but their children may be, so we are encouraging them to bring their children to benefit even though they themselves may not be able to benefit directly” (In-depth interview, July 07, 2010).

U3 further stated that certain people within the CKC structure want to own the center. He stressed that there is a lot of bias in terms of using the services “there is a lot of nepotism in the center such that the staff only assists those he knows, his friends” (In-depth interview, July 07, 2010). He also mentioned how he did not understand why he would be forced to sign the visitors’ book, which to him should be voluntarily done. He also questioned the viability of the visitors book stating “there is no way you can convince me that a 46 year old Maasai who is illiterate can comment in very
good English…” (In-depth interview, July 07, 2010). U3 stressed on the need to have a community member sitting in the CKC instead of ALIN-EA bringing in someone from outside the community.

In addition, U3 also stressed the need for the CKC to increase its opening hours in order for those working fulltime in other organizations and institutions within the community to benefit as well “the center is closed very early therefore by the time I am ready to go to the CKC after my working hours, I get it is closed so I wait to access it during weekends, which sometimes I am unable too and on Sunday’s it is usually closed” (In-depth interview, July 07, 2010).

According to U3, the success of the center is as a result of having a trusted community member run the center. For U3 the ongoing issues at the center are as a result of lack of trust and poor leadership:

“Now you would find even the Chief would go there and if he finds an unfamiliar face he will not give his work to be done or even leave it there for it to be done by the person he knows. He will wait for Sxxx to come. So unless he sees someone he trusts is when he will leave his work” (In-depth interview, July 07, 2010)

According to U3 “the potential members of the CKC are youth. The center was successful because the former staff was working with the community door-to-door. His interest was the community and not personal, to serve people. He did not have any barriers. No machines were tampered with or wrangles about them” (In-depth interview, July 07, 2010). The respondent stressed that the only way to deal with the ongoing CKC issues is by appointing a young community member to run the center.

**Potential benefit of the CKC for Development**

U1 stressed that the CKC could do a lot to both teachers and students at the school such that “those who did not get the opportunity to learn computers while in college have the chance to do so at the center that way if you are researching on something you do not have to rely on others to do it for you. Then to the pupils at least we are seeing when they learn computers at this level it is going to help them much because they are going to learn a lot and keeping them busy after school sessions. On that we are seeing it is going to open up their minds to learn new things” (In-depth interview, July 07, 2010). Furthermore, U2 stressed that the CKC plays a vital role in educating the community on information technology and in meeting the communication needs of the community.
For U1 the CKC has great potential to further develop Nguruman though the use of computers. “As we talk of in developing countries, people do not use manpower mostly, people are using machines, computers and so on. In banks you go there and see people using computers but let as say you go to a place where something of this sort has never been there before, of course people will be behind. So I am seeing the way we have computers as we have right now though they are few, at least people are getting somewhere” (in-depth interview July 07, 2010). In addition, U2 stressed that the CKC is a very useful organ not only for development only if it is fully utilized by community members. U3 pointed out that the CKC is a resource center, which can educate the community and provide information that could help advance their way of life for instance gaining information on new types of black boards that do not need dust chalks. For U3 the CKC is very useful for development of Nguruman. However, he stressed the need for the center to be expanded to accommodate a library for school going children.

According to U1 the future of the CKC revolves around fame. The respondent described it as a center that will not only be a community center but one that will be known internationally. She gave an example of an article about the Nguruman CKC in one of the newspapers read in the USA:

“I am seeing it is going to be not just a community center but a center that, you know we have appeared in international, was it in New York Times or the Herald? So it will not just be a community thing but one that will attract many, many people from several places. So in a few years to come when they visit Kenya they will want to visit that remote center that they heard about. Many will be interested in coming to see how the CIC looks like and they feel how people really need the services … At least we can get several people willing to help” (in-depth interview July 07, 2010).

U1 also stressed that the lack of knowledge on how to use ICT tools especially the computer puts them in a technological gap that can only be filled by trying to use these ICT tools. That way the community will be able to advance to the level of the urban areas.
Communication and Information Activities

**User 1**

U1 mentioned that she has a phone, which she uses for communicating with her immediate family members and others in her social network that includes colleagues and friends in Nguruman and other parts of Kenya. She also uses the phone to browse the Internet. She has a radio and listens to several programmes daily at home. She watches television for news and the World Cup and reads the newspaper at the CKC. The respondent has also used the computer at the CKC to do her CV and schoolwork and she also uses it for accessing the Internet for email, and reading the online newspaper.

![Communicative ecology of User 1](image)

**Figure 12. Communicative ecology of User 1, female teacher, 26 years**

**User 2**

U2 has a phone, which he uses to communicate mainly with his immediate family members and community members within his social network (farmers, buyers for his produce, friends at the shopping center among others). He also has a radio, which he listens to everyday. He listens to everything that he finds useful and prefers those programmes that present health issues such as HIV/AIDS, family matters and farming. He listens for national and international news and is particularly interested in...
programmes that educate on the new constitution. He watches television at the CKC and does not pay for this service because it is free for focal group members. He reads the newspaper and other publications at the CKC, which help in his farming initiatives and business. He is learning how to use the computer.

**Figure 13. Communicative ecology of User 2, male farmer and focal group member age, early 50s**

**User 3**

U3 has a phone, which he uses to communicate with immediate family members and other members of the community within his social network (teachers and friends). He has a television and radio powered by a generator that needs to be constantly fueled. He owns a solar panel that provides lighting in his house. He listens to national and international news, and, music on radio. He watches the television occasionally for national and international news and for watching movies. He has used the computer at the CKC to access email to communicate with his friends and has used a World Space Receiver\(^\text{18}\) at the CKC to listen to news and post an article for community development issues.

\(^{18}\) The World Space Receiver was founded in 1990 and “uses satellite to broadcast digital audio and multi-media directly to compact, portable radio receivers”. The one in Nguruman operates the AfriStar
Analysis Of The Users’ Communicative Ecologies

Access to new communicative technologies: The figures above reveal that the users have more access to new media and ICTs. It is also apparent that they do not use ICTs in isolation for instance the use of television, Internet and radio to access the newspaper, shows which ICTs they feel are appropriate for their communication or information needs. However, they access and understand these ICTs differently, which also presents different representations of their communication and information needs.

Different communication and information activities: From the data in the above figures, it is apparent that their communication patterns and needs differ presenting different meanings and possibilities of these ICTs. It also reveals that their communication and information processes are much more advanced than those of
the non-users. This shows that the CKC becomes an integral part of the users every day lives for improving and supporting their communication and information needs.

**Social networks:** Like the non-users, it is apparent that the users’ social networks are connected to and communicate with a range of people mainly immediate family members and other members of the community. Their social networks are influenced by being members of other groups in the community for instance U1 and U3 who are teachers include other teachers in their social networks, U2 who is a farmer includes other farmers in his social network. It is also reveals that their social networks grow by including other people other than immediate family members. This presentation then shows how the different ICTs fit into their every day lives in order to ensure that their social networks continue to exist, which is also important to them.

**Different meanings of the same ICTs:** From the figures above, it is apparent that the ICTs are being used differently. For instance the use of the computer for all the users differs. U1 uses it to do her job, U2 uses it for computer learning and U3 uses it to access the Internet. In this case, for each of the users, the computer would be set up differently and each would follow a different set of rules. This reveals how the different ICTs are used and mean to the different users.

**CKC encouraging different uses of ICTs:** These figures reveal that the CKC has several ICTs within a single space therefore encouraging different uses of ICTs.

**Profiles of and Findings from focus group discussions**
The table below presents profiles of the groups that participated in the focus group discussions in this study. Two are women groups and one youth group.

<table>
<thead>
<tr>
<th>Focus group</th>
<th>Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women’s group I (July 08, 2010)</td>
<td>It has 15 members in total. Eight members were present for the focus group. The group started a “merry-go-round”(^{19}) by making revolving financial contributions for each other and buying utensils for each other. Later they came up with a project for drying vegetables and acquired a solar drier from the Ministry of Agriculture. Through this project they registered as a self-help group. Their main challenge is lack of market for their dried vegetables. Other group activities include tilling farms for community members at a fee. Women in this group are from the Kikuyu and Kamba tribe.</td>
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</tbody>
</table>

\(^{19}\) The merry-go-round is a popular concept among women groups not only in Kenya but other African countries who harness the power to cooperatively work together to build fund reservoirs for investments. Women face many difficulties in accessing credit through commercial banks because most of the banks demand large collateral before one can actually access a loan. Therefore the merry-go-round arrangement provides financial support to such women. Groups allocate one day where they meet to collect and lend each other money. Each member of the group takes a turn to receive the group’s specified amount (Okello, 2008).
The women began by making revolving contributions to each member of the group. Through such contributions they were able to buy kitchen utensils for each other and help their needy friends and cheap in to assist in paying school fees. They then decided to diversify and began farming. However, due to low quantity in production, they have not been able to sell as much as they anticipated. They use the produce among themselves. The following are some of the crops and fruits they have been growing:

- Rice
- Groundnuts
- Papaws’
- Tomatoes
- Cowpeas
- Soya bean
- Okra
- Peppers
- Eggplants
- Mangoes

The group has 15 members but only six were present for the focus group. The women in this group were from three tribal affiliations, the Maasai, Kamba and Taita.

They also begun by making informal contributions to each other and later diversified to begin other projects. All the group members are from the Maasai community. Their activities revolve around farming and herding their livestock. They till people’s farms in order to raise funds to take children to school.

The youth group was not affiliated to any formal group. Nonetheless, the group was of diverse backgrounds namely:

- Farmers
- University students
- Fisherman
- Small business owners
- Peer educators
- Community youth group members
- Electrician
- Building constructor
- Volunteers from a development organization

Table 12. Profiles of the focus groups.

Perceptions of development and the state of development in Nguruman

Development meant different things to the different groups interviewed. Development was described mainly in terms of infrastructure (e.g. better road, more vehicles, availability of schools, churches, health center among others) and socio-economic issues (e.g. increase in population, increased farms, more shops, education among others). Nevertheless, it was interesting to hear similar accounts from the women groups of how Nguruman has developed over a specific period of time:

“It is developed because when I came in 1974 there were not many people and wild animals mostly inhabited the area. The few people who were here were scattered. It then began growing slowly as we saw a road constructed by a man named Sxxx from Center to Olkiramatian. Then we started seeing people coming and we started developing the community. People may come
now and think Nguruman has been the same for a long time, but it has not. Now it is developed as the number of people has increased..." (Women focus group, II).

“If you compare it with other areas it is a little far off but looking back from where we have come from, I say it is developed. The only transport we had then was a tractor. Even the pregnant women had to use it or the other alternative was to walk. It was only available on Saturdays...When I came here in 1958 there were no shops and very few people. There were only 3 homesteads in this area and some Sonjos from Tanzania on the area behind us. We used to get transport every end of the month ...so in my opinion, I see Nguruman is developed, there are shops now, and there are schools. If you compare then and now, it is developed” (Women focus group I).

For some women, their use of phones was a sign of development in Nguruman citing “Women have phones now just like the men” (Women focus group III). Table 13 shows some of the factors regarded as indicators of development in Nguruman.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Women focus group I</th>
<th>Women focus group II</th>
<th>Women focus group III</th>
<th>Youth focus group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved infrastructure (roads, availability of transport, network coverage, better houses)</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Availability of community institutions (schools, churches and health center)</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Education (children and youth education)</td>
<td>X</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Communication and information resources (CKC, phones, radios)</td>
<td>X</td>
<td>√</td>
<td>X</td>
<td>√</td>
</tr>
<tr>
<td>Demographic issues (increased population, increased farms)</td>
<td>√</td>
<td>√</td>
<td>X</td>
<td>√</td>
</tr>
</tbody>
</table>

Table 13. Participants perceived indicators of development for Nguruman

The table above is quite revealing in several ways. All the groups perceived development in terms of improved infrastructure and availability of community institutions. Education was viewed as an important component for development. Three of the groups perceived education for their children and youth as indicators of development. However, only one group did not mention this as an indicator. Furthermore, an increase in the number of people living in Nguruman was viewed as an indicator of development. However, one group did not mention this as a preferred
indicator. The availability of communication and information resources was only mentioned in two groups.

As can be seen from the table above women’s group II and the youth focus groups had the most comprehensive view of development. They indicated that development of Nguruman was as a result of all the indicators presented above. The table also shows that availability of communication and information resources such as phones, radios and the CKC does not necessarily depict development in two groups.

**Emerging community development issues**

Illiteracy emerged as one of the major issues affecting development in Nguruman. This meant the lack of proper or no education for most of the participants. It was clear that most of the women in the groups interviewed were illiterate and this influenced development of the community as well as the way they used and understood the CKC and other ICT tools. For one woman “it is hard for someone who has not been educated. Many of us have not been educated. You know it is good for someone to gain knowledge from education” (Women focus group II). Nevertheless it was also clear that it is important for them to be involved in their self-help group activities because this way they learn from each other by taking more practical information through their group meetings. This enables them to contribute to development of their community in collaboration with extension workers within the area.

Value of education was yet another issue and was about how the community feels about formal and informal education. All the participants in the group interviews pointed out that education is important especially for development of Nguruman. For the women, educating their children was the most important thing to secure their future. For one woman “I prefer my children and grand children going there [CKC] to learn … education is free and it is no longer just boys going to school now there are many girls going to school though I feel we are still behind because you will find some children are left home to look after the cows ” (Women focus group I). “There is need to encourage people to take their children to school (Youth focus group)

Gender issues and women’s participation was a major determinant as well. Most of the women in the group interviews pointed out that visiting the CKC is not for the women “if you go there as a woman wanting to learn, you will be told that you want to learn so much so that you want to abandon your family … you even fear going there
because there are no women”. One of the women, a member of the focal group, pointed out that women have been left out from utilizing the CKC equally as the men. She further emphasized the need to come up with strategies for encouraging women to utilize the CKC services for instance allocating specific hours for women only or allocating a separate room for the women to use. In addition there were several factors that affected the participation of the women not only in the CKC activities but also in community activities.

It was clear that the women had their hands full working in farms and at home and therefore had no available time to participate in community activities. For one woman “sometimes I do not even get time to listen to anything on the radio because I have so many thoughts about my children” (Women focus group I). Most of them have no time to spare for other activities around them. At one point during one of the group interviews’, I noticed that most of the women had left. I was told that they had to go prepare lunch for their school going children so we had to postpone the discussions till the following day.

Cultural barriers were in terms of social domination of the men owing to the strong cultural background in the Maasai community. According to the CKC staff (Personal communication, July 02, 2010) it is culturally inappropriate for women to sit together in the same space with men “when women come and see the young men in the CKC, they prefer standing outside, as it is “culturally appropriate. If the District Commissioner was to visit the center at this moment and there were women in, they would flock in one corner while the men take up the front sections”.

During one of the group interviews I observed how one of the women, while having a cup of tea, was informed that her brother in law had arrived and was in her homestead. In a split second she fled to the kitchen throwing away whatever she was eating. On enquiring about the scene I was informed that women are not particularly allowed to interact with men of around the mid 20s to 40s in public even if they are family members (Personal communication July 03, 2010). Women in this case feel hesitant to participate in social gatherings and other community activities.

**Understanding what the CKC is about**

Most of the women in two of the groups had heard about the CKC but did not know what it was about “we have heard about it from people and we know it is there but we do not know what it is for” (Women focus group I), “we see the CKC is just a house that has everything in it but we need to know what it is all about and what
services it offers” (Women focus group July 06, 2010). Nevertheless, they knew the CKC as the place where one of the women had received a call some years back when there were no mobile phones in the area, or where they took their phones for charging batteries. According to one participant (Women focus group III) the CKC helped them a lot when there were no mobile phones, through the use of a pay phone. According to the women, the CKC is a place for charging phone batteries, library services, has a computer. However, they emphasized the need for the staff to advertise the services offered at the center for those who do not know about it. Nonetheless, most of the youth knew about the CKC and described it as a place to access Internet, charge phone batteries, borrow books, and as their meeting place. For one of the youth “I was told about the CKC by Txxx and he told me to go open a Facebook account (Youth focus group). According to the staff (Personal communication July 02, 2010) most of the youth in Nguruman had Facebook accounts and email addresses. However, I observed that there were very few people using the Internet due to continuous technology problems for instance poor or no Internet connection, power shortages and viruses in the computers. Also due to the structural issues that were going on at that time, the CKC was closed for a week. Those whom I met at the center were either there to learn how to use the computer or just to meet up with friends.

Users of and access to the CKC

For most of the women, the CKC is associated with the youth “there was a problem at first because people associated the CKC with the youth. Even now when you go there you will find that most of the people there are young guys. Women were even afraid of going there because it was more a youth center” (Women focus group, I). Participants in the youth focus group did not refute that pointing out that the CKC was believed to be a youth center only “the CKC is understood to be for the youth only”. “Older people understand the CKC to be a youth place. They assume that it is a place for idle youth and those who have just finished their duties to become more mischievous” (Youth focus group participant).

Nonetheless, others in this group mentioned that the CKC gives access to every member of the community. However, they also pointed out that it is only women who are educated who use the CKC.

Nevertheless, during my observations at the CKC, at no point did any woman come to the center to use the facilities other that a young guy’s sister coming to pass on a
message to him, and when she entered, the atmosphere changed. It felt like she was totally out of place.

In all the groups, most participants’ stressed the importance of being educated in order to use the computer at the CKC. According to one participant (Women focus group, July 03, 2010) “I came to know about the computer at the CKC recently but I do not know what it is for. I believe it is for the learned people because it can help them in their business”. For another participant “When you go there and you see the computer you will ask what it is. If I go there I would not understand anything I see. I will only see the machine running and not know what is going on because I am illiterate” (Women focus group participant, II). However, some participants stated that being educated is not a condition for using ICTs. According to the focal group member “Before I thought that using computers is for the educated and literate but going there I saw even those who have not been to school using the computer” (Women focus group participant, I).

Another notable issue was that of fear. Fear of being in the center with men, which I mentioned earlier as a culturally inappropriate issue within the community and the second fear is of handling the ICTs in the CKC. For one woman the fear of handling the CKC equipment is what keeps her from visiting the center “I fear misplacing a book or breaking something in the CKC property because I do not know how I would pay for it” (Women focus group participant, III). For one woman she feared being told-off by the staff at the center and therefore lacked the interest to visit the CKC. Several community members cited that on several occasions they did not get assistance when they visited the center due to the staff’s unwillingness (Personal communication July 03, 04, 09, 10 2010). This was something I also observed at one point when I needed to use the Internet. Nevertheless, according to the former staff it is not just the women who fear using the ICTs in the center, it also includes other members of the community, which he described it as techno-phobia (Personal communication July 10, 2010).

Nonetheless, most participants in the focus groups mentioned that the CKC is accessible in terms of its location citing that it is located in a shopping center where people can easily access it. For some youth, their duties and responsibilities (herding) hinder them from visiting the center citing they lack the time while others stressed on allocating another center in order for those coming from other areas in Nguruman to benefit from such services offered at the CKC “People from Ngomongo
are far from the CKC. We need a center at that end also” (Youth focus group participant).

**Potential benefit of the CKC for development**

Most of the participants in the women focus group could not respond to the question on the potential benefit of the CKC for development in Nguruman. This was because they were not aware of what the CKC was all about or did not understand the concept of the center. Nevertheless, the few women who understood what the CKC was all about stressed the importance of the CKC not only for development of Nguruman but also developing their self-help groups. For the focal group member, the CKC is a place for them to learn about other self-help groups and how they have developed

“I have borrowed magazines that have helped me and I have brought them for the group to read and learn as I have learnt. These will help us because they will be able to see how other women groups elsewhere have developed. We want to start a new project but we see as though we shall go at a loss. This project we are currently doing, for instance, we lose hope in it but when we read how other groups started and the challenges they encountered to get where they are, no matter how long it takes, we get hope and know we shall fulfill our goals” (Women focus group I participant).

One participant in another group stressed the importance of sharing the information gained at the center for those who had visited the CKC (Women focus group III participant).

On the other hand, the youth stated that the CKC has enabled Nguruman to be known by others communities within Kenya. During my observation an older man came into the CKC to borrow a magazine on farming issues, which he does very often and he mentioned that Nguruman is a very lucky place to have new ICTs such as the computers and the Internet to use for free. For him, Nguruman has come to be known by other people who come and share their knowledge with the community and this in turn enables the community to learn new things (Personal communication, July 08, 2010). The youth pointed out that the CKC has helped them communicate with other people in other countries through the Internet, which is what draws them to the CKC. Nevertheless, some participants’ stressed the need to advertise the services of the CKC in order for every member of the community to understand what it is about and utilize it effectively. All the youth participants’ stressed that the CKC is an important component in the development of Nguruman.
Communication and information activities

It was interesting to note that all the groups had different communication and information activities. For the women’s groups, all were self-help groups and the most important form of communication was face-to-face during group meetings and with family and friends. Some women use posters to know about social events taking place in the community. It was also interesting to know that observing other people plays a major role in developing the community. One Maasai woman pointed out how she observed other community members mainly from other tribes (Kikuyu and Kamba) on farming techniques and applies these in her every day life “like now you see we Maasai do not do farming but from having pieces of land here in Nguruman means using them wisely so we learn from tenants. Even our houses, Maasai never make good houses but now we have good houses made by the help of fundi” (Women focus group III participant).

All the women had radios which most listen to and these have helped them one-way or another. For most of the women they listed to national news and development programmes. One participant stressed the importance of having a radio saying “I listen to what is going on out there. You hear of people fighting each other when you are here in Nguruman. Now if you do not have a radio, what would you listen to? Sometimes it helps a lot for instance I heard one time that avocados are good medicines. I have them and yet I did not know this. Even passion fruits, its flowers and leaves are a form of medicine and I did not know! Coach grass also adds blood to your body! Alovera too is a medicine. I heard these from the radio” (Women focus group II participant).

For one of the participants in another group, listening to the radio helped her know about other women self-help groups and their projects in order to diversify their projects as well (Women focus group I participant). It was quite interesting to know how some women got a ‘wake-up-call’ to develop themselves, from listening to the radio. Nonetheless, all the women pointed out that the most used form of communication among them was word-of-mouth to pass on information on meetings or on social events in the community.

Phones were very unpopular among the women groups as very few of the women had mobile phones. The few who had phones mentioned that they lend them to other group members to make calls to family and relatives who live far. For one woman she stressed on the importance of having a phone citing “I do not have a phone personally but I use my daughter’s phone. I see it as very necessary to have a
mobile phone nowadays” (Women focus group II participant). Having a phone is something they say “came the other day and we shall come to own and know how to use them. This is also part of development” (Women focus group II).

Only two women owned televisions. One of the women them mentioned that she only watches movies because she has no antennae to watch cable TV. The youth on the other hand had a list of ICTs they knew some of which have been used by several participants. Table 14 presents the ICTs, whether the youth have used them and where they used them.

<table>
<thead>
<tr>
<th>ICT tool</th>
<th>Use and access among participants (Youth focus group)</th>
<th>Location</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio</td>
<td>All</td>
<td>At home</td>
<td></td>
</tr>
<tr>
<td>Television</td>
<td>All</td>
<td>At CKC and homes</td>
<td></td>
</tr>
<tr>
<td>Laptop</td>
<td>Not all</td>
<td>At CKC</td>
<td></td>
</tr>
<tr>
<td>Books</td>
<td>Not all</td>
<td>At CKC library</td>
<td></td>
</tr>
<tr>
<td>Publications (Magazines)</td>
<td>Not all</td>
<td>At CKC</td>
<td></td>
</tr>
<tr>
<td>Newspaper</td>
<td>Not all</td>
<td>At CKC</td>
<td></td>
</tr>
<tr>
<td>Digital camera</td>
<td>Not all</td>
<td>Personal</td>
<td></td>
</tr>
<tr>
<td>iPod</td>
<td>Not all</td>
<td>One participant had it</td>
<td></td>
</tr>
<tr>
<td>Mobile phones</td>
<td>All</td>
<td>Personal</td>
<td></td>
</tr>
<tr>
<td>Radio call</td>
<td>Not all</td>
<td>Development and conservation organizations in Nguruman (KWS, AMREF, ACC)</td>
<td></td>
</tr>
<tr>
<td>Billboards</td>
<td>All</td>
<td>Magadi town</td>
<td></td>
</tr>
<tr>
<td>Posters</td>
<td>Not all</td>
<td>At CKC notice board</td>
<td></td>
</tr>
<tr>
<td>VSAT (Very Small Aperture Terminal) satellite dish</td>
<td>All</td>
<td>At the CKC</td>
<td></td>
</tr>
<tr>
<td>Internet</td>
<td>Not all</td>
<td>At the CKC</td>
<td></td>
</tr>
<tr>
<td>Desktop computers</td>
<td>Not all</td>
<td>At the CKC</td>
<td></td>
</tr>
</tbody>
</table>

*Table 14. Youth focus group perceptions on use of and access to different ICTs*

It is apparent from the table above that all participants have personal mobile phones and have used televisions and radios both at the CKC and in their homes. The table also shows that all participants have used billboards to gain information. However this is in different contexts. Some use them for getting information from

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20 A Very Small Aperture Terminal (VSAT) is a device used to broadcast and receive data signal through a satellite. It is also known as a small private earth station. The ‘very small’ component of its acronym refers to the size of its dish antennae mounted on the roof or ground. It may typically be about 4 feet (1.2m) in diameter. Other components include a transmitter and low-noise converter make up the VSAT’s outdoor unit (“What is VSAT,” 2007).
advertisements others use to get information on social events while others get information on agricultural and health issues such as disease outbreaks.

The participants who used the CKC to watch television mentioned that they normally watch national and international news and football (the field work was done during the World Cup season). For some, they used the newspaper to get information on the next matches to be played. During my observation at the CKC, newspaper readers used it to gain information on sports specifically the World Cup. For one CKC user, he goes to read the sports section of the daily newspaper (Personal communication, July 02, 2010). Nevertheless, several users of the CKC stressed that the newspaper was not easily accessible because the community receives only one copy, which comes in the evening. “There is always a large number of people waiting to read it” (Personal communication, July 02, 2010; Youth focus group, July 03, 2010). Very few participants have used the CKC to borrow books and the few that have do so to read storybooks and entertainment magazines such as true love (Youth focus group July, 03, 2010).

Interestingly several participants used the computer for learning basic skills and for accessing the Internet. I also observed that some used the desktop computers for playing computer games for long periods of time. The laptop on the other hand was used for the Internet. The participants who access the Internet at the CKC mentioned that they have Facebook accounts and email addresses. Some even have blog spots. These they say help communicate with friends. According to the current staff (Personal communication, July 02, 2010) majority of the youth in Nguruman have email addresses and use the Internet at the CKC for visiting social sites such as Facebook, you tube and twitter. The IPod was very new to them and was not popular with most of the participants.

What is interesting in this data is that not all the youth had access to some and I think very important ICTs and services in the CKC such as the laptop, desktop computer, Internet, newspaper, publications and books, yet the CKC is known and believed by other community members to be a youth center. The participants who had not used these facilities stressed on the need for advertising the services of the CKC more as well as having a staff member who was willing to help them know how to utilize the facility effectively. As for the VSAT, digital camera and radio call, all participants had seen them. Only one participant used a camera for personal use especially for
uploading photos on Facebook. The VSAT is situated behind the CKC and is visible to people but it is not in use.

Findings from Key informants

Background of interviewees
Two key informants were interviewed one from the government sector and one from a development organization. The Program manager (PM) (Male) has worked with ALIN-EA for 11 years in charge of capacity building and partnerships and generally likes technologies. His academic background is on environmental studies and has experience in regional development issues. PM is responsible for capacity building for ALIN-EA members and communities on various development issues, formation of focal groups and establishing Community Knowledge centers (CKCs) to create local content and trains them in the use of appropriate ICTs (Personal communication, July 21, 2010; ALIN-EA, 2005). ALIN-EA was founded in 1988 and is an information exchange programme that does networking within three countries whose main aim is to ensure that information reaches people who really need it as fast as possible using the available ICTs.

Manager/Projects monitoring and evaluation (MME) (male) is a professionally qualified Population Scientist with an interest and extensive experience in monitoring and evaluation in development projects performance for over twelve years. He has managed and evaluated universal access projects in Kenya on behalf of the Communications Commission of Kenya (CCK) for the last four years. It is the regulatory authority for the communications sector in Kenya and was established in 1999 by the Kenya Communications Act No.2 of 1998. It is responsible for facilitating the development of information and communications sectors, (which includes broadcasting, multimedia, telecommunications and postal services) and electronic commerce (“Communications Commission of Kenya,” 2010; International Telecommunications Union, 2010)

Strategic use of ICTs for effective poverty reduction
PM and MME stressed on the importance of ICTs in the poverty reduction process. For MME, “ICTs are enablers that can be used to fight and reduce poverty reduction only if communities can adopt ICT applications towards poverty reduction. For instance the ability of a person to get market information on ones phone …”(In-depth interview, August 05, 2010). According to PM, the lessons learnt from establishing the Community Knowledge Centers within the East African region is related to
poverty reduction. The concept of the CKCs according to PM is one that enables more people to use the ICTs and the more they learn to use them, the more they access new innovative information “So what people in Laikipia West have done is use information resources from the Internet especially from the Maarifa to do quite some practical things … Someone would tell you how they have dug an area to harvest water during the rainy season to irrigate crops, which they sell and are able to purchase a bicycle. That kind of impact…” (In-depth interview, July 21, 2010). Furthermore, for PM accessing other emerging services such as E-health, E-government, E-education and any other ‘Es’ in ICT4D contributes significantly to the poverty reduction process not only in the rural areas but also the country as a whole.

ICTs and Kenya’s economic growth

According to PM, ICTs have made several contributions to Kenya’s economic growth for instance through the new mobile banking initiative, which has played a significant role in this process. Being an agent for the initiative according to PM involves applying for a license which enables one to open as many outlets as they can, which makes it possible for them to contribute to the economic growth of rural communities, which is their main focus. For PM, the mobile banking initiative has made it possible for people to be employed, which to him is “a very big contribution to economic growth” (In-depth interview, July 21, 2010). Further, PM mentioned that radios play an important role in the economic growth through the information disseminated for instance through educative programmes people gain knowledge, which they implement.

According to MME, “…looking at various publications, they say that the contribution of the ICT industry to the GDP of countries in Africa is around 3.5% - 5.6% but it will depend on the different countries. In Kenya I know the figure is slightly over 3.5%, which is a big chunk. This has really helped” (In-depth interview, August 05, 2010). He also mentioned the contribution that has been made by the mobile banking initiative stressing on the increase in employment opportunities. Further MME mentioned that ICTs have enabled the growth of local industry in Kenya through the sale of mobile calling cards. For the respondent, the growth of the local industry has played an important role in reducing the number of people migrating from the rural to the urban areas in search of employment through establishing personal telephone kiosks at the rural areas. MME also mentioned that foreign investors with a focus on ICTs play an important role in Kenya’s economic growth, which to him is a direct
contribution. MME also stressed on the ability of people to access market information through the use of ICTs as a valuable way to contribute to economic development.

Role of government in influencing the growth of ICT4D
MME pointed out that one of the ways the government has influenced the growth of ICTs is through liberalization of the market “I think liberalization is key. We have introduced simple licensing regimes in this country so instead of having many licenses for various services, now we have the unified licensing framework, which enables you to do multiple things in this country” (In-depth interview, August 05, 2010). Further, MME mentioned that there are interconnection policies that have been put in place in order to reduce the interconnection charges between the various mobile service providers, which “acts as a multiplier to the rural people” (In-depth interview, August 05, 2010).

The government, according to MME is also extensively involved in laying the fiber optic network that shall see every part of Kenya connected to the World. PM argued that the fiber optic network shall make it possible for communication costs to reduce and things like VSATs will not be necessary because everyone in the country will be connected “You will have hotspots just like if you went to one of these big hotels with your wireless-enabled laptop. All you’ll need is a password to access the Internet without anyone charging you anything. Even things like teleconferencing and Skype, all these things will be cheap. It is possible now with the availability of the fiber cable” (In-depth interview, July 21, 2010).

Moreover, MME pointed out that the government plays an important role in regulating tax on ICT tools that can be availed to the rural population. For PM, being involved in a project that meant establishing VSATs at the CKCs meant dealing with large amounts of money on a monthly basis, which was not viable for them. In such a situation according to PM, the role of the government is to step in and “try lower the tariffs for old VSATs as alternatives for information access in remote areas where the fiber cable has not reached” (In-depth interview, July 21, 2010).

MME further mentioned that the government established a law, the Communications Amendment Act of 2009, that created a universal service fund to supports ICT infrastructure roll-out in areas that are economically unviable.

“The law came to being as from January 2009 when the Kenya Communications Act was passed and with that law it created the Universal
Service Fund where the mobile service providers are expected to contribute a small percentage of their revenue to the kitty, such that this money can be used to support infrastructure roll-out in some underserved and un-served areas in Kenya… contribution between 0.5% to 1% of their gross revenues. The role of the fund is to support innovations in ICTs so wherever a person may be, if they are innovative, they will be able to benefit from it. He also mentioned about the National ICT policy and stressed on the need to revise it.

Nevertheless, it was interesting to note that the government collaborates with other organizations especially NGOs with a focus on ICTs, in order to influence the growth of ICT4D in Kenya. MME mentioned that the Communications Commission of Kenya has worked jointly with several organizations in order to implement its ICT-focused development initiatives

“Part of our mandate is to facilitate access of ICT services and so the government through the Commission has been implementing Universal Access projects, which involve the establishment of 16 schools equipped with computers, furniture and free Internet connectivity for three years, which has now elapsed. They are now managing on their own and are running well … we worked with the Kenya Institute of Education to create E-curriculum for the form 1 to 4 curriculum in Kenya and the piloting was done in these 16 schools and so they have more or less adopted E-learning … Apart from that we also liaise with those NGOs with a focus on ICTs and have been creating what is called local content …”(In-depth interview, August 05, 2010).

In response to the question on whether there is a culturally and socially relevant communication dialogue among development providers, the community, and within the recipients that allows successful implementation of ICT4D, and if the government is involved, MME was not clear. However, it was interesting to note there was another government entity, the Kenya ICT board, which was established to fill the gap that existed between the Communications Commission of Kenya and the Ministry of Information and Communication. The Kenya ICT board is responsible for establishing digital ICT villages in remote parts of Kenya. Nevertheless, there is no structured way of communication according to MME. Each entity is independent from the other. PM on the other hand stressed on the need to come up with systems that would encourage such a dialogue. Communication according to him is very important in the development process.
Kenya and the digital divide

MME stated that there are areas in Kenya where there is no ICT infrastructure. In contrast to this, there are also widespread ICT services in Kenya according to MME “We are currently at 81% GSM\(^{21}\) coverage and I think by population it must be 51% that is currently covered. However if you look at it in terms of the areas in Kenya, then you can say that about 20% of Kenya needs to be covered” (In-depth interview, August 05, 2010). What was interesting to note was the idea of using new and emerging technologies alongside the old technologies to bridge the digital divide within the country. For MME, the new technologies serve as a complementary role for bridging the digital gap. PM supported this idea by stressing the need to blend the new and old technologies. According to PM, the emergence of new technology is gradually reducing the digital divide. He gave an illustration of how the mobile phone is revolutionizing remote areas in Kenya for instance you would find a community member with a very advanced phone, which he uses only to take photos and make or receive calls. Nonetheless, for PM having appropriate ICTs is what will make an impact such that “some ICTs, if you were to talk about them say three to four years ago, people would shun away from them but now with the coming of new ICTs and lowering of costs … appropriate ICTs will make an impact” (In-depth interview, July 21, 2010).

A comparison of Kenya a few years back and now according to MME reveals a significant change in the digital divide “Kenya has achieved a major stride because if you look at the trade and use of mobile phones and mobile banking which is even in the villages, I can say we have achieved a lot” (In-depth interview, August 05, 2010). Nevertheless, PM argued that the digital divide might not be completely phased out.

ICTs and rural development

Ways of disseminating information for rural development

For PM, community radios are the most effective ways of disseminating information for rural development because everyone listens to them. PM was involved in an information mapping exercise in a rural area in Kenya, which revealed why people listen to certain radio channels. For some people, listening to the radio keeps them on track with what is going on and according to PM people to do not want to be left behind describing it as “tunaenda na masaa” (we are going with time) (In-depth interview, July 21, 2010). According to PM, what was interesting during the mapping

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\(^{21}\) GSM (Global System for Mobile communication) is a digital wireless mobile telephony system widely used in many parts of the world. Data sent through GSM is usually digitized and compressed and sent down a channel (“Global System for Mobile communication,” 2006).
was that people listen to certain programmes only relating to their particular context for instance a farmer would listen to farming programmes and the women would listen to programmes relating to primary health, child care and other family or household issues. The men according to PM are only interested in politics. The youth on the other hand would listen to music and those in school are also interested in educative programmes. So for PM the radio has very important information it delivers to people and provides a “sort of empowering process” (In-depth interview, July 21, 2010).

In his view, MME pointed out that the use of provincial administration in the form of E-government directorate, “which has championed the use of E-applications” (In-depth interview, August 05, 2010) has played a significant role in information dissemination in rural areas of Kenya. According to MME, through E-application, a person can be able to apply for jobs in the public service, apply for a passport and identification card keeping track of these online anywhere in the country. Apart from that, MME stressed on the importance of collaborating with NGOs with a focus on ICTs to create local content for rural communities for instance “information on fishing to a fishing community would be available at any particular time from the Web portal” (In-depth interview, August 05, 2010).

PM also mentioned the use of IPod broadcasting to disseminate information for rural communities. According to him, the use of IPods loaded with available local content in the form of short videos on development issues and experiences enables especially the women to use them with ease because they are easy to carry around and watch at own time. In turn, they learn from them and implement what they learn in their every-day lives. Newspapers are also ways of disseminating information according to PM. He mentioned that ALIN-EA compiles newspapers weekly, bind them and send them to Nguruman CKC. He pointed out that community members really value this despite the fact that they may be old newspapers “to them if we take even for last week you know even this is fresh news and they want to catch up with what is going on plus more development related information” (In-depth interview, July 21, 2010).

**ICT-focused development initiatives for preparing rural communities to be part of the global information society**

According to PM, one of the initiatives is the concept of digital villages that have been created by the government. PM pointed out that the goal is to have at least two
telecentres in each constituency in Kenya. He also stressed on the significant role played by ICT-focused NGOs and donors in pushing for rural communities to be part of the global information society by establishing rural telecentres. Nevertheless, PM stressed that creation of such initiatives boils down to the impact they have among people.

According to MME, the Ministry of Information and Communications through the Kenya ICT board has established ICT villages (digital villages) in every constituency to provide ICT services towards development. MME also mentioned that the Communications Commission of Kenya implemented the Universal access project, a pilot initiative that saw the establishment of 16 schools equipped with ICT facilities. the Communications Commission of Kenya according to him has also collaborated with organizations from different sectors (church, NGOs, Cooperative and health) to provide support to four telecentres set up in different rural areas in Kenya. “This has been a success and we have helped the schools be on the digital platform …” (In-depth interview, August 05, 2010).

**Barriers/ challenges to successful implementation of ICT4D in rural areas**

The key informants were asked to talk about the barriers and or challenges they have encountered in successfully implement ICT4D in rural areas. It is important to note that some of the responses given intertwine with the challenges in successfully implementing telecentres and therefore some of the responses given here may be repeated in the next section on telecentres.

According to MME, there are many barriers to successful implementation of ICT4D in rural areas. He pointed out that resistance plays a major role in implementing ICT4D “people do not want to change, they are used to the old ways of doing things so why computers” (In-depth interview, August 05, 2010). PM pointed out that there are people who adapt the technologies fast and there are those who wait to see what unfolds. Nonetheless, for PM technophobia is the greatest drawback “because people will fear to even touch a mobile phone, they tremble at the sight of a computer or even gadgets like these [IPod]” (In-depth interview, July 21, 2010).

For MME and PM, age and gender are major factors contributing to the barriers for successful implementation of ICT4D. According to MME, “there is also the age barrier. There are those old people who will never learn. So still, they need the old ICTs” (In-depth interview, August 05, 2010). The cultural issues according to PM
revolve around gender disparities such that very few women access ICTs due to their cultural background and availability of time “you find that most of the women do not have the opportunity maybe to go in a center like that of Nguruman to watch TV or a video. You will rarely see that because they have so many other things to do and also some of the set-ups like Nguruman you see if the men go there the women will get out because of cultural barriers” (In-depth interview, July 21, 2010).

Cost was an issue that was stressed by both informants. For PM some ICTs are expensive to buy and sustain in the rural areas. For instance, according to him, ALIN-EA set up a VSAT at Nguruman CKC, which was part of a project supported by Google. The monthly costs of running the VSAT were solely theirs and yet they did not have that kind of monthly budget. For MME, one of the main challenges they encountered in the Universal Access project was the cost of installing and insuring the ICTs because there was a lot of vandalism when the initiatives were began. Further, MME mentioned that the cost of connectivity in terms of telecentre set up is very high especially if using VSAT connectivity. However, According to MME, the cost of ICTs should be reduced and the only was is by reducing tax on various ICT tools “such as mobile phone handsets so that cheaper phones can be availed to the rural populations” For PM reducing international rates on VSATs is what will count.

For both informants, most rural communities do not have electricity and therefore it costs more to set up ICT4D initiatives because of looking for other alternatives of generating power, which is very expensive. PM argued that “without power there is no way an ICT will work for long” (In-depth interview, July 21, 2010). MME argued that the lack of electricity in the rural areas is a key challenge “because how will you power up your phone or computer or even a laptop” (In-depth interview, August 05, 2010).

Nevertheless, MME stressed that it is important for organizations to team up in order to deal with these challenges. He also stressed on the importance of using the youth to make an impact in their communities through sharing information with especially older folk “I think there is also great potential with the youth. The youth and ICTs are inseparable. The youth can be used in the rural areas to help their parents to access ICTs with ease” (In-depth interview, August 05, 2010). PM pointed out that providing the appropriate ICT tools for rural communities would address the issue of technophobia. Furthermore, if people in the rural areas were able to know the potential of ICTs for development, then they would fully utilize the information
disseminated. PM also stressed on community cohesiveness in terms of contributing to the ICT4D initiatives. This according to him will ensure sustainability of the initiatives. In addition, according to PM, ALIN-EA uses IPod broadcasting to address gender disparities in accessing ICTs “we avail the IPods to the women, show them how to use, it is not difficult and then they can go and watch at their own time” (In-depth interview, July 21, 2010).

Potential of telecentres in rural areas
What was interesting according to PM is that telecentres have a way of bringing people together “to form a forum through their interest to learn other things from other places so like a big success story is when Axxx and the community mobilized themselves and went for an exchange visit and that really was an eye opener. Now you see there is an increase in the number of Maasai’s practicing farming and engaging in crop export and all that” (In-depth interview, July 21, 2010). According to PM, without the Nguruman CKC, people would not have known it “Nguruman center also somewhere someone observed that it is ranked as the 6th remotest center in the world” (In-depth interview, July 21, 2010). Communities where the telecentres have been established have had a great impact according to PM. Most of the leading innovators are people who have used the centers. Telecentres according to PM have the potential to help a large number of people learn within a short time and therefore increases the impact.

When asked about the potential of telecentres in particular Nguruman CKC, PM pointed out that Nguruman has quite a number of resources that are underutilized for instance wildlife and its beautiful landscape. The CKC can tap into these and initiate income-generating activities such as tramping, which would be ploughed back to the community. Nonetheless, PM stressed on the need to get the community involved in all these. For MME, telecentres play a vital role in championing the voices of the poor “serve as a mouth piece of various communities requiring these services” (In-depth interview, August 05, 2010). MME also stressed on the need to have a strong telecentre movement, which for now he says is very weak.

Challenges in establishing and running telecentres
For MME, the cost of connectivity in telecentre set up is very expensive especially when using VSAT connections. He suggested the use of the GSM as this is relatively cheaper. PM supported this stating that the cost of using the VSAT at Nguruman was very high and the only way to deal with the high costs was approaching other
development organizations working in the area to share the costs of using it. PM also mentioned that the cost of having trained staff local entrepreneur at the centers was expensive. Most centers according to both informants have no electricity to power the ICT tools and therefore there is need to look at other alternatives to provide power for instance solar panels and hydro electricity. Additionally, MME pointed out that some of the telecentres they established were vandalized and therefore they had to meet the cost of installing new ICTs and insuring them.

Moreover, PM pointed out that most telecentres do not have the capacity to serve many people at the same time for instance he mentioned how ALIN-EA set up a telecentre that had five laptops and when schools closed there was an influx of teachers wanting to use the facility and it was not possible to serve all. Interestingly, most of the services offered at the telecentres set up by the ALIN-EA are free. This brought in the issue of sustainability of telecentres.

**Sustainability of telecentres**

Telecentre sustainability according to MME is a key component in successfully implementing ICT4D initiatives. He suggested that one strategy to address sustainability is through public-private partnerships (PPPs). By this he meant collaborating with other organizations rather than doing it alone. PM also stressed the need to collaborate with other organizations in ensuring the sustainability of telecentres. PM also pointed out that community cohesiveness also plays a major role in addressing the issue of sustainability.

Another way according to MME is for centers to come up with income generating activities “I can say it is sustainable on its own because of the money generated on their own” (In-depth interview, August 05, 2010). PM also stressed on the idea of having income generating activities in order to ensure that the center survives even when the development organization pulls out its support. According to PM, observing ALIN-EA’s successful centers that have applied the income generating approach has provided an opportunity for them to replicate such models in its other centers. Nonetheless, for PM “in the long-run what NGOs can do is because they do not want to go into profit-making business for they are not-for-profit they can catalyze the spread of these technologies maybe without really wanting to look at it like they charge costs or something but it is a good idea to incorporate the issue of sustainability because charging for some services may not meet the cost of running
the center. So it is good to look and see what income generating activities you would get into” (In-depth interview, July 21, 2010).

Summary
There is a general view of Nguruman as relatively developed. Participants originally from Nguruman compared its current state of development to earlier years and said it is developed. However, participants who are not originally from Nguruman say the area is relatively developed when they compare it with other communities in Kenya. Like the participants from the focus groups, those from the interviews described development in terms of infrastructure such as roads, communication services, community institutions, and socio-economic conditions such increase in population, cultural issues, and education. For most of the participants, especially those originally from Nguruman, mentioned that the infrastructure of Nguruman has improved when compared to its former state some years back.

For all the participants, there were commonalities in the emerging issues that were perceived to influence development of Nguruman such as gender and cultural issues, illiteracy and the value of education. These issues were perceived as major determinants in development of Nguruman. One unanticipated finding that emerged revolved around access to the telecentre for people who have relocated to Nguruman to do business and who do not count themselves as community members.

It was quite encouraging to know that the CKC is known by most of my participants. However, most of them did not know what services it offered. Yet the center has been there for about eight years. The few who had visited the center described it as a place for communication through email, learning computers, accessing the Internet, getting information on specific issues for instance farming, and, borrowing books. For the youth, the CKC was a place for getting together. However, the staff’s description of the center revealed other services not known by the community, and this highlights a gap. This is further discussed in the next chapter.

Age and gender of users of the Nguruman CKC were major determinants in the use and access to the center by women in the community. According to the users and non-users, majority of the telecentre users are young men. For most female participants especially the older and non-educated this aspect hinders them from
visiting the center due to cultural reasons. These reasons are further discussed in Chapter five.

A comparison of the participants’ communicative ecologies reveals different communication and information patterns and activities unique to each individual. Each individual uses different ICTs and links these ICTs to his/her social network to enhance the communication and information patterns. This is further discussed in the next chapter.

Does the CKC have potential to enhance the state of development in Nguruman? Well, for most of the participants, yes it does only if, everyone in the community knows why it is there and fully utilizes the services offered, and if information is shared. But what do the policy and decision makers perceive? According to the key informants, ICTs are important tools in the poverty reduction process. The concept of the CKC for instance, enables many people to use ICTs and therefore access new innovative ideas. Accessing services such as e-Health, e-Education and other e-Information contributes significantly to the poverty reduction process.

In order to influence the growth of ICTs in the country especially in the rural areas, the government, according to the experts, has played a major role in establishing regulations and policies to support ICT infrastructure rollout in such areas a good example is the liberalization of the market. But why then is there only one service provider in Nguruman?

There are ICT-focused initiatives developed by the experts for preparing rural communities to be part of the global information society such as digital villages by the government and rural telecentres like the Nguruman CKC by ICT-focused NGOs and donors. However, barriers exist to successful implementation of these initiatives. The only aspects shared by community members on barriers to ICTs is age and gender in ICT access and use, and the inability of such centers to serve a large number of people. These findings are extremely important because they highlight issues of sustainability that are further discussed in the next chapter.
CHAPTER FIVE

DISCUSSION

Introduction
This chapter seeks to address the main research question "what is the impact of Nguruman CKC on the community and its development" by discussing the findings presented in Chapter four. This chapter provides an analysis and discussion of the key findings within the context of the literature presented earlier. There are several emerging themes that are addressed here such as perceptions of development, relevance of the telecentre in terms of its usefulness and appropriateness of the services offered in order to meet the needs of the community as well as promote development, access to and use of the center, management and ownership models utilized at the center and how these have an effect on the sustainability of the telecentre.

Emphasis is put on how the community views the center, whether it has been successful, and its potential for development. As a development worker who was previously involved in the establishment of this center, and based on earlier evidence, this center was considered more successful than the other three similar centers set up as previously mentioned in Chapter one, therefore, this research was to tease out the factors behind its success. Further, through discussing the findings I reflect on the factors (literacies, determinants, gender issues, and, power structures) that relate to access and use of the ICT center by the community members. Emphasis is placed on how the policy makers understand rural communities and how these communities have responded to ICTs for development.

In this discussion two models are used to further our understanding of how this telecentre sits within the community. The first model was developed by Colle (2000), which provides variables for describing what type of telecentre Nguruman CKC is. The second one is the telecentre evolution model by Fuchs (1997; see also Etta & Parvyn-Wamahiu, 2003) to describe how the ownership, management and operations of Nguruman CKC have evolved overtime. I also look at other studies on telecentres in order to put my case study within the wider context of ICT4D.
Although an effort has been made to thematically group my findings, there are certain themes that are pervasive, for instance gender issues, culture, age and education. I identify key emerging issues and discuss them together to answer my research questions.

It is important at this point to understand what type of telecentre Nguruman CKC is and the kind of services it offers and how it has evolved before embarking on analyzing its relevance to the community and the impact it has on their lives.

**Understanding and describing Nguruman CKC**

Attempts to define and classify telecentres have adopted different criteria (Townsend et al, 2001; Owen & Darkwa, 2000; Roman & Colle, 2002c; Gomez et al., 1999; Colle, 2000; Jensen, 2001). However, a recent analysis of telecentre classification by Rega (2010) brought to light two commonalities:

- Telecentres as community development instruments that have a community development purpose for people living in rural areas
- Telecentres as tools for providing communication services, which are relevant for local communities, using a range of digital and non-digital ICTs. The telecentre offers different communication services related to these technologies such as basic computer and Internet training, information and education related to issues of interest for the local community and community based services for instance library, or, just a meeting place facility (p. 17).

Findings show that the CKC offers services such as basic computer training, Internet access, e-government services, multi-media services such as videos on farming techniques, online market information especially for the farmers, library services, publication on various development issues, and email services. Printing and phone charging services are also available. The figure below presents a model of key variables used to describe Nguruman CKC adopted from Colle (2000).
The Nguruman CKC is located in a rural area where there is limited access to basic service. Unlike some centers that are narrow focused, only offering access to information technology, Nguruman CKC is a multi-purpose center and is not solely devoted to individual access to communication technology such as offering Internet access only. The center has several ICTs within a single space (computer, library, phone facilities, and newspapers) and this encourages different uses of ICTs (Tacchi, et al., 2007). It also offers basic computer training, facilitates distance learning for instance community members doing their research as indicated in the findings, provides information on development issues, and, serves as an instrument for information sharing in the community. However, Nguruman CKC is a stand-alone structure and although it makes contractual arrangements with the community’s schools to provide basic computer training for teachers and pupils, it is not attached to any community institution. Several telecentres are community-based, meaning they are owned and managed by the local community in which they have been set up. Others are establishment-based meaning they are owned and managed by organizations (government, NGOs, and private businesses) (Colle, 2000). Originally, the CKC was establishment-based, owned and managed by World Corps Kenya. Whether the CKC is currently community-based or establishment-based is difficult to determine at this point due the recent emergence of ownership debates between World Corps Kenya and Arid Lands Information Network-Eastern Africa.
Several telecentres respond to specific information needs (thematic) of certain groups in the community such as on health, farming, development and other social issues. Other centers on the other hand tend to meet information needs of the whole community (universal) (Colle, 2000; Rega, 2010). Findings indicate that the Nguruman CKC meets specific needs of certain groups in the community, for instance the youth and some farmers and teachers.

The primary aim of Nguruman CKC is not to make profits but to provide services to the community and offer free of charge services. However, the CKC exists under an organizational model and is 100 percent-supported by external funders of Arid Lands Information Network-Eastern Africa (ALIN-EA). The findings, in line with the literature review (Bailey, 2009; Mayanja, 2006), showed that financial and social sustainability are key obstacles for the successful implementation of telecentre initiatives. For telecentres to achieve and gain tangible benefits for the poor, both in rural and urban settings, subsidies will be essential for the start-up phase and subsequent funding of public services will be required (Proenza, 2001). But the question is, what happens once the organization pulls out? Fillip & Foote (2007) suggest that an “entrepreneur-led, private sector approach is perceived as more likely to be sustainable. Yet a purely commercial approach may not accomplish the social objectives that motivated the interest in the telecentres in the first place (p. 27). The findings from the key informants revealed that charging fees for services might run the risk of increasing inequalities in access and use keeping in mind that Nguruman in a remote rural community that has limited access to basic services. Literature on other telecentre initiatives (Fillip & Foote, 2007) showed that several telecentre initiatives take “a balanced approach, following a social entrepreneurship model, where the goal is to make a profit, or at least recover all the costs and provide a surplus to grow and a diversity of services, while at the same time serving the needs of the local population” (p. 27). Both organizations (World Corps Kenya and Arid Lands Information Network-Eastern Africa) therefore need to have a plan for transitioning the CKC from donor funding to an entrepreneur-led model by developing creative revenue and marketing plans to sustain it (adopted from Fillip & Foote, 2007).

Whether Nguruman CKC is independent or networked is difficult to determine at this point because it was established as an independent entity. When World Corps Kenya made contractual agreements with Arid Lands Information Network-Eastern Africa, the CKC became part of a network of other similar centers based on a broader project of ALIN-EA and through this, each center shares its experiences within the
network. Due to the ownership debates between the organizations, two stand-alone centers have been created, one is operated and managed by the World Corps trained community member and the other by a field officer from ALIN-EA. Parkinson (2005)’s study showed that stand-alone centers are not easy to maintain in rural areas and are likely to have limited market demand with the exception of, for instance, computer services or phone services. It also means that even when they do get external support, they tend to have limited use and impact. Parkinson (2005) suggests integrating such stand-alone initiative into larger rural development projects in order to contribute to overall development goals while the initiatives themselves make ICT service provision more feasible, although still relying on market structures. This provides an anchor market for ICT services and therefore stimulates demand and enables people to find and apply information that is useful. From my observation and experience, the ALIN-EA network of telecentres is an informal group that basically uses occasional meetings to connect people working in telecentres. They also have formal links to offer specific services to help their members with daily telecentre tasks, for instance, business management training, and technical troubleshooting (adopted from Fillip & Foote, 2007). As indicated in the literature review, there is an added advantage for telecentres that are networked because “members come together to learn from each other and cooperatively access services” and through this, the centers become “more effective, sustainable and valuable to the communities they serve” (Fillip & Foote, 2007, p. 141). This is further discussed in the evolution of the CKC below.

From my observation there are two types of centers in Nguruman, what Gomez et al. (1999) refer to as a basic telecentre and a telecentre franchise. A basic telecentre is a “typically small independently operated community enterprise [in the rural areas] with a small number of computers and dial-up connections to a wide area network and the Internet. Used by the general public for becoming computer literate, sending email and searching Web sites. Minimal marketing information within the center, and is heavily consumer-driven. They are generally subsidized by government or non-government organizations and are intended to be a public service with minimal or no fees” (Gomez et al., 1999, p. 3; also see Etta & Parvyn-Wamahiu, 2005). The telecentre franchise is “a series of interconnected telecentres, which are centrally coordinated but independently owned and operated” (Gomez et al., 1999, p. 4). The CKC is usually under supervision by Arid Lands Information Network-Eastern Africa that offers financial support occasionally as well as technical support. A telecentre franchise according to Gomez et al. (1999) is run like a small business that will
eventually become financially and technically independent. Unlike the other centers under supervision by ALIN-EA, the CKC is not run like a small business because it does not charge any fees for its services. Originally it did until it was operated under ALIN-EA’s approaches. Based on the findings from the ALIN-EA manager, this will soon change because very soon community members will be paying for services such as printing and photocopying. But the CKC does house a small number of computers for the public to access and dial-up connections to Internet service providers as Gomez et al. (1999) identify.

The Nguruman CKC represents a community access point where community members can access conventional ICT tools (like computer, Internet and telephone). It also provides knowledge and training services. According to Ariyabandu (2009), when such “telecentres are subject to value addition with knowledge and training services along with basic parameters, it represents a ‘knowledge hub’” (p.4). Knowledge in his view is an essential aspect in economic development of livelihoods because it is shared and is therefore able to be multiplied in a large community. The importance of knowledge is also reflected in the work of Servaes (2007) who suggests that although ICTs are important tools for sharing information, they often cannot solve development problems caused by social, economic and political issues nor can they change existing power structures as the information available needs to be received by people in the form of knowledge.

The views of the participants and my own observations point to a gap in the description and understanding of the CKC and its services among the staff, users and non-users. This can be traced to poor publicity, as not enough seems to have been done to create awareness about the center or its services. Findings in a study by Etta & Parvyn-Wamahiu (2003) showed that this is common and therefore the Nguruman CKC is not alone. In addition, this can also be traced to the lack of a relevant communication and dialogue between World Corps Kenya, ALIN-EA, policy makers and the community to provide a common understanding among key stakeholders (the community) of the development initiative. This is not unique to this particular ICT center. Roman & Colle (2002b) assert that ensuring communities understand, value and use telecentres remains a challenge. The implication for this is putting emphasis on the planning of communication initiatives, which focus on dialogue rather than one-way communication to provide support to similar development projects. Emphasis is placed on the facilitation of exchange of opinions among the various stakeholders involved in the development project with the aim of
taking into account the grassroots perceptions in the planning of the project and mobilizing them in the development activities. Including opinions of the marginalized, underprivileged and poorest sectors ensures that communication processes are more inclusive and open-ended and provides a setting to address not only immediate issues but also structural problems (Bessette & Rajasunderam, 1996; Nobuya, 2007; Servaes, 2007; Tufle, 2009).

**Evolution of Nguruman CKC**

While there seems to be a general agreement in literature about the basic functions of telecentres, debates about the nature of ownership, management and operations still remain (Etta & Parvyn-Wamahiu, 2005). Telecentre ownership, management and operations evolve overtime through three stages as Fuchs (1997) has described: the investment, contract and user fee stages.

The investment stage characterizes the early status of the telecentre. This is where the NGO forms collaboration with a local community in an effort to develop the locals’ capacity by supporting them to participate in the information society. The telecentre is fully supported by the organization in financial and technical terms and by providing training for local partners and stakeholders of the community as a way of demonstrating practical utility. When the telecentre gets to the contract stage, this indicates that it has gained autonomy from the organization and begins to make contractual arrangements with other organizations and institutions such as schools, government offices, and hospitals in order to build a network of clients for providing services and technical support. Finally, the user-fee stage indicates that the telecentre is no longer depending on the organization because the community will be aware of the benefits of the services offered and will be willing to pay for them (Etta & Parvyn-Wamahiu, 2005).

This evolutionary view means that it only takes a matter of time for the telecentre to become an independent and self-sustaining facility (Etta & Parvyn-Wamahiu, 2005). However, this does not seem to be the case with the Nguruman CKC. The CKC was established in 2003 as part of a pilot project by World Corps Kenya. The project trained 15 youth imparting them with the necessary skills in enterprise development, computers, renewable energy and community development. This training enabled them to set up four-community information center. The aim of the project was to empower the local communities through improving their access to information. The project was primarily donor funded and World Corps Kenya financed and supplied
the equipment (solar panels, laptops, pay phones, printer and batteries for each center (Akedi, 2006). The CKC gained autonomy after two years but World Corps maintained a leading role in providing technical support and advisory services. The center was run like a small business for the local trained youth and eventually it became financially independent. During its fifth year of operation, World Corps Kenya formed collaboration with Arid Lands Information Network-Eastern Africa to provide information exchange, capacity building and technical support for the community for the sake of gathering and disseminating local knowledge (World Corps, 2007). World Corps Kenya acted as the host organization for ALIN-EA at the CKC each with its own roles. Due to the nature of the partnership, the CKC was operated under ALIN-EA’s approaches. The center also employed other systems and technologies that were under development by ALIN-EA such as the World Space Receiver. During the partnership period, the center’s name was changed from Community Information Center to Community Knowledge Center and now Maarifa Center. Prior to the ownership debated, the center was operated and managed by the World Corps Kenya-trained local youth and a field officer and occasional volunteers from ALIN-EA. When the E-Centers were establishing in 2003, on average, about 1,235 people had visited the four centers each month (World Corps Kenya, 2007). During that year until 2008, the centers were the only places community members could make or receive calls due to the lack of communication signals. I remember while we worked in Nguruman, we could not use our mobile phones and could only use the pay phone at the CKC. Most of the CKC’s financial component came from pay phone, barber, and printing services. By the time the partnership began, there was a stronger communication signal and a mobile service provider. This saw an influx of mobile phones in Nguruman. As a result the pay-phone serve component at the CKC gradually phased out. Since the center was run under ALIN-EA’s approaches, all the services apart from the barber services became free. Due to the ownership debated, separate centers were established and it is therefore unclear whether both centers have begun charging fees for any of the services they offer. What is clear is that ALIN-EA has continues to support its center in financial and technical terms. It is difficult to determine at this point whether the original E-center is currently being supported.

Reflecting on the above stages, I perceive that the CKC moved from one stage to another as it started to make contractual arrangements not only with ALIN-EA but also with other organizations and institutions working in the area. Some would use it to enhance their working performance (teachers and students), or strengthening
peoples’ communication at a time when the communication channels were nonexistent or even providing farming information to a farmer. Through this process relationships were formed and could have developed. However, these broke down, which resulted in separate centers being established.

It is important to note that telecentre models have different weaknesses and strengths. The two centers in Nguruman are not an exception. Because of the diversity and complexity of the conditions under which the centers have emerged and developed, this study suggests that there is no best model to be replicated. However, a complementarity of the models is what is important because it brings out individual telecentre strengths and weaknesses (Fillip & Foote, 2007).

The skills and characteristics of the operator or manager of a telecentre are what determine the success or failure of the center (Fillip & Foote, 2007). From the findings, it is clear that ALIN-EA’s approach of employing a staff (field officer who is a community outsider) to operate and manage the center has had a lot to with the ownership debates. The findings from the participants indicate that some community members encountered an unwilling staff and therefore lacked the interest to visit the center. Others feared being told off by the staff, while some indicated that the staff only preferred helping those he knows. Some participants raised the issue of trust and suggested a community member they identify with and can trust should run the CKC. According to some participants, the CKC staff cannot be trusted. Fillip & Foote (2007) suggest the involvement of local ICT champions and infomediaries who will play a central role in facilitating access and effective use of the telecentre. Infomediaries play a central role in “advocacy, peer learning and creating vital demand for telecentre services” (Fillip & Foote, 2007, p. 25). A local ICT champion is an individual who is aware of the objectives of the telecentre and embraces them. This is someone who supports technology-based solutions and is a trusted community member (Fillip & Foote, 2007). Fuchs (1997) suggest that this role should be filled by a woman and I agree based on the findings that women are left out in terms of access and use of the center. Fuchs (1997) argues that an individual who learns computer skills in order to become a telecentre manager provides an obvious demonstration effect in the community. In addition, learning how to work with technology has to be made simple and accessible, which requires sociability and communication skills coupled with empathy and other directedness. This does not mean that women are better telecentre managers than men, it is simply the fact that women, in most cultures, are sociable and empathetic (Fuchs, 1997) and other
women are more likely to visit the telecentre as a result (Tacchi & Martin, 2008) therefore dealing with inequalities in ICT access and use.

**Access to and use of ICTs in Nguruman**

This study demonstrates that ICTs have the potential to become important enablers that can be used to fight and reduce poverty reduction only if communities can adopt their applications to their own ends. The concept of telecentres in the rural areas is one that is based on enabling more people to use the ICTs, and the more they learn how to use them, the more they generate new innovative ideas. Findings from the key informants pointed out accessing e-services such as e-Government, e-Education and e-Health has contributed significantly to the poverty reduction process not only in rural areas in Kenya but also the country as a whole. But this study did not see evidence of these advantages. Based on the findings from this study, the Nguruman CKC has the characteristics of a basic telecentre that acts as a community access point where people can use conventional ICT tools such as computers, newspapers, Internet and telephone and it provides knowledge and training services such as basic computer skills. It has minimal information marketing, is heavily consumer-driven and is a public service offering no fees.

According to the key informants of this study ICTs in Kenya are said to have made several contributions to Kenya’s economic growth for instance through the new mobile banking initiative, which has seen the growth of the local industry and in turn increased employment opportunities and reduced the rural-urban migration. Although the key informants stated that a direct contribution to Kenya’s economic growth is through foreign investors with a focus on ICTs and that Kenya’s GDP is slightly over 3.5% as a result of ICTs, evidence of how this impacted the local community was difficult to determine in the case of the Nguruman CKC.

ICTs have been attributed as important components in advancing economic growth and reducing poverty. They are not only mediums of communication but also an enabler of development and an opportunity for developing countries to access the global information infrastructure and participate in the knowledge economy (Levy & Banerjee, 2008; Zhao, 2008; Melkote & Steeves, 2001; Guislain, et al., 2006). Based on the findings, the availability of ICT tools for knowledge creation, generating and sharing information in Nguruman shows that the community has not been left behind in the digital world even though the CKC has been rated the 6th remotest center in the world. ICT tools that are mostly used by participants include: cell phones, radio,
televisions, newspapers, computers, Internet, world space receiver, and the IPod. Through these ICT tools, levels of general and technical literacy tend to increase, for instance, through radio programmes, basic computer learning skills or even through the IPod broadcasting. This concurs with a study by Etta & Parvyn-Wamahiu (2003). In their study, Radio, for example, is described as the most effective way of disseminating information for rural development in Kenya. Ownership of radios is far higher than any other electronic tool. An estimated 60% of the African population is reached by existing radio networks. In Nguruman, there are many community members who watch television at home or at the CKC for information, which has, in different ways, changed their thinking, attitudes and behaviors for instance for one participant watching national news during helps her know what is going on world wide. However, people do not need to go to the CKC to listen to the radio because they can do so at home or while they are doing other tasks. Radio and television broadcasting and to some extent IPod broadcasting, has continued to play a key role in creating awareness of, and interest in innovations in Nguruman. It is important to note that the Radio is a traditional media (Thioune, 2003) that has been used in development long before the discussion of ICTs begun.

Therefore, put simply, if the Radio, a traditional media is doing the development job in the rural areas far much better than new ICTs, then what is the need of using so much money in equipping telecentres in the rural areas with computers for instance, that will need solar energy and batteries due to lack of power and will only be used for playing games and getting into Facebook or email? The Nguruman CKC for instance has several computers that are not functioning because there is not enough power to run more than two computers and besides, there is a lack of control of the use such that most of the users play computer games and are interested in getting into Facebook and sending email. In terms of development, Radio seems to be a key contributor by providing people information on development programmes such as on health, civic education, agriculture, education, and entrepreneurship (mostly provided by the government, NGOs, self-help groups, Church-based organizations and ordinary people), which has a more direct impact on their thinking, attitudes and behaviors. Listeners are given the opportunity to call (using mobile phone) to ask questions about the different ideas being presented. Such an example shows the importance of getting everyone involved in the development process in a more participatory manner. So should more emphasis be put on Radio then, based on the fact that it not only has better programmes and is richer in information but it is easily accessible and more popular in use?
Without a doubt, Nguruman CKC has brought community members of this rural area into direct connection with ICTs. However, the usage pattern at the CKC shows that services especially those related to computers are more popular particularly among male youth, leaving out whole sections of the community members. Computer use among the older population tends to be very low. Information services (for farmers, teachers, students) have moderate levels of demand. Computer-use among the youth was mainly for playing computer games, basic computer learning, and accessing the Internet (Facebook) and email services. The non-use of the advisory services offered at the center was also observed. This was due to the lack of skilled personnel for such services. As mentioned in the literature, demand for information and computer services in the rural areas are underused and therefore do not show the tendency to increase overtime. Furthermore, these services tend to be difficult to maintain overtime due to telecommunication problems and the lack of electricity (Etta & Parvyn-Wamahiu, 2003) as experienced in Nguruman where there is only solar power.

When the CKC was established, people used to go there to make phone calls, because there was no cell phone coverage in the area and therefore no alternative for those wanting to make phone calls. However now the Safaricom network covers the area. This has decreased the use of the telecentre. The study shows that mobile phones were the most commonly used technology for communication in order to maintain links between geographically dispersed family members by facilitating direct and immediate communication. Telephone use therefore facilitates the ongoing function of extended family support networks. This is also reflected in a study by Parkinson (2005) in Uganda and South Africa that showed telephones are most commonly used for communicating with family members. Telephone use according to Parkinson cuts across all sectors of society, for instance rural, mainly subsistence-based family members use the phone to be in touch with formally employed relatives based in the cities and other towns.

Inequalities of access in terms of age, gender, education, and literacy level, and cultural issues emerged as major factors influencing use and access to the Nguruman CKC. An interesting observation was the absence of older people at the center. This echoes inequalities of access to ICTs arising from broader social inequalities based on gender and formal education (Tacchi & Martin, 2008). Etta & Parvyn-Wamahiu (2003) found that telecentre users in Africa have been
disadvantaged on the basis of gender, age, education, literacy levels and socio-economic status. In their study, the absence of the elderly and disabled population at the telecentres was also observed. My study corroborates this view and shows that older people believe ICTs are only for their children, and especially the youth.

Findings in line with literature (Odame, 2005; Tacchi & Martin, 2008; Best & Maier, 2007) show that the gender gap in terms of meaningful access to ICTs remains. In Nguruman, very few women use the CKC. Odame (2005) asserts the gender gap still exists because women are rarely involved in the needs assessment of ICTs for development, the attitudes that high-end information technology ‘is not for women’ who are still being treated as passive recipients of information and not active information users and communicators, and, there is considerable delay in addressing the limitations faced by women in accessing supposedly ‘public’ information spaces, or even private sector initiatives such as cyber cafes” (p. 16). Women “do not feel welcome in telecentres because of the “maleness” of the environment and the accompanying intimidation” (Colle, 2001, p. 12). Intimidation impedes participation of the women in the telecentre initiative (Etta & Parvyn-Wamahiu, 2003; Colle, 2001; Roman & Colle, 2002a). This is certainly the case in Nguruman. This study suggests the use of female, local ICT champions, in an effort to provide access opportunities and develop tools and contents specific to the priority needs of women (Gill et al., 2010).

The most common users of the Nguruman CKC are high school students or those who have just completed high school, all of whom are young men. In many telecentre initiatives throughout the world, the youth are the largest part of the population using computers and Internet opportunities. An IDRC telecentre study in Latin America, Uganda and Mozambique by Etta & Parvyn-Wamahiu (2003; also cited in McConnell, 2006), shows that most of the users were students and between the age of 15 and 34 years and the majority of these were male while the minority was female. The implication for this demonstrates that the CKC has become a male, youth information center rather than a community information center. Therefore, there needs to be a rethinking of the rationale of such projects to include the roles of infomediaries, which are key in facilitating access and effective use of the initiatives (Fillip & Foote, 2007).

Education emerged as another major determinant in use and access of ICTs. A general belief indicated by the participants was that the CKC was for the educated or knowledgeable. There was also the popular view that computers are devices for the
educated only. Not surprisingly, most of the people who used computer-related services tended to have a higher level of education (high/secondary school and above) and often had prior experience with computers through school, work or personal introduction. This restricts spontaneous appropriation of ICTs even where physical access is made available as Parkinson (2005) argues.

Further observations reveal that culture influences access, especially among women in the community. Age and cultural issues were crosscutting, such that older female participants indicated that it was culturally inappropriate for them to visit the center, which was usually flocked by young men the age of their sons. Some participants expressed fear handling ICTs at the CKC. As mentioned in Chapter two, deficiencies in literacy, education, language, cost, locality, technophobia and the perceived role of women in society impede their access to and use of ICTs initiatives such as telecentres. These barriers exist widely, however they are more severe among African women as well as in some parts of Asia and Latin America (Roman & Colle, 2002b; Etta & Parvyn-Wamahiu, 2003). From my observation, the CKC has not been able to demonstrate a strong way of overcoming the barriers to access faced by many community members. In this case, people need to have other channels for building their knowledge of and confidence in using ICTs. This study suggests the need to have trainers to build the capacity of the community in ICTs and development issues, for instance on entrepreneurship. This study also suggests the need to understand gender inequalities and obstacles to full participation and through this initiate a kind of response to gender issues in order to engage women fully in the development process.

What emerges from these findings revolves around access and exclusion from ICTs based on socio-economic factors. This mirrors the idea that ICTs can intensify and reinforce existing economic, political and social inequalities depending on how the they are designed, deployed and accessed (McNamara, 2003). The implication for this is that governments need to take proactive measures in ensuring ICTs serve as effective tools for social inclusion through widespread access especially for the poor and disadvantaged to benefit (Watson, 2007).

Power structures and biases at the CKC also emerged as factors that influenced access and use. This appeared to revolve around the issue of ownership, poor attitude of the staff, and lack of trust between the some community members, users and non-users and the staff at the center. As mentioned earlier, due to the
contractual arrangements at the CKC, ownership issues emerged that eventually led to a broken partnership between the organizations and the establishment of a separate facility. Furthermore, participants expressed the need to have a willing and trusted person from within the community to run the center. The findings indicate that the telecentre was experiencing management problems in terms of weak management, as well as poor technical and social skills. As Fillip & Foote (2007) argue, “telecentre operators, local ICT champions, and infomediaries play a key role in facilitating access and effective use of telecentres. In many instances, the success or failure of a telecentre is rooted in characteristics and skills of the manager or operator” (p. 25)

Further, it was apparent that the hours of operation and location greatly affected use and access of the facility. The telecentre maintains formal working hours, which limits the time during which the facility is open to the public. The CKC was usually not open late in the evening/night, on Sundays or on public holidays thus reducing use especially for those employed. The available space in the CKC was also too small with no privacy for users of the computer. In a study by EAR researchers, one of the recurring emerging themes was the way men and women perform different roles in the community. Martin (2008) asserts “it is this basic socialization of gender roles in the community that shapes the possibilities for social interaction among men and women, as well as opportunities for their engagement with the ICT initiatives in their local communities” (p. 71). Therefore in order for the CKC staff and volunteers to increase the involvement of the community, they first need to understand the gendered ideas and behaviors of the community members and being sensitive towards the social traditions of the Nguruman people. Through this, they will be able to determine: what potentials they have at the center to engage with community members in their leisure time, what kinds of activities the community finds important enough to participate in, given their workload and determine an appropriate time to engage men and women in the CKC activities. But if the CKC staff and volunteers do not know why and where community members are at any given time, then it will be very hard for them to make socially relevant programmes for the community as Martin (2008) suggests.

Some community members expressed the need to have a similar center in the neighboring communities. As mentioned in Chapter one, Nguruman sub-location comprises of Oloibortoto East and West areas (Kinyua et al., 1997), which are situated quite far from where the CKC is located. Roman & Colle (2002b) assert that
if a telecentre is away from the usual community meeting points, it may impede participation (p. 4). This is the case with the Nguuruman CKC. The greatest way for implementers of telecentre initiatives to be certain they are addressing the needs of the target communities is by engaging active participation of the community members in voicing their information and communication needs (Fillip & Foote, 2007). Roman & Colle (2002b) purport it is the community members that should decide where the telecentre should be placed, “in fact, participating in an important decision related to the telecentre operation” (p. 4). As Conroy (2006) notes, a high level of community participation and ownership in the operation and use of a telecentre provides major bearing on its success and sustainability. In his study, Conroy recommends that management of telecentres need to develop a definite participation strategy in the planning stage. The guiding principle suggested is a people-centered programme based on community ownership, which the community must endorse as a whole. This study reinforces this need.

One unanticipated finding was that some community members do not count themselves as part of the community having come from different tribal affiliations. Consequently, this perception hinders their access and use of the CKC. If we put it within the context of Sub-Saharan Africa where most formal colonial states were arbitrarily put together grouping different tribes into one nation, it brings in the question on how communities are created when an individual’s affiliation is to his/her tribe. People from other tribal communities migrated to Nguruman for their own economic advantage, which is their sole interest and not in being part of a wider community. However, it is ironic that the CKC was set up to help increase economic activity in terms of access to market for goods, yet it does not seem to attract these “other” community members to serve their economic needs. This finding has important implications to take into consideration when establishing telecentres in such communities.

**Role of the government in influencing the growth of ICTs for development**

Findings from the key informants demonstrate the government’s commitment in preparing rural communities to be part of the information society at a legislative and policy level, for instance through the implementation of the Universal Access projects also called digital villages and laying of the fiber optic cable that will connect every District in Kenya with the digital world. Also, reforms have been introduced and measures taken that have influenced the growth of ICTs in Kenya. This is evidenced by the views of the key informants, who identified the liberalization of the market,
introduction of interconnection policies in order to reduce the interconnection charges between the various mobile service providers, and regulating tax on ICT tools that can be availed to the rural population. This highlights a gap between the aspirations of the legal and policy framework, and the reality in rural areas. In Nguruman, there is one mobile service provider, which indicates a monopoly still exists, intermittent electricity supply, and high connectivity and maintenance costs. This means that the advantages hoped for by the decision and policy makers have not been fully realized.

The government has introduced a law, the Communications Amendment Act of 2008 that created a universal service fund to support ICT infrastructure rollout in areas that are economically unviable. This is evidenced by the several centers similar to the Nguruman CKC that have been established in different areas in Kenya, which are supported by the universal service fund such as the school-based ICT centers and Community ICT centers supported by the Communications Commission of Kenya (Communications Commission of Kenya, 2010). As mentioned in the literature review, African countries have now begun gradually implementing strategies of including new ICTs on their development agenda towards the development process (Thioune, 2003). The study by Thioune (2003) indicates that Kenya has introduced significant reforms in the telecommunications sector such as privatizing companies, liberalizing and putting an end to monopolies. Nonetheless, like other African countries, Kenya does not appear to have an integrated vision of the policies implemented in its telecommunications sector. The reforms established are still sectoral. Vaughan (2006) argues that many ICT strategies adopt a sectoral approach to implementing ICTs. A consistent and systematic policy is yet to be formulated. Thioune (2003) suggests “an integrated approach, which would be more holistic in terms of policies designed to introduce and to appropriate ICTs for development, [needs to be adopted]” (p. 7). Labelle (2005) purports that while there are many types of ICT strategies to choose from, an integrated approach to ICT development and deployment is more likely to produce human, social and economic development success over a long-term period. However, whether ICT policies and strategies are created separate to or incorporated with sectoral policies and strategies, generally, it is agreed that national priorities for poverty reduction should first be created including particular initiatives for pro-poor growth. This study suggests that broad based participation at all levels should be facilitated in developing the strategies (adopted from Vaughan, 2006).
Challenges/barriers to successful implementation of ICT initiatives

The greatest challenge to successful implementation of ICT initiatives indicated in the findings was financial in terms of the cost of setting up the initiatives in the rural areas, the cost of having trained staff or local entrepreneurs at the centers, the cost of installing new ICTs and insuring them and the cost of connectivity. The high cost of the equipment, supplies and maintenance was a constant problem for ALIN-EA because they bear the burden of funding the CKC on a monthly basis. In addition the general infrastructure in Nguruman is of concern especially with regard to the lack of electricity supply. As mentioned earlier, rural populations particularly in Africa face a set of challenges that impede their access and use of telecentre initiatives despite the evolution of enabling policies and legal framework. Establishment of telecentres comes with great challenges such as availability of affordable technology, the use of the facility remains a problem due to security and maintenance, low connectivity, and reliability of affordable power supply (Jhunjhunwala, 2008; Bailey, 2009). All of these challenges are present in Nguruman.

The findings also indicated that age, gender disparities, and gender roles form significant barriers. As previously mentioned, there was a notable absence of older people at the CKC. Gender disparities revolved around the community’s cultural background and reflect the attitude of the community towards the women. With regard to gender roles, there is an indication that the social roles and behaviors of women in the community impede their opportunity to engage with the CKC. Martin (2008) suggests that for successful community involvement in a local initiative, it is imperative to understand the gender relations in the community. This study supports this view.

Sustainability of telecentres

From my observation and the views of the participants, the sustainability of the CKC was constantly under threat ranging from weak management, technical and infrastructural problems. Problems such as poor connectivity, computer failures, and lack of enough power for more than two computers, unusable computers, and lack of printing paper/printer failures occur. In reviewing the literature, financial and social sustainability of telecentres remain two of the key obstacles of digital inclusion projects: “whether telecentres remain an influential component in the community development agenda in the long run, depends on how they respond to the urgent need to build social and financial sustainability capacities” (Mayanja, 2006, p. 2; see also Bailey, 2009).
The findings show that operations, management and ownership style, relevance of the service and content as well as community involvement have influenced the sustainability of the CKC. The issue of sustainability as mentioned in the literature review (Rega, 2010; Etta & Parvyn-Wamahiu, 2003) has come to be seen as more complex and multi-dimensional relying on more than only the financial resources. Further, issues commonly associated with sustainability of telecentres include the operating environment, ownership and management styles, community participation, relevance of the services and content (Rega, 2010, p. 37; also see Etta & Parvyn-Wamahiu, 2003, p. 32).

My study suggests that forging partnerships rather than doing it alone, community cohesiveness, and introducing income-generating models in the telecentres are important strategies for dealing with the sustainability issue. As the Nguruman CKC continues to exist, different social and financial sustainability problems emerge in the process. Therefore, the issue of sustainability should be seen as a continuous process rather than a one-off process. This concurs with the ideas of Baulch (2008) who found that the work of sustaining is an on-going and constant process of dealing with the problems that emerge as an initiative evolves: “sustaining an initiative is a constant labor of firstly, attending to the myriad of problems that social and financial sustainability entails both in and of themselves and, secondly, attending to the complex questions of how to most suitably marry these two” (p. 108). Such ongoing attention was absent in the CKC highlighting yet again the need for appropriate management at the center.

Having discussed the perceptions of the community about the CKC, it is also important to look at what development means for the community since the Nguruman CKC is meant to facilitate and enhance development.

**Perceptions of development**

The findings of this study showed that development meant different things to the participants. It was described mainly in terms of infrastructure, availability of ICTs, enhanced communication, availability of community institutions (such as schools and churches), and improved socio-economic conditions. This is also reflected in development related literature. Development is at times described to depict social, economic and political changes at individual and group levels and other times to represent social and economic indicators such as GDP, GNP, life expectancy, and income levels, among others. Development is also described as involving the
concepts of ‘progress’ and ‘growth’. Development of social infrastructure (in health, agriculture, education, transportation and communication) was an integral part in achieving development (Melkote & Steeves, 2001; Fonchingong, 2006; Banerjee & Loo, 2002; Servaes, 2007; Unwin, 2009). Therefore, from the perceptions of the community and also the available theories, development should not be looked at in isolation, as it is subjective and contextual.

Words such as ‘better’ infrastructure, ‘increased’ population, ‘availability’ of transport, and ‘more' shops were the qualifying words the community used to describe the state of development in Nguruman over a period of time. To community members, development meant improved living conditions. This also described evolution and progressive change. According to Melkote & Steeves (2001) despite the significant differences in understanding development, most scholars agree that development means improving the society’s living conditions. However, there is much debate as to what constitutes ‘improved’ and how these conditions should be achieved. It was difficult to affirm with certainty what constitutes ‘improved’ in this study.

There were issues that emerged, which related specifically to the participants perceptions of development, use and nature of access as well as challenges to successful implementation of ICT4D initiatives. Gender, age and cultural issues were difficult to separate because they tended to be dependent on each other.

The cultural issues of Female Genital Mutilation and early marriages are related to the reasons why girls do not get further education and also relate to the attitude towards women and girls, which become manifested in access to and use of the CKC. The issue of gender in access to the CKC reflects on the attitude of the community towards women. The findings illustrate that there are cultural ways in which relationships are conducted such as prescriptions on women’s behavior in the presence of men. A change of attitude towards these practices is what several respondents perceive as integral for development. They not only represent rites of passage from childhood to adulthood but a whole wealth of other socially important meanings and assumptions of social and cultural responsibilities for both boys and girls as they become full members of the Maasai community (Tarayia, 2004; Hauff, 2003). This has impacted on the ability of children to receive education.

It was evident from the findings that most participants, especially from the group interviews, had either not attained any level of education or had a lower level of
education. Even so, educating their children was important in order to guarantee a good future for them as well as getting employment opportunities. Nonetheless, there was a clear indication that some community members would deny children education as a result of a combination of cultural and social factors, such as pastoralism and gender preferences. Most families among the Maasai move from one area to another in search of pasture for their livestock. This means that children end up missing out of school most of the time. Gender preference in terms of educating boys rather than girls (discussed below) is a contributing factor as to why most of the women in the community are illiterate. It was clear that most of the women in the groups interviewed were illiterate and this according to them, influenced development of the community because it acts as an impediment to participation activities at the CKC and the community.

The findings indicate that families prefer to educate boys rather than girls. This gender inequality is not unique in the African context. Girls are a source of wealth, according to some participants, and should therefore stay home. This is because they could help secure basic food supplies, and other household tasks and are exchanged for bride wealth, which is negotiated, based on a symbolic number of livestock (Tarayia, 2004; Watson, & Montgomery, 1999; Hauff, 2003). For the families that have many children, half the children would go to school while the other half remain at home to tend to the livestock and other household duties (NU3; women focus group I). This finding clearly illustrates the issue of social inequality, which in this case is as a result of a combination of cultural and social factors. The issue that emerges from this finding relates specifically to the violation of the rights of children to receive education.

**Do ICTs enhance development**

There is an indication that some of the community members (users and non-users of the center) do not see the link between the use of the ICTs and the improvement of their socio-economic conditions. For instance, some women did not see the usefulness of ICTs (computer, the Internet, other new tools) in their lives and therefore felt they were not ready to use them. Some community members who are aware of the potential role that ICTs play for development foresee positive effects of their use. Their wish is that others would take maximum advantage of the tools to improve their capacities in order to reach an improved level of development. Essentially, the CKC has had its most success with young men. For some it has increased their ability to develop into business and social entrepreneurs as
anticipated by World Corps Kenya in their project objectives but for most the center has provided a social venue.

Nonetheless, there is a clear indication of changes in perception and behavior in the users of ICTs through access to information, changes observed by the users themselves in their activities. As mentioned in the literature review, there is a general acknowledgement that ICTs have the potential to help poor communities especially in Sub-Saharan Africa to find new and innovative ways of stepping up the development process. Because the development process is neither one-dimensional nor unitary, the transforming aspect of ICTs can be used to catalyze rapid and sustainable social and economic development (Thioune, 2003). This has not yet occurred in Nguruman.

The study demonstrates that ICTs can change the social and economic life of some community members. For instance using the mobile phone to strengthen the patterns of communication and information between family members, using the computer to enhance working performance of teachers because they are able to save time, enhancing performance of students in school through basic computer skills, accessing development information through the radio, television and publications to enhance say farming initiatives and further development of self-help initiatives, and accessing information through the Internet for job opportunities or further education for the youth. This indicates that the process of appropriation of ICTs is ongoing in some communities but it is hindered by certain technical, institutional, socio-economic and cultural factors (Thioune, 2003). Successful impact of ICTs therefore means ensuring that content is adapted to the conditions of the targeted beneficiaries and ensuring ways for increasing access for rural communities are found.

Summary
There are major lessons to be learnt and a broad variety of capacities to be developed to support the telecentre initiatives in rural areas. From the findings and discussion in the study there is a clear gap in the perceptions of the local community and the perceptions of the decision and policy makers regarding ICT initiatives. This study suggests that through the exchange of opinions among the various stakeholders involved in the development project, while taking into account the grassroots perceptions in the planning of the project and mobilizing them in the development activities will ensure that there is conscious and active participation in every stage of the development process.
The evidence of some community members in Nguruman indicates that the CKC has made significant difference, changing their lives, attitudes, knowledge and perceptions. For some, the extent of impact has been slight while for others it has been profound. The question that remains is, whether this change will last and what the CKC requires to ensure desirable change in the lives of community members lasts. The barriers to access and use of the CKC, which are based on limiting factors such as gender, age, illiteracy and cultural issues, need to be dealt with to provide for sensible models that support genuine community participation and capacity development (Etta & Parvyn-Wamahiu, 2003). This can be achieved through forging partnerships between the community and development organizations and embracing community cohesiveness. A very strong emerging issue in this study is how the telecentre is managed. This is not unique to the Nguruman CKC. Several telecentre studies (Parkinson, 2005; Thiuone, 2005; Etta & Parvyn-Wamahiu, 2003) show that effective operation and management of telecentre initiatives is considered to be important for long-term sustainability of the centers. The challenge therefore is to build on the CKCs experiences so that new initiatives can address the weaknesses that have been demonstrated in this project.
CONCLUSION

The availability of ICTs in Nguruman shows that it has not been left behind in the digital age. However, availability of technologies and the real impact on communities’ development are not synonymous. This research set out to answer this question, along with a number of sub questions relating to gender, age, illiteracy and power structures that influence access and use of ICTs within the community. The overall findings indicate that the Nguruman CKC has changed some people’s lives who have used it in varying degrees for instance to enhance working performance through the use of the computer, enhancing performance of students through basic computer skills and accessing relevant information on development through the use of Internet, publications, and media services. However, it is only accessible to a small section of the population. This study shows that women, especially, and the older people have been left out in accessing and using the facility due to major factors in terms of age, gender, and illiteracy. In addition, ICTs in this community are hindered by many institutional, socio-economic and technical problems such as poor infrastructure, gender and cultural issues that impede access and use among women and telecentre sustainability. The ongoing social and financial sustainability of the center in terms of ownership and management requires constant attention.

In this study, ICTs, particularly traditional ICTs (radio and television) can significantly contribute to improving people's living conditions by making information available on agriculture, education, civic education health and other areas directly affecting communities that will help solve real problems they encounter. The expectations of community members who use these ICTs reflect their level of understanding of the relationship that exists between these tools and the improvement of their living conditions. This positive attitude can be taken to mean an acceptance of ICTs by certain groups in the community, which suggests that these tools can be exploited to enhance development efforts. As demonstrated in the findings, some community members have experienced life changes in their effort to appropriate ICTs. These changes include acquiring new skills and more efficiency in job-related activities. This low level of impact means that emphasis should now be put on taking far-reaching actions that will meet not only the expectations of the whole community but also consolidate the advances that have been made in ICT appropriation by remote, rural communities (Thioune, 2003).
The study shows that the context and institutional framework for ICTs in Kenya is changing, which reflects the government’s commitment to prepare, especially, rural communities to be part of the information society. Nevertheless, Kenya is yet to formulate a consistent policy that integrates ICTs into other economic and social aspects of life. Reforms have been introduced and measures have been taken that have influenced the growth of ICTs in the country. Despite these reforms, a gap exists between the aspirations of policy makers and the reality in rural areas owing to the poor state of ICT and general infrastructure. This has meant that their hopes have not been fully realized.

As indicated in the literature review and discussions undertaken in this study, it is clear that there are several impediments to access and use of ICTs in rural areas that were common to other telecentre studies. These include: age, gender, illiteracy and cultural issues. These challenges relate to participation and appropriation of ICT mechanisms and to the way useful information and knowledge is collected, disseminated and shared within the community. These challenges need to be dealt with to provide for sensible models that support genuine community participation and capacity development (Etta & Parvyn-Wamahiu, 2003). Communities, through cohesiveness, must face these challenges. In addition, forging partnerships between them, development organizations and policy makers will provide for the provision of equal access to ICTs for all community members. We need to bear in mind that if ICTs are not regulated to a certain extent, they can exacerbate inequalities in access and use especially in regard to resources that are scarce (Gill et al., 2010).

This study shows there is a complex relationship between ownership, management and sustainability of telecentres that is in need of further research. Nevertheless, community participation in the telecentre activities has been considered as an essential element for the sustainability of such initiatives at the community level. Community participation was pointed out and affirmed by the key informants. This is what improves local ownership according to Etta & Parvyn-Wamahiu (2003), which brings about success and sustainability of the telecentre. Ownership suggests control but it is evident that the Nguruman community was not in control of the CKC. Instead, the CKC staff and volunteers who were employees of Arid Land Information Network-Eastern Africa usually had more say in the decisions affecting the daily activities of the center.
As indicated in the literature review and discussion of this study, financial sustainability is a major common issue in telecentre initiatives. In this study, the findings indicate the CKC exists under an organizational model and is therefore fully supported by external funders of Arid Lands Information Network-Eastern Africa. Is the CKC viable enough to run after the supporting organization pulls out? Suggestions have been made in terms of the need for the collaborating organizations to have a plan for transitioning the CKC from donor-funding to entrepreneur-led by developing creative revenue and market plans. However, at this point the financial sustainability of the Nguruman CKC remains elusive.

Decision and policy makers, and local communities have placed a lot of hope on the potential of ICTs in the development process. The spread and adoption of ICTs in remote rural communities should therefore be based on social change that emphasizes the potential value of information for initiating long-term change (Etta & Parvyn-Wamahiu, 2003). There are several ways of achieving this, including the improvement of the poor (general and ICT) infrastructure, providing of support to ensure growth of ICT initiatives and, adopting relevant and appropriate social change strategies, which form the basis for social inclusion of all members of the community.

**Recommendations**

Based on the findings, the recommendations, which I believe, need to be integrated in future ICT strategies should consider the following:

**Community participation**

Development communication emerges from successful rural development calls for the conscious and active participation of the intended recipients at each phase of the development process. Rural development cannot occur without changes in the attitudes and behaviors of the people concerned (Colle, 2007). Therefore emphasis should be put on the planning of communication initiatives, focusing on dialogue rather than one-way communication as support to development initiatives. Through the exchange of opinions among the various stakeholders involved in the development project, taking into account the grassroots perceptions in the planning of the project and mobilizing them in the development activities will ensure that there is conscious and active participation in every stage of the development process. By including opinions of the people concerned will guarantee that communication processes are more inclusive and open-ended. This will provide a platform to
address a host of issues. This study thus endorses a people-centered programme based on community ownership, which the whole community must give support to.

**Sustainability of rural telecentre initiatives**

Telecentres have a definite role in the development process. They play an important role in information and education, which is key to development and seen as an important human right. Therefore there is need to provide support in initiating, maintaining and running telecentres. Unless World Corps Kenya and Arid Lands Information Network-Eastern Africa expand the lifespan of such projects, the optimal development and growth of the CKC becomes inadequate. Both organizations need to have a plan for transitioning the CKC from a donor-funded model to a social entrepreneurship model, where the goal is to make profits to recover costs and provide a surplus to grow, while at the same time serving the community's needs. Efforts should be made to come up with subsidized services or group rates for instance among women or students. Time-banding where discounted rates can be offered during off-peak times could also be attempted (Etta & Parvyn-Wamahiu, 2003). These can be used to contribute to social sustainability. However, decision and policy makers as well as local communities should keep in mind that as telecentres grow, the work of sustaining them continues. Besides, there is no best telecentre model that can be replicated as seen in the discussion. This is because of the diversity and complexity of the conditions under which the centers emerge. The Nguruman centers are no exception. What is important is looking at a complementarity of the models in order to bring out individual telecentre strengths.

This study suggests forging partnership (also referred to by a key informant as public private partnerships - PPPs) for financial sustainability of telecentres in rural communities. Emphasis should be put on forming creative partnerships between private Information Technology (IT) companies and the government, civil society organizations and international aid agencies and local communities to create a relevant communication dialogue that allows successful implementation of ICTs for development. The high cost of purchasing the equipment, supplies and maintenance for rural telecentres should be reduced through for instance tax exemptions, technical training of the staff and volunteers and development of “village tech corps” as identified by Etta & Parvyn-Wamahiu (2003), also describe as technicians on foot/bicycles.
Growth of the telecommunications infrastructure
Connectivity is important for successful implementation of ICTs in the rural areas because it relies on the telecommunications infrastructure provided and controlled by the government and licensed operators. Emphasis therefore should be put on the growth of the telecommunications infrastructure by encouraging public-private partnerships and investments. Another important implication is that the laws established by the government should be supportive in development of appropriate ICTs especially for rural areas, for instance, regulating tax on ICT tools and equipment (computers, mobile phone handsets, VSATs) that can be availed to the rural population.

Increasing access and use of ICTs in rural communities
Telecentres need to be designed also with the non-users in mind. This requires taking into consideration the practical needs and realities of non-users who have reservations about using the centers, whether this is because of inappropriate location, access in terms of opening hours, lack of trained staff, and poor publicity. Attention should be paid to the needs of people for instance locating a separate room or time for the women to use, or putting up booths for privacy. The choice of location should be taken into consideration based on factors that affect use and access. Telecentre awareness and sensitization should be increased through interactive services for instance involving infomediaries and local ICT champions who support technology-based solutions and can play a key role in advocacy, peer learning and engendered demand for telecentre services. In addition, training should be given to the staff and volunteers and any management committee regularly in order to deal with issues of weak or poor management. Improved service hours and planning should be developed, for instance opening for 12 hours every day in order for those on official working hours to benefit.

When establishing telecentres in communities like Nguruman that are multi-ethnic, development organizations need to take into consideration community members who do not count themselves as part of the community based on the fact that they affiliate themselves with other tribal groups. The word ‘community’ should therefore be well thought-out before implementing ICT initiatives in such communities. In addition, unless the government and development agencies take proactive measures to ensure ICTs serve as effective tools for social inclusion and social change, widespread access especially for the poor and disadvantaged will not be attained.
Gender and ICTs
Increasing access and use of ICTs among women has the ability to drive their economic improvement and stimulate broader economic growth. Developers and decision makers therefore need to know what technologies women need in order to increase their economic opportunities. Women must be involved as innovators of the technology and developers of the process to design ICTs that women cannot afford not to use. Gender inequalities in education continue to play a central role in influencing economic advancement among women. Therefore, decision and policy makers need to promote the economic advancement of women by giving equitable opportunities to girls to receive education. Through such efforts, technology can be leveraged in a way that places women on a higher path towards their economic improvement. Further, decision and policy makers need to provide a regulatory environment to encourage business practices that facilitate access and use among women by formulating policies that encourage public, private partnerships for the distribution of ICTs to women.

The use of a woman local ICT champions in Nguruman is particularly needed. She needs to be somebody who understands and supports technology-based solutions, is trusted by the women in the community and shares a vision for the future. The local champion should also play a central role in communication with the women and be an advisor to the telecentre.

Further research on ICT4D
Further research particularly action type of research in ICTs for development is particularly needed in order to provide a platform for engaging communities in implementing change in the access and use of telecentres.

In conclusion, getting the most out of the benefits of ICTs for rural communities is a goal that comes with great challenges and continuous change and learning. Therefore we need to keep in mind that the learning process is an ongoing and dynamic course of action. The lessons brought together in this research study can be viewed as potential contributions to the ICT for development field as well as help new ICT initiatives exert the knowledge of experience on a wider scale.
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menuPK:258649~pagePK:158889~piPK:146815~theSitePK:258644,00.html


Dear Rosabel,

Your file number for this application: 2009-1052
Title: Application of Information and Communication Technologies for development (ICT4D) to rural communities in Kenya a case study of Nguruman Knowledge Centre (CKC), Magadi

Your application for ethics approval has been reviewed by the Unitec Research Ethics Committee (UREC) and has been approved for the following period:

Start date: 24 March 2010
Finish date: 23 March 2011

Please note that:
1. the above dates must be referred to on the information AND consent forms given to all participants
2. you must inform UREC, in advance, of any ethically-relevant deviation in the project. This may require additional approval.
3. approval is conditional on gaining organisational consent from the Not for Profit organisations involved in your research before they participate in the research.

You may now commence your research according to the protocols approved by UREC. We wish you every success with your project.

Yours sincerely,

Lyndon Walker
Deputy Chair, UREC

cc: Helen Connor
Cynthia Almeida
Appendix B

RESEARCH PLAN

Application of Information and Communication Technologies for Development (ICT4D) to rural communities in Kenya a case study of Nguruman Community Knowledge Centre (CKC), Magadi.

Main research question, what is the impact of Nguruman Community Knowledge Centre (CKC) on the daily life of Nguruman community?

Sub-questions include:
1. How is the CKC viewed by the community?
2. What has made the Nguruman CKC the most successful over the other four?
3. Are there any power structures and biases that relate to the use of ICTs within the community (family ties and ownership, governance issues)?
4. Is gender an issue/factor in accessing the CKC?
5. Are there literacies required to access the CKC?
6. What determinants are required to use ICTs (educational background, available help in the CKC, availability of newspapers, among others)?
7. What is the potential of the CKC from a user perspective?
8. Is there a relevant dialogue among development providers and the community, and within the recipient group itself that allows successful implementation of ICTs for development?

Time frame: 1 and 1/2 months

Research team: Researcher, 2 research assistants from community, and World Corps Kenya Magadi officer.

<table>
<thead>
<tr>
<th>Activities/ Methods of data collection</th>
<th>Timeline (2010)</th>
<th>Who will be involved</th>
<th>Documentation</th>
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<td>Meeting with research team</td>
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<td>Field notes, EAR training manual, Research draft and plan</td>
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<td>Collecting secondary data (grey material) and statistical information</td>
<td>June 1 to June 16</td>
<td>UNESCO, Kenya Polytechnic, Catholic University of Eastern Africa, University of Nairobi</td>
<td>Literature review</td>
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<td>Meeting with community leaders</td>
<td>June 21 to June 22</td>
<td>Researcher, World Corps Kenya Magadi officer, Research assistants, Area chief</td>
<td>Field notes, Photos</td>
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<td>Community group</td>
<td>June</td>
<td>Area chief</td>
<td>Field Notes</td>
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<td>Meetings</td>
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<td>Researcher World Corps Kenya Magadi officer</td>
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<td>CKC staff</td>
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**Reflection and interpretation of daily observations and activities**

**Continuous throughout the research study**

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<td>• Community mapping</td>
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<td>Field notes Photos</td>
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**Areas of research (Checklist)**

1. Ngurumani CKC
   - Who uses the CKC (Men, women)?
   - For what purposes (training, business, events planning, notice boards, getting together etc)?
   - When (timing) is it frequently used?
   - How many people come in daily?
   - How many staff are available each day?
What were they saying?
Conversations with some users

**Methods**: Participant observation and detailed field notes on relevant communication and events taking place

2. Ngurumani Community
   - Where is the CKC located in the community?
   - Social and cultural networks and structures that exist
   - Communicative ecology:
     - Mapping social network (people, activities, relationships and ICTs one is linked to on a daily basis) indicating the different kinds of information sought from different people and places
     - Do men and women have different communicative ecologies?
     - What are some of the different factors that place you in different social networks?
     - Why do you think different social networks have different communication processes?
     - Understanding the different communication processes of different social networks
   - How does the community view the Community Knowledge Centre?
   - What has made the Nguruman CKC the most successful over the other four?
   - Are there any power structures and biases that relate to the use of ICTs within the community (family ties and ownership, governance issues)?
   - Is gender an issue/factor in accessing the CKC?
   - Are there literacies required to access the CKC?
   - What determinants are required to use ICTs (educational background, available help in the CKC, availability of newspapers, among others)?
   - What is the potential of the CKC from a user perspective?
   
   **Methods**: Group interviews, in-depth semi-structured interviews, participant observation and field notes

3. Government and NGO/Donor representatives
   - Personal ICT background
   - Involvement with ICT4D
   - Challenges in implementing ICT for development initiatives
   - Success stories of ICTs for development
   - Use of ICTs for effective poverty reduction process
   - Kenya economic growth through ICTs
   - Ways being used to disseminate information for rural development in Kenya
   - ICT-focused development initiatives aimed at preparing rural communities to become a part of the global information society
   - Role of the government in influencing the growth of ICTs for development of rural areas
   - The current state of the ICT policy within the view of rural development
   - Perception of communication in the development process

   **Methods**: In-depth semi-structured interviews

**Cost of research to include:**
1. Travel for researcher from Nairobi to Magadi
2. Accommodation for researcher
3. Admin
4. Equipment
5. Refreshments for participants
6. Communication costs

Appendix C

INFORMATION FOR PARTICIPANTS

Supa, Ta kwenya, Hujambo, Hello!

My name is Rosabel Githinji. I am currently enrolled in the Master of Social Practice degree in the Department of Social Practice at Unitec New Zealand. As part of the program I am undertaking a research to look at the application of Information and Communication Technologies for Development (ICT4D) to rural communities in Kenya a case study of Nguruman Community Knowledge Centre (CKC) in Magadi.

The aim is to look at the impact of the CKC on the daily life of Nguruman community in the view of development. The intent is to interview people using focus groups and face-to-face interviews who can help in generating and ascertaining information on assessing the relationship between the CKC and the community. You may choose to participate in a focus group discussion or face-to-face interviews, or both.

What we are doing

I will first engage with people in as many different situations as possible in the community and CKC through observation. The intention is to look at relevant communication and events/actions related to:

- Who uses the CKC (Men, women)?
- For what purposes (training, business, events planning, notice boards, getting together etc)?
- When (timing) is it frequently used?
- How many people come in daily?
- How many staff are available each day?
- What were they saying?
- Conversations with some users
- Interaction with CKC staff and other users
- Other daily communication practices-information exchanges within the community

During this time I will be able to:

- Know where is the CKC located in the community?
- Know the social and cultural networks and structures that exist in the community
- What kinds of activities the local people engage in (or would like)
• What communication resources are available to them (media content, technologies, skills)
• How they understand ways in which these resources can be used
• Who they communicate with and why

I will use a research diary to take notes and as a reflection tool for interpretation of daily observations and activities. This shall be continuous throughout the research.

With the help of a male and female research assistant from the community, I will be undertaking two focus groups discussions for women of all ages and two focus groups discussions for men of all ages separately lasting 2-3 hours in a familiar, but neutral, quiet meeting places. The discussions shall be conducted when participants are not time-stressed. I will take notes in order to indicate who says what and tape record so as to provide back-up which shall later be transcribed. Where it will not be possible to record, I will have one of my assistants taking notes while I facilitate the interview.

Focus group discussions will be conducted with targeted community groups such as:
- Business owners
- Farmers
- Development workers in the area (Including Health workers)
- Women groups,
- Youth groups
- Teachers
- Other community members

I will also be undertaking twelve interviews with each interview lasting between 35 and 45 minutes. The interviews will be taped to ensure both the researcher and participant concentrate fully however the researcher will take notes in order to note down points that will be useful to expand on. The tapes will later be transcribed to provide back-up to the interviewer’s notes and recall of the interviews. I will ensure that no feature identifies you.

Interviews will be conducted with:
- Community users/non-users of the CKC
- Development organizations involved in implementing and supporting ICT initiatives
- Government representatives

The focus group discussions and face-to-face interviews will be conducted in English and Swahili and translated into Maasai where required. This shall be the role of the research assistants.

The notes taken from the focus groups discussions and interviews will be given to participants for review and confirmation.

When the research is complete a summary of the findings will be given to all participants. Once the draft report of the project had been accepted the tapes will be erased and paper copies of interview notes destroyed. Publication of the findings would also be anticipated.

Consent
Once participants are aware of the content of the research they shall need to give verbal consent and then the research team shall read the forms to them or let them read for themselves. This will ensure that they do not feel intimidated by the structure of the consent forms. Informed consent from all participants ensures confidentiality for the participants and that their data is secure. A copy of the consent form is attached.

At any time if you have any concerns about the research project you can contact Rosabel – 0721 965 338, wgithinji@gmail.com

At any time if you have concerns about the research project you may contact the research supervisors:

Dr Helene Connor - +64 -9-815 4321 extension 5010, hconnor@unitec.ac.nz
Dr Evangelia Papoutsaki - +64-9-815 4321 ext 8746, epapoutsaki@unitec.ac.nz
Sue Elliot - +64 -9-815 4321 extension 5010, sjelliott@xtra.co.nz
selliot2@unitec.ac.nz

Confidentiality

All information collected from you will be stored on a password-protected file and the only people who have access to your information are the researcher and the supervisors.

Ashi oleng, Asante, Thank you!

UREC REGISTRATION NUMBER: (2009 -1052)

This study has been approved by the Unitec Research Ethics Committee from (24 March 2010 ) to (23 March 2011). If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretariat (Ph: 09 815 4321 ext.7254). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Appendix D

PARTICIPANT CONSENT FORM

Application of Information and Communication Technologies for Development (ICT4D) in a rural communities in Kenya a case study of Nguruman Community Knowledge Centre (CKC), Magadi

This consent form will enable the gathering of information to explore the impact of Nguruman Community Knowledge Centre (CKC) on the daily life of Nguruman community.

- I have had the research project explained to me and have read and understand the information sheet provided.

- I understand that my participation is voluntary and I may withdraw my participation or any information I provide within two (2) weeks of completion of the data collection without any sort of penalty.

- I understand that my participation will be confidential and no directly identifiable information about me will be accessible to persons other than the researchers and their supervisor. I further understand that the research data will be stored securely on password protected computer file at Unitec for a period of 5 years.

- I understand that my discussion with the researcher shall be taped and transcribed. The tapes will be erased after they have been transcribed.

- I understand that I can have access to the finished research document in electronic form and by so doing will view the information in confidence.

- I am aware that I may contact the Research Supervisors, Dr Helene Connor +64 -9-815 4321 extension 5010, hconnor@unitec.ac.nz, Dr Evangelia Papoutsaki +64-9-815 4321 ext 8746, epapoutsaki@unitec.ac.nz and Sue Elliot +64 -9-815 4321 extension 5010, sjelliot@xtra.co.nz, selliot2@unitec.ac.nz if I have queries about the project.

- I have had time to consider my participation and hereby give consent to do so.
At any time if you have any concerns about the research project you can contact Rosabel – 0721 965 338, wgithinji@gmail.com

This study has been approved by the UNITEC Research Ethics Committee from (24 March 2010) to (23 March 2011). If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the Secretary (ph: 09 815-4321 ext 8455). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Appendix E

Research Consent letter for use by organizations to provide consent

Organization’s Letterhead

I (name) (position in organization) for (organization) give consent and confirm the support of Rosabel Githinji to undertake research on the application of Information Communication Technologies for Development (ICT4D) to rural areas in Kenya a case study of Nguruman Community Knowledge Centre (CKC).

Rosabel has discussed this project with us and we have seen the documentation relating to it. We are happy to contact some of our partner organizations to see if they would be interested in participating in the research. We understand that consent to be involved is entirely the choice of the partner organization and in presenting the information about the research we would not be putting any pressure on any of our partner organizations to be involved.

If a partner organization expresses an interest in discussing the matter further with Rosabel we will forward their contact details.

The consent is subject to approval of research ethics application no (2009 - 1052) by the Unitec Research Ethics Committee and a copy of the approval letter being forwarded to the organization immediately it is available.

We look forward to seeing a report on the outcome of this research.

Signature: Date:
Appendix F

RESEARCH ASSISTANT/TRANSCRIBER CONFIDENTIALITY AGREEMENT

This study is being undertaken by Rosabel Githinji as part of the Master of Social Practice degree in the Department of Social Practice at Unitec New Zealand. The purpose of the project is to look at the impact of the Nguruman Community Knowledge Centre (CKC) on the daily lives of Nguruman Community. Data from this research may be fed back into the CKC to improve its practices and effectiveness. A final report on the research will be presented to Unitec New Zealand and there will be a publication of the findings through the CKC implementing agency, World Corps Kenya.

Project Title: Application of Information and Communication Technologies for Development (ICT4D) to rural communities in Kenya a case study of Nguruman Community Knowledge Centre (CKC), Magadi

I, _________________________________, the Research Assistant/Transcriber, understand that:

1. I have had the research project explained to me and have read and understand the information sheet provided.

2. I understand that my participation is voluntary and I may withdraw my consent within a period of one (1) week of the training and shall give a notice of four (4) days prior to this.

I agree to:

3. Keep all the research information shared with me confidential by not discussing or sharing the research information in any form or format (e.g., disks, tapes, transcripts) with anyone other than the Researcher.

4. Keep all research information in any form or format (e.g., disks, tapes, transcripts) secure while it is in my possession.

5. Return all research information in any form or format (e.g., disks, tapes, transcripts) to the Researcher when I have completed the research tasks.

6. After consulting with the Researcher, erase or destroy all research information in any form or format regarding this research project that is not...
returnable to the Researcher (e.g., information stored on computer hard drive).

7. The terms and conditions stated above constitute the entire agreement between the parties. This Agreement may not be modified except by means of a written amendment to this Agreement signed by the Researcher and the Research assistant

Research Assistant/Transcriber

(Name)    (Signature)    (Date)

Researcher

(Name)    (Signature)    (Date)

If you have any questions or concerns about this study please contact:
Rosabel Githinji - 0721 965 338, wgithinji@gmail.com or research supervisors:
Dr Helene Connor - +64 -9-815 4321 extension 5010, hconnor@unitec.ac.nz
Dr Evangelia Papoutsaki - +64-9-815 4321 ext 8746, epapoutsaki@unitec.ac.nz
Sue Elliot - +64 -9-815 4321 extension 5010, sjelliot@xtra.co.nz

UREC REGISTRATION NUMBER: (2009-1052)

This study has been approved by the Unitec Research Ethics Committee from (24 March 2010) to (23 March 2011). If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretariat (Ph: 09 815 4321 ext.7254). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Appendix G

INTERVIEW GUIDE FOR THE COMMUNITY USERS AND NON-USERS OF NGURUMAN CKC

Application of Information and Communication Technologies for Development (ICT4D) to rural communities in Kenya a case study of Nguruman Community Knowledge Centre (CKC), Magadi

This interview schedule was developed by the researcher to guide interviews with community users/non-users (including household interviews) and provide a checklist to ensure I cover all the intended areas.

The researcher did not ask all the questions but the aim was to cover the main topics – household, education, employment, development, communication, ICTs use, CKC access and use. Specific questions in each interview were used as prompts.

Household
- Who leaves here?
- What ages are they?
- How are you related?
- How long have you lived in Nguruman

Education
- Have you ever been to school? If not why?
- Have you ever seen a computer? If yes where?
- Do any of your household members use computers? Do you have one? If not where did you/they use it?
- What do you mean by computers?
- Have you ever visited the CKC to use a computer? If yes, for what?
- Do you want to learn computers?
- What do you want to learn in computers?

Employment
- What does each household member do?
- Is it difficult to get a job?
- Are you employed?
- What does your job entail?
- Do you use the CKC to do your job requirements?
- Has it helped you? How?
- Do you have a business?
- What kind of business do you have?
- How long have you had your business?
- Do you use the CKC in the daily activities of your business?
- Have you had any challenges in running your business?
- What are some of the challenges?
- Has your business been successful? If yes, why?
Development

- Do you know what development means?
- Do you consider Nguruman community developed? If yes why? If not, why?
- Do you think the CKC is useful for development?

Communication

- Whom do you communicate with? Why?
- How do you communicate with relatives and friends living nearby or far away?
- How do you send urgent messages?
- Do you have a telephone? If yes, when did you last use it? If no, where did you go to make a phone call? How much did you pay?
- Where do you get information about social events
- How do you get information on what is happening locally, nationally and internationally?
- How do you get information about development, health, education, markets
- Do you buy or pay for them?
- Is it easily available?

ICTs use

- Do you have a radio? Which station do you listen to? How often do you listen?
- What type of programmes do you like?
- Do you have a TV
- What channels do you watch?
- Where and when do you watch?
- Do you have a phone?
- Where do you often make calls and for what purposes?
- Do you know what internet is?
- Have you or your household members used it? Where?
- What do you use it for?
- What do you think of it?
- Do you think computers are useful tools for development?
- Have you used computers for other things for example games?
- Do you think internet is relevant for your daily life?

CKC use

- Have you heard of Nguruman CKC?
- Have you ever been there?
- How did you come to know of the centre?
- What do you think of it?
- Why do you think it is the most successful among the four centres established by World Corps Kenya?
- Do you require literacies to access the CKC?
- Are women and men allowed equal access to the CKC?
- What is the potential of the CKC from your view?

Other demographic information

- Age
- Gender

As the research progresses, the schedule was updated in the light of issues emerging as important to the research (Adapted from Tacchi et al, 2007)
Application of Information and Communication Technologies for Development (ICT4D) to rural communities in Kenya a case study of Nguruman Community Knowledge Centre (CKC), Magadi

Starting questions
1. What is your background?
2. Please tell me when and how your involvement with ICT4D begun?
3. What triggered your interest?
4. Can you tell me about your experiences with ICTs for development initiatives?
5. Can you tell me about some the major challenges you have encountered in implementing ICT for development initiatives?
6. What are some of the success stories of ICTs for development you are aware of?
7. Are there any conditions available that contribute to these successes?

Exploratory questions
1. Can the strategic use of ICTs make poverty reduction process more effective? How or in what ways?
2. Do you think Kenya has made any contribution to economic growth through ICTs? In what ways or how?
3. Are there ways being used to disseminate information for rural development in Kenya? What kind of information is being disseminated?
4. Are there any ICT-focused development initiatives aimed at preparing rural communities to become a part of the global information society you are aware of? Tell me about them.
5. Do you think the government has been able to influence the growth of ICTs for development of rural areas? To what extent?
6. What is the current state of the ICT policy within the view of rural development?
7. In your view to what extent do you see communication as an important factor in development process? Tell me about this.
Appendix I

LOCATING KENYA IN AFRICA

Source: http://vbministries.com/where_we_are2.asp