



The impact of saving with Mobile Money Transfer Technology on the livelihoods of rural wage-earning women: A case study in Maragua District, Kenya

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Submitted as the dissertation component in partial fulfilment of the academic requirements for the degree of Master of Development Studies Graduate Programme in the School of Built Environment and Development Studies

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Now faith is being sure of what we hope for and certain of what we do not see. ~ Hebrews 11:1 NIV

Abstract

Information and communication technologies have been shown to potentially aid in leveraging financial inclusion among low-income groups. This study investigates whether mobile money transfer technologies can be utilised by women in an empowering way within rural agricultural settings. Through a case study focusing on rural women in the agricultural Kenyan context, the research explores whether the savings mechanism offered by mobile money transfer technologies is being utilised. Guided by a qualitative research approach, semi-structured interviews were conducted with 28 purposively selected women in the Gakoigo sub-location in the Maragua district, of Central Province, Kenya, some of whom used mobile money transfer technologies and others who did not. The Choice Framework was applied to the findings gathered in order to provide an in-depth and holistic understanding of how mobile money transfer technologies provided women engaged in rural wage labour access to new financial options. The findings show that some of the choices made by these women, including the usage of both formal and informal savings, complements their current financial practice, as well as the achievements attained as a result of this choice. The study finds that although mobile money transfer technologies do benefit women who make use of mobile savings, pre-existing policies have formed structures within institutions and organisations which do not cater for the needs of rural women. For this reason, these policies prevent women whose livelihoods depend on the agricultural sector from exerting their full potential to use mobile phones as a saving tool. Informal methods of saving, such as Rotating Service and Credit Associations therefore continue to be used as a preferred method of saving amongst these rural Kenyan women.

Declaration

I, Nduta Mbarathi declare that

1. The research reported in this thesis, except where otherwise indicated, is my original research under the supervision of Professor Imraan Valodia and co-supervision of Kathleen Diga.
2. This thesis has not been submitted for any degree or examination at any other university.
3. This thesis does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons.
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Signed

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Acknowledgement

Foremost, I am grateful to God for His Divine Grace, the good health and well-being that were essential to complete this dissertation.

I am most obliged to all my respondents who volunteered to participate in this study in spite of their tight schedules. I am grateful to Lydia Muthoni for her time and assistance in locating the respondents during fieldwork.

I wish to express my sincere thanks to my Supervisor, Professor Imraan Valodia, for his advice and financial assistance as I embarked on this study. I am also grateful to Kathleen Diga, my Co-Supervisor, for mentoring me and sharing expertise on ICTs, as well as the valuable guidance and encouragement she extended to me. In addition, I wish to appreciate her support in co-authoring part of this research which has been published in the SSRN journal, and accepted for publication in ITID special issue 2015 (Publication still pending).

I wish to thank the following teams and organisers of the following conferences for selecting my abstracts for presentation: IPID conference 2013, Cape Town, South Africa; CPR South Young Scholars Programme 2013, Mysore, India; and CPR South Conference 2014, Johannesburg, South Africa. My sincere regards to the Judges of CPR South 2014 for selecting our paper for publication in the ITID special issue 2015 (publication still pending). Thanks to IT for Change Inclusion Roundtable in Bangalore, India. I am also sincerely grateful for Professor Timothy Waema of the University of Nairobi for his input into this study during the CPR South 2013 Young Scholars Conference.

I take this opportunity to express gratitude to the School of Development Studies for giving me the chance to pursue my Masters Degree. I also wish to thank my former lecturers and support staff in the school. I wish to particularly thank Mrs Catherine Sutherland for spearheading the Masters forum, which was very helpful while undertaking this research. I am also grateful to all my friends in Durban, Kenya, South Sudan and the United States and beyond, for their valuable friendship and support during the highs and lows of this academic journey.

Last, but not least, I would like to thank my family, especially my late father, Charles Muita Mbarathi, who encouraged me to work hard and never give up. I would like to sincerely

thank my mother Lydia Nge'ndo Mbarathi, who not only encouraged and motivated me during the course of my studies, but also helped me contact respondents and to translate the semi-structured questionnaire to Kikuyu. I am also grateful to my brothers Mbarathi, Njoroge and Ndung'u for their sense of humour and moral support, which kept me going. I would also like to acknowledge my extended family and family friends for their prayers and support. I wish to sincerely thank Mrs Nondumiso Shangase for embracing me like her own daughter whilst in South Africa. Finally, I wish to acknowledge Noel and Charlene Walker for taking their time to orient me upon my arrival in Durban.

I thank you all! Blessings abound!

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Acronyms and Abbreviations

ASDS:	Agricultural Sector Development Strategy
CA:	Capability Approach
CBK:	Central Bank of Kenya
CDF:	Constituency Development Fund
CF:	Choice Framework
CTICT:	Critical Theory for Information and Communication Technologies
DFID:	Department of International Development
FAO:	Food and Agriculture Organisation of the United Nations
FEMNET:	African Women's Development and Communication Network
GDP:	Gross Domestic Product
GoK:	Government of Kenya
ICT4D:	Information and Communication Technologies for Development
ICTs:	Information and Communication Technologies
IMF	International Monetary Fund
ITU:	International Telecommunications Union
KIPPRA:	Kenya Institute for Public Policy Research and Analysis
KSH:	Kenya Shillings
MDG:	Millennium Development Goal
MMT:	Mobile Money Transfer
MNO:	Mobile Network Operator
M-PESA:	'M' for Mobile and 'Pesa', a Swahili word meaning Money
MSO:	Mobile Service Operator
MVNO:	Mobile Virtual Network Operator
P2P:	Person-to-Person
PIN:	Personal Identification Number
ROSCA:	Rotating Service and Credit Association
SAPs:	Structural Adjustment Programmes
SIM:	Subscriber Identity Module
SLF:	Sustainable Livelihoods Framework
SMS:	Short Message Services
UKZN:	University of KwaZulu-Natal

UNDP: United Nations Development Programme
USD: United States Dollars
WB: World Bank
WIZZIT: A telecommunication provider based in South Africa that provides banking services using a mobile phone

Chapter 1: Introduction

1.0 Introduction

The growth and uptake -universal spread and assimilation- along with the adoption -usage- of Information and Communication Technologies (ICTs) has played a considerable role in the transformation of social, economic, and political development in low-income countries (African Women's Development and Communication Network [FEMNET], 2002; May, Waema & Bjåstad, 2014; May & Adera, 2011). ICTs, such as mobile phones, have contributed towards promoting economic growth and employment creation through the generation of business opportunities and the provision of cheap financial services for the unbanked - those with no access to banking services (Elder, Samarajiva, Gillwald & Galperin, 2013; Kiiti & Mutinda, 2011; Plyler, Haas & Nagarajan, 2010). The rise and uptake of these technologies has been cited as a viable means for developing countries to ascend into higher stages of development (May *et al.*, 2014). While research on uptake and use of ICTs has been carried out, there have been few empirical investigations into the impacts, value and usage of mobile telephony in human development, particularly among low-income groups (Mbiti & Weil, 2011; Toyama, 2012). Currently, evidence-based studies that examine the effects of ICTs on the poor in developing countries are mainly descriptive, and the majority of these studies lack conceptual and theoretical frameworks that can assess the impacts of ICTs in society (Duncombe & Boateng, 2009; Heeks, 2010).

The overall aim of this study was to explore how poor rural women use mobile money transfer (MMT) technologies to save. The findings of this qualitative study were analysed using the Choice Framework (CF) developed by Kleine (2013). The CF was useful for this study because it helped the researcher to systematically analyse how and why the respondents choose to utilise mobile phones as a saving tool, which fulfilled the main purpose of the analysis, which was to establish how the poor utilise these forms of technologies.

This introductory chapter begins with the background to the research problem and also presents a brief overview of MMTs such as M-PESA (where 'M' stands for mobile and '*pesa*' is a Swahili word meaning money). Thereafter the impact of policies and external shocks on rural women and how they manage to recover from these shocks through informal saving methods such as Rotating Service and Credit Associations (ROSCAs) will be discussed. Lastly, this chapter will provide a brief explanation of the research objectives, design, theoretical framework and the methodology

employed in the study. The chapter will conclude with an outline of the subsequent chapters of the dissertation.

1.1 Background of the Problem

ICTs, such as mobile phones, are recognised as devices that can potentially aid in leveraging financial inclusion among low-income groups, especially poor women in rural areas (Morawczynski, 2009). Existing trends in Kenya, for example, show an increase of mobile phone uptake since the launch of MMTs such as M-PESA. M-PESA is a service which offers mobile money transfer services to its customers. This service was launched in 2007 by one of Kenya's leading mobile network operators, Safaricom. M-PESA operates by enabling person-to-person (P2P) transmission of money into another user's account through Short Message Services (SMS) (Flores-Roux & Mariscal, 2010; Mas & Morawczynski, 2009; Morawczynski, 2009).

This MMT allows customers to pay bills, buy airtime and deposit, withdraw and send money to other users using a mobile phone. Furthermore, M-PESA allows users to convert virtual currency into hard cash by visiting easily accessible M-PESA agents (Flores-Roux & Mariscal, 2010). The number of mobile service operators (MSOs) in Kenya who offer MMT services has grown. MSOs in the region include the following: Orange Money; Airtel Money; Tangaza; Mobikash; and most recently, Equity Bank, which has been licenced as a Mobile Virtual Network Operator (MVNO) (Okuttah, 2014). Currently, M-PESA still dominates the Kenyan market with over 14 million active M-PESA users (Mas & Morawczynski, 2009; Safaricom, 2013). Previous research demonstrates that the use of these technologies has helped in extending financial services to the unbanked (Morawczynski, 2009a; Morawczynski & Pickens, 2009).

MMTs have also become a potential means to facilitate financial access for the poor (Aker & Mbiti, 2010). However, very few studies examine the impacts of these technologies among poor women, especially those whose economic lives depend on agriculture. This research therefore attempts to address this gap by focusing on how rural women in Kenya use MMTs to save.

1.1.1 Context of Research Area: Structural Adjustments and its Impacts on Women and the Rural Economy in Kenya

Currently 70 per cent of people living in rural areas source their livelihoods from the agricultural sector. A study on division of labour within the agricultural economy by Boserup (1970) found that women play a pivotal role in food production in the agricultural workforce and within their households. According to the Food and Agriculture Organisation [FAO], (2011), 43 per cent of women in low-income countries worldwide are employed in the agricultural workforce.

The agricultural sector in Kenya is regarded as one of the main contributors of revenue to the national economy, with a Gross Domestic Product (GDP) contribution of 26% per cent (Kenya Institute for Public Policy Research and Analysis [KIPPRA], 2013). Despite the fact that the sector is a major economic earner, the agricultural sector is largely at the commercial scale and has yet to tap into the potential of small-scale farming (Emongór, n.d.). Currently, the sector faces various challenges, inter alia, erratic weather patterns that have been triggered by the effects of climate change (Emongór, n.d.). Furthermore, other external global effects such as the oil shocks in the 1970's and the global economic crisis in 2008 continue to impact on the sector (Mwega, 2009; Owuor, 2012; Rono, 2002). In addition, the impacts of previous policies such as Structural Adjustment Programmes (SAPs) from the late 1980's continue to have a significant impact on the agricultural sector in Kenya (Rono, 2002). Below a brief overview of the impacts of SAPs on women working in Kenya's agricultural sector is provided.

The terms and conditions imposed through the implementation of SAPs required that the Kenyan government cut back on its expenditure in agriculture to allow for loan repayments to the International Monetary Fund (IMF), World Bank (WB) and privatised government institutions, and also to reduce market tariffs in order to increase efficiency and stimulate long-term economic growth (Hewitt, 2000; Sparr, 1994). As a result, the supply of agricultural inputs and extension services that previously benefited farmers was affected (Hewitt, 2000; Sparr, 1994). According to Sparr (1994), SAPs, to a large extent, had a negative impact on the majority of people who depend on agriculture as their source of livelihood. The majority of this negative impact was directed at women, who play a significant role engaging in both farm activities as well as unpaid work within their households. For example, the implementation of SAPs ignored the critical role that women played in food production (Due & Gladwin, 1991; Elabon-Idenudia, 1991; Ongile, 1999; Pearson, 1992). As an illustration, women's labour was exploited particularly in the coffee export business where women, despite contributing their labour in sector, did not fully benefit from the incomes earned from the cash crop economy (Brownhill, Kaara & Turner 1997; Lahiri-Dutt, 2012; Ongile,

1999). In general, previous studies show that even though SAPs had positive impacts in some countries, the negative impacts that these programmes had on other developing nations overshadow the advantages. Furthermore, the most affected by these policies were largely rural women in agriculture (Due & Gladwin, 1991; Sparr, 1994). Nevertheless, the agricultural policies, which resulted in low returns from agricultural activities continue to persist, hence, making it difficult for women to utilise MMTs to save.

To date the Government of Kenya (GoK) has taken major steps in setting up mechanisms which work towards reviving the rural economy. To achieve this, the GoK has designed a National Plan, the 'Vision 2030', which aims to increase economic growth in the country and is also aligned with the objectives of the Millennium Development Goals (MDGs). In addition, the current Constitution of Kenya (2010) requires that the national government decentralise its powers - both executive and legislative powers - to the 47 counties in the country (The Laws of Kenya, 2010). This is in accordance with enabling the equal distribution of resources in each county, with the intention that previously marginalised Kenyans are granted better local access to essential services such as basic health, free education, and access to water and sanitation. In addition, the law endeavours to foster local participation as well as promote accountability in government-initiated programmes/projects, which aim to promote development (The Laws of Kenya, 2010).

Previous studies demonstrate that poor agricultural policy in Kenya fail to consider the role of smallholder farmers that further on their livelihoods (Alila & Atieno, 2006). This has changed since the Ministry of Agriculture developed the Agricultural Sector Development Strategy (ASDS) (2010-2020), which aims to revive the sector by improving rural infrastructure and increasing rural incomes (GoK, 2010). While these new policies have been implemented, progress in improving and reviving the agricultural sector in rural areas is yet to be realised. More specifically, Kenyan citizens are still awaiting the creation of laws and regulations which benefit farmers, particularly those in the small-scale sector, most of whom are women. In spite of these weak policies, women in rural areas have managed to find ways of dealing with the day-to-day economic challenges that emanate from weak agricultural policies by forming informal groups such as ROSCAs which will briefly be examined in the following section and further elaborated upon in Chapter Four.

1.1.2 Women's Resilience through Informal Financial Services: Rotating Service and Credit Associations

Poor women in rural areas who lack formal banking services resort to informal saving methods such as ROSCAs (Fonchingong, 1999). ROSCAs mainly consist of members of a group - in most cases linked through pre-existing social connections - who contribute and pool money. Each member benefits from the aggregate fund in turns. More specifically, once a cycle of the distributed funding reaches each member, and thus ends a full rotation amongst the group, the group can then decide whether to re-start another cycle of saving (Anderson Baland & Moene, 2009; Collins, Morduch, Rutherford & Ruthven, 2009). Thus far, this mode of saving is still common among low-income groups.

ROSCAs are a vital means of financial security among the poor, particularly among small-scale farmers, many of whom do not have access to financial services (Fonchingong, 1999; Klonner, 2013). Community self-help groups such as ROSCAs have helped women respond to risk by allowing them to gain economic independence, as well as giving the same women a means to network, share knowledge and exchange ideas around cash flow management (Collins *et al.*, 2009; Fonchingong, 1999; Klonner, 2003). These types of financial management tactics enable them to cater for their life cycle needs, such as smoothing consumption and cushioning them from potential future risks and hazards (Collins *et al.*, 2009; Klonner, 2003). Furthermore, several studies demonstrate that saving through the use of ROSCAs plays a significant role in instilling financial discipline among members, which fosters better financial management (Gugerty, 2007; Rutherford, 1999). However, this is mainly dependent on the income flow and thus this aspect of discipline may not be feasible in instances when the income is irregular (Rutherford, 1999). These informal financial arrangements, along with other community strategies, have assisted rural women to cope with daily life when institutional structures have failed to deliver on public services, extensions services and social welfare assistance.

Recent studies demonstrate that the challenge of being formally unbanked has narrowed due to the rise of mobile money in developing countries (Duncombe & Boateng, 2009; Kirui, Okello & Nyikal, 2012; Morawczynski, 2009b). The rapid uptake of mobile phones has had transformational impact in most poor countries, making it possible for the unbanked to access financial services using a mobile phone, especially where formal banking services are inaccessible (Diniz, Albuquerque & Cernev, 2011; Jenkins, 2008; Porteous, 2006). However, the magnitude of the impact of mobile money on unbanked women whose livelihoods depend on agriculture has been under-researched in the Kenyan context. This study therefore seeks to address this gap by developing an understanding of how women engage in agricultural wage labour access and use MMT technology services.

1.2 Theoretical Framework

The researcher applied the Choice Framework (CF), which was developed by Kleine (2013) in this study. The CF combines various conceptual frameworks such as the empowerment framework by Alsop and Heinsohn (2005) and the Sustainable Livelihoods Framework, a concept developed by the United Kingdom's Department of International Development (DFID) (1999). Using technological innovation as the central focus, Kleine (2013) consolidates the elements of availability, affordability and skills required to operate a device within Gerster and Zimmermann's (2003) scope of the extent to which an individual can access the technology. These conceptual frameworks draw on Sen's Capability Approach (CA), whose idea of development places emphasis on the opportunities people have that allow them to lead the lives that they would have reason to value (Sen, 1999). Kleine (2013) argues that an individual's choice constitutes the elements of availability, affordability and skills, and that these elements can influence the usage of available technologies. Since an individual's ability to access various resources varies from person to person, the CF was found to be useful because it helped the researcher to develop an understanding of how the respondents in this study were able to access and use mobile phones to accomplish their economic needs. The CF also helped in discerning how existing structures and policies promote or hinder the respondents from achieving their aspired needs.

1.3 Research Problems and Objectives: Key Questions to be Asked

This research aims to examine how saving money through using mobile money transfer systems such as M-PESA impacts on the livelihoods of women engaged in agricultural wage labour.

The objectives of the study are:

1. To understand how saving using MMTs has impacted on the livelihoods of poor women in rural Kenya; and
2. To examine how the use of MMTs helps women cope with day-to-day challenges and risks and how this form of savings impacts on these challenges and risks.

The research attempts to answer the following questions:

1. Do women use MMT technologies in Maragua?
2. What factors determine whether or not women access this technology?
3. Why do women who are engaged in agricultural wage labour use MMT technologies to save?
4. What challenges do women engaged in agricultural wage labour face when using MMT technologies?
5. How has saving through MMT technologies enabled women engaged in agricultural wage labour to have better access to assets that can enhance their livelihoods?
6. How has saving using MMT technologies impacted on the livelihoods of women who engage in rural agricultural wage labour?

1.4 Methodology

This study was designed as a qualitative study conducted in the Maragua district, Gakoigo sub-location, in Central Province Kenya. The purposive sampling method was applied. The respondents for this study were selected using the snowball sampling technique and data was collected using a semi-structured interview schedule. This method was found to be vital because it enabled the researcher to build rapport with the respondents who subsequently identified other respondents who could participate in the study. Data analysis was executed using Microsoft Excel and NVIVO. A detailed discussion of the methodology will be elaborated further in Chapter Three.

1.5 Thesis Structure

The thesis is divided into five chapters. Chapter One, the introduction, has raised critical aspects which are connected to the background of the study. Chapter Two will provide an explanation of the theoretical framework, the CF, which was applied in the study. The CF will guide the study in establishing whether the development outcomes among both MMT users and non-users have been attained. It will also be employed to analyse how access, availability and affordability of

technologies such as MMTs impact on choice among the research group, as well as how existing structures from the macro, meso or micro-level enhance or hinder their capabilities towards attaining the lives they value. Chapter Three will present a detailed literature review that will focus on the growth and existing debates regarding uptake and adoption of ICTs in developing countries. The chapter will also highlight how ICTs, such as mobile phones, have been innovatively used to provide banking services to the poor with the goal of improving their well-being. Chapter Three further proceeds with a brief overview of the impact of mobile phone banking specifically in Kenya, the country of focus for this study. Chapter Four highlights the methodology that was employed during the investigation. It will outline and justify the research process, the research instruments and data analysis used during the qualitative study. Subsequently, Chapter Five will present the key research findings that were obtained from the study. Primary findings demonstrate that the uptake of MMTs among the unit of study - MMT users and non-users - was mainly based on age and level of education. Chapter Five further outlines how the unit of study combined saving methods using both MMTs and informal saving methods such as ROSCAs to achieve their livelihood objectives. The thesis concludes with Chapter Six, which provides a comprehensive discussion of the main themes that emerged from the findings. The research findings are discussed in relation to the findings of previous studies considered in the literature review. Conclusions based on the findings emanating from the application of the CF and Sen's CA will finally be drawn in Chapter Six.

Chapter 2: Theoretical Framework

2.0 Introduction

This chapter will highlight the components of the CF and explain the framework's usefulness as a theoretical tool. The framework is based on Sen's CA, which predominantly focuses on an individual's needs and values. The CF incorporates ideas regarding empowerment developed by Alsop and Heinsohn (2005), including the fundamental components of DFID's (1999) Sustainable Livelihoods Framework. These ideas are fused together in a comprehensive framework which guided this study and enabled the researcher to evaluate and understand the processes that influence rural women to choose MMTs as a means to save their incomes. The CF was deemed suitable for this study because it enabled the researcher to employ a holistic and analytical approach in conducting the research, which was people-centred. It also allowed the researcher to focus on people's choice in a systematic manner (Kleine, 2012). The framework was used in this study to assist in providing an in-depth understanding of how women in rural areas choose to use MMTs as a strategy to reach certain development outcomes. These choices are based on their varying degrees of empowerment. Within a certain empowered state, the women can effectively use their resource portfolio to assist them in reaching their intended outcomes. This framework allowed the researcher to identify existing interrelationships that guided the analysis of the significance of MMTs and their impact on the livelihoods of women in rural agricultural areas. The chapter begins with a consideration of the CA and how it has been operationalised in previous studies, after which the CF will be discussed.

2.1 The Capability Approach

It has been two decades since Amartya Sen, a 1998 Nobel Prize winner in economics, developed the CA as an alternative practice for assessing development. According to Sen (1999, p.3), "development is a process of expanding the real freedoms people enjoy to lead the lives that they value". The CA is represented as an economic model, which primarily focuses on the individual's freedoms and abilities to make choices, enabling them to improve their well-being (Sen, 1980). For the most part, this approach has drawn popular interest from researchers, government and

development agencies (Robeyns, 2005). As a result, the CA has been applied on numerous occasions for assessing human development projects, policy evaluation, cost-benefit analysis, as well as to effectively analyse the well-being of people within various social structures (Clark, 2005; Kleine, 2008; Robeyns, 2005).

The CA consists of two main concepts: 'functionings' - beings and doings - and 'capabilities' - opportunities and freedoms - which both act as a means of fulfilling an individual's purpose (Robeyns, 2006). Sen (1999) implies that functionings are based on an individual's choice to choose a life that they value. This aspect of functionings is elaborated further by Crespo (2008), who classifies functionings into two components namely elementary functionings and complex functionings. Elementary functionings, according to Crespo (2008), mainly focuses on human basic needs, which are vital to an individual, for example, being in good health and receiving sufficient nourishment. On the other hand, complex functionings are mainly associated with subjective well-being, for example, an individual's happiness, esteem and participation within a community. Such non-material aspects - happiness and respect - cannot be measured (Crespo, 2008).

Capabilities, on the other hand, refer to the means and ways a person realises functionings, based on actual opportunities or freedoms that are available to them (Robeyns, 2006). Capability is dependent on whether a person has access to these opportunities and freedoms, which can allow them to achieve the life that they value (Robeyns, 2006). According to Sen (1999), individuals possess the freedom of choice, which is pertinent to achieving essential functionings and capabilities and can allow them access to available opportunities which they value.

Figure 1 below provides a description of the components of the CA, which must be accessible to an individual so that they are able to achieve the lives they value. The illustration attempts to unpack how an individual uses resources to achieve functionings and capabilities, and how these components then contribute towards the development outcomes a person wishes to attain.

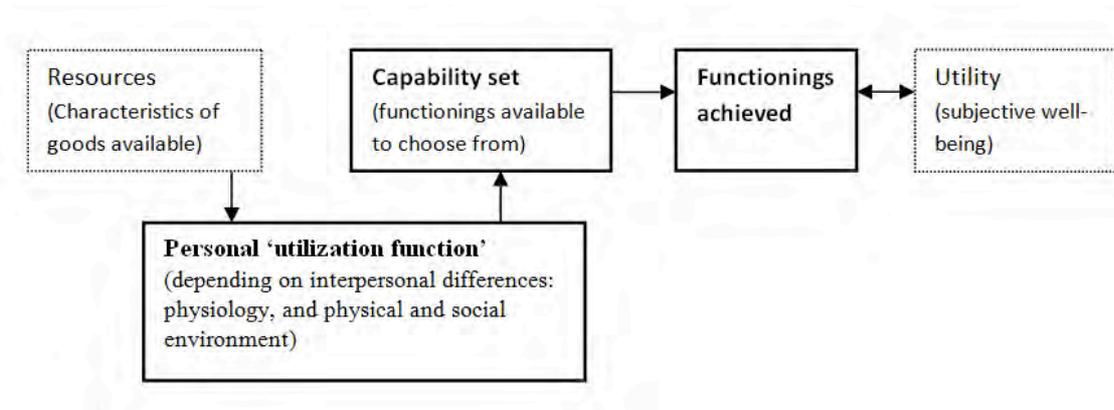


Figure 1: Conceptualising Functions and Capabilities in the Capability Approach (Source: Wells, 2014)

Within the context of the CA, resources are characterised by an individual’s ability to access and benefit from goods and services available to them (Subramanian *et al.*, 2013). Therefore Sen (1973) argues that the achievement of improved well-being of an individual should be defined based on the resources which a person considers accessible and of value, and should not be based solely on economic indicators such as income, material wealth, consumption flows and job security. Robeyns (2003a) suggests that an individual’s resources should be considered as a measure of the degree to which their income and resource portfolio enhances their well-being. For that reason, it is critical for an individual to benefit from their existing resource portfolio (Robeyns, 2013).

A person is able to convert accessible resources into achieved functionings, which are built within a capability set (Wells, 2014). The capability set is made up of a set of valuable functionings to which an individual has access (Wells, 2014, para. 19). Depending on their needs, these choices can successively lead to the strengthening of an individual’s well-being (Crespo, 2008; Robeyns, 2003a). The capability set makes it possible for a person to make choices that will lead towards the achievement of functionings. Sen (1992) uses an illustration of hunger to explain two scenarios within which an individual can choose to utilise their capability set. First, a person may be hungry because they cannot access food as result of a famine; they have no capability to access food. On the other hand, a person may choose to be hungry in order to fulfil religious obligations by abstaining from food. The former has no capability to access to food and is starving, and therefore can be referred to as genuinely hungry. In contrast, the person who is fasting has an opportunity or capability to access to food, but chooses not to eat due to religious reasons (Sen, 1992). The exemplification of hunger demonstrates that functionings and capabilities are inherently

interrelated, but on the other hand may also be divergent within the CA depending on a person's capability set (Clark, 2005).

Altogether, the outcomes derived from achieved functionings are transformed into utility. Utility, in the CA, refers to the output - achieved functionings - which are determined by the choices that people make. These choices lead to an individual achieving subjective well-being, along with personal satisfaction and contentment (Alkire, 2008; Robeyns, 2003a; Wells, 2012). It is however important to note that the expansion of an individual's freedom is feasible only if existing social, economic and political institutions are fused and aligned towards expanding the individual's freedom, which will further lead towards transforming and sustaining their well-being (Magsino, 2010). This makes the CA an appropriate framework in this study that will serve as a way of understanding the existing interrelationships between people's freedoms and capabilities that motivate them to achieve the lives they value.

2.1.1 Strengths and Weaknesses of the Capability Approach

Robeyns (2003a) highlights three major strengths of the CA based on an analysis of gender inequalities in developed countries. Firstly, Robeyns (2003b) describes the CA as a people-centred approach where the individual is considered as the sole agent of facilitating development. In the same way, the individual is in control of the freedoms that they have, which then allows them to choose and achieve the life that they value (Clark, 2005; Kleine, 2013). This concept of freedom is contrary to the common methods of measuring an individual's well-being that apply only economic indicators, such as income and wealth (Robeyns, 2003b).

Secondly, the CA takes a humanistic approach that broadens the view of an individual's role and examines their ability to convert resources depending on both market and non-market conditions (Robeyns, 2003a). Robeyns (2003a) critiques other frameworks and models from a gender standpoint, arguing that most inequality assessments are distinguished based on the market economy, and hence focus mainly on a person's income or their type of work. As a result, these assessments overlook the non-market settings, such as gender-ascribed roles and the work associated with these roles, which to a great extent can influence a person's well-being. For example, women largely engage in unpaid work like caring for children and the elderly, while at the same time managing the household (Gladwin, 1991; Sparr, 1994). They are also able to form supportive networks although they may be susceptible to domestic violence (Robeyns, 2003a). The

humanistic approach, according to Robeyns (2003a), allows these factors to be taken into account and to assess the impact of these in non-market settings. An individual's context, which exists within market and non-market settings, can influence their functionings and capabilities, and hence the CA is cited as a useful framework, which can help to assess the latter (Robeyns, 2003a). The CA can help in assessing the dimensions of an individual's well-being by unravelling existing economic and intra-household inequalities that are normally omitted during assessment (Robeyns, 2013a; Smith, Spence & Rashid, 2011).

Lastly, the CA is a strong approach for recognising individuals as a heterogeneous entity. People come from different backgrounds and possess different potentials within different environments. As postulated by Sen (1992, p.xi):

Investigations of equality – theoretical as well as practical – that proceed with the assumption of antecedent uniformity . . . thus miss out on a major aspect of the problem. Human diversity is not a secondary complication (to be ignored or to be introduced ‘later on’); it is a fundamental aspect of our interest in equality.

The CA takes into account the heterogeneous nature of an individual in terms of race, biological differences, gender, geopolitical environment and physical disabilities. The approach has been acknowledged by researchers for its flexibility as well as the multidisciplinary attributes, which can allow for an evaluation of individuals within diverse environments (Clark, 2005). Contrary to the welfarist approach, which observes people as a homogenous entity, the CA shows how the attributes of heterogeneity influence the choices that people make when converting resources to their intended aspirations (Oosterlaken, 2009; Robeyns, 2003b). In essence, the CA does not take a ‘one size fits all’ stance. The strengths of the CA include looking beyond standard economic indicators of measuring well-being, and taking into consideration the holistic and heterogeneous nature of the individual. This subsequently enables an explanation of the existing inequalities, depending on the distinct environment within which a person exists, to be developed (Robeyns, 2003b; Wells, 2014). Altogether, the holistic approach that the CA takes towards recognising the freedom an individual possesses is inclusive of their diverse backgrounds, and the CA can therefore be acknowledged as an appropriate method of evaluating an individual's well-being.

The CA nevertheless has two weaknesses highlighted by Robeyns (2003a) and Kleine (2013). To begin with, Robeyns (2003a) argues that the CA is not specifically applicable to programmes which assess issues of gender inequality. Robeyns (2003a, p.67) contends that Sen's primary focus on an individual's capabilities can be inaccurate when measuring inequality within a gendered context, because it will culminate in “androcentric interpretations and applications” Robeyns (2003a, p.67).

That is to say, analysis for the most part is focused on men, which can consequently affect the outcomes. As an illustration, Robeyns (2003a) refers to gender discrimination, which exists within the current market systems, and social structures that can influence gendered preference as a consequence of the socialisation process. These circumstances, in turn, can reduce a person's capabilities, and further affect their access to capability sets. To avoid gender bias, Robeyns (2003a) suggests three methods of applying the CA when assessing gender inequality namely: 1) selecting the appropriate capabilities which are applicable to gender inequality; 2) determining whether to focus on capabilities or functionings; and lastly, 3) establishing how to analyse gender inequality based on capabilities and functionings.

Another weakness in terms of operationalising Sen's CA is that it is too complex to apply on its own (Clark, 2005; Kleine, 2008). Kleine (2008) posits that there is a need to strengthen the approach and to incorporate it with other relevant frameworks and theories in order to make it usable depending on the aims of the particular study in which it is applied. However, Robeyns (2003a, p.67) argues that attempting to include other social theories to operationalise the CA may be biased in terms of race, sexual identity, gender and cultural bias and may thereby interfere with the analysis of the CA. Undoubtedly, in spite of these weaknesses, the CA still remains a suitable approach, which can provide guidance in understanding how human capabilities can lead to development and improve people's livelihoods.

2.1.2 Studies that Operationalise the Capability Approach on the Impacts of ICTs among Poor Communities

The purpose of employing the CA in this study was because it was found to be appropriate in assessing poverty in terms of well-being, instead of in terms of income and wealth (Robeyns, 2003b). Equally, the CA can be used as a framework to analyse the impacts of poverty and inequality. More specifically, the approach can be used for conventional purposes such as conducting a cost benefit analysis for a project (Robeyns, 2006). In addition, the CA can be utilised by governments and non-governmental organisations as a guide in policymaking and can be used to regulate and promote social and political ethics in both developed and developing countries. Finally, the CA can be applied and put into use in various studies, and some of its principles have been developed and adopted by governments to design regional and national policy (Gasper, 2006). An example of this is the United Nations Development Programme (UNDP) which has adopted the CA in the development of the Human Development Report (Robeyns, 2006).

The CA has been applied in several scholarly studies to assess the impacts of ICTs in development (Gigler, 2004; Kleine, 2013; Smith *et al.*, 2011; Vaughan, 2011; Zheng and Stahl, 2010). Gigler (2004) employed the CA to evaluate the impacts of ICTs in Latin America. The study demonstrated that ICTs do indeed improve the capabilities of the poor. ICTs were shown to enable people in Latin America to enhance their livelihoods by gaining new skills, as well as to enable the poor to actively participate in matters pertaining to their social and political lives. However, Gigler (2004, p.32) concedes that there was no direct causal relationship between ICTs and poverty reduction. Gigler (2004) infer that acquiring ICT skills empowers people and raises self-esteem - subjective well-being - giving people a sense of accomplishment. Finally, Gigler (2004) posits that ICT programmes that focus on empowering people should be built with the existing structures in mind, and with a primary focus on the existing indigenous knowledge.

Smith *et al.* (2011) in their study carried out an assessment of previous studies to establish how the use of mobile phones has expanded human capabilities. The study findings demonstrated that mobile phone usage plays an essential role in transforming people's capability sets, and thus, the devices have enabled people to access more resources and opportunities that were previously non-existent. Smith *et al.* (2011) assert that mobile phones can expand human capabilities by enhancing social, economic and political control among poor and disadvantaged groups. Nonetheless, they argue that the impacts of technology can be both positive and negative, although the positive impacts of technology that enhance human capabilities surpass the negative impacts. In summary, technology is useful in society because it not only enhances communication and connectedness but also increases economic benefits to poor communities by extending access to financial services, for example, banking the unbanked (Smith, *et al.*, 2011).

Zheng and Stahl (2010) assert that employing the CA can help augment Critical Theory for Information and Communication Technologies (CTICT). Zheng and Stahl (2010) describe the CA as a theory which can be a means of improving social reality. CTICT can help to understand the concept of enhanced empowerment with the aim of gaining a broader understanding of how technology can be used as a means of expanding human capabilities. Both the CA and CTICT have a common feature, which is the focus on enhancing human empowerment. However, applying Critical Theory helps in the analysis process because the approach pays close attention to the existing policies, regulations and existing designs, which determine the equal distribution of ICTs. At the same time, the CA can guide a study in terms of assessing the potential of ICTs as a means to promote human development and to determine the contribution of ICTs towards realising development outcomes.

According to a case study analysis on the role of Information and Communication Technologies for Development (ICT4D) within a community context of Aborigine communities, which employs the CA, Vaughan (2011) found that ICT initiatives that took into account the needs of the communities flourished in their outcomes, compared to projects which did not. Vaughan (2011) established that the projects which flourished were of significant value to the community because the existing ICTs were connected in order to address the community's history and culture. Vaughan's (2011) findings suggest that operationalising the CA should take a collective and bottom-up stance in order to unravel the potential capabilities which can be beneficial to communities. For this reason, the CA is a viable approach that can guide governments and policymakers to execute sound policies, which will be beneficial to the general population (Vaughan, 2011).

Kleine (2008) asserts that using the CA can be useful when combined with other theories. Kleine (2008) goes further to operationalise these combined theories into a revised framework called the Choice Framework (CF). The CF is defined within Sen's concept of development. Sen considers development to be obtained from individual freedoms, and not within the confines of economic growth. Operationalising Sen's CA on its own can make it difficult to analyse contexts and situations critically, and it is therefore necessary to incorporate a framework like the CF to reinforce practicability (Kleine, 2008). Kleine (2013) applied the CF in her ethnographic study, which assessed the government's process in implementing ICT policies in Latin America. More specifically, the study examined how telecenters have benefited the micro entrepreneurs in rural Chile to help them realise their valued functionings. Kleine (2013) applied the CF to determine how people make choices towards Internet use in respect to specific contexts.

In this chapter, Sen's CA and Kleine's (2013) CF are examined to establish if and to what extent women in rural areas utilise MMTs to save their incomes. Sen (1980) emphasises that existing structures should create an environment that can make it possible for individuals to make useful choices that will be beneficial towards improving their livelihoods. Kleine's (2013) CF will be used to operationalise the CA in this study. A consideration of the CF will assist in establishing how the existing structures and policies in Kenya enable or prevent the use of MMTs among low-income groups - with specific reference to women - and will also assist in determining the extent to which these technologies are contributing towards improving their livelihoods. The following section will provide a detailed description of the CF, which is also applied in this study.

2.2 The Choice Framework

The CF comprises six major components namely: Achieved Functionings; Development Outcomes; Degrees of Empowerment; Capabilities; Structure; and Agency. To administer the CF, Kleine (2013) proposes that the analytic process should begin by examining the Achieved Functionings and that the CF components should then be evaluated proceeding backwards. The arrows in Figure 2 below indicate how these components are connected. This process helps in determining the aspect of choice and capabilities that an individual possesses as well as in establishing how a person's capability set influences choice within existing structures (Kleine, 2013). This operation starts by analysing how an individual realises their development outcomes. As seen in Figure 2 below, freedom of choice is the primary outcome along with other secondary outcomes, which are socially or financially related. The analysis then proceeds to the left with the aim of determining the degrees of empowerment. Degrees of empowerment are characterised by an individual's choices, which also enable them to advance towards their achieved functionings. These are driven by the existing degrees of empowerment, which serve as a representation of their capabilities (Kleine, 2013).

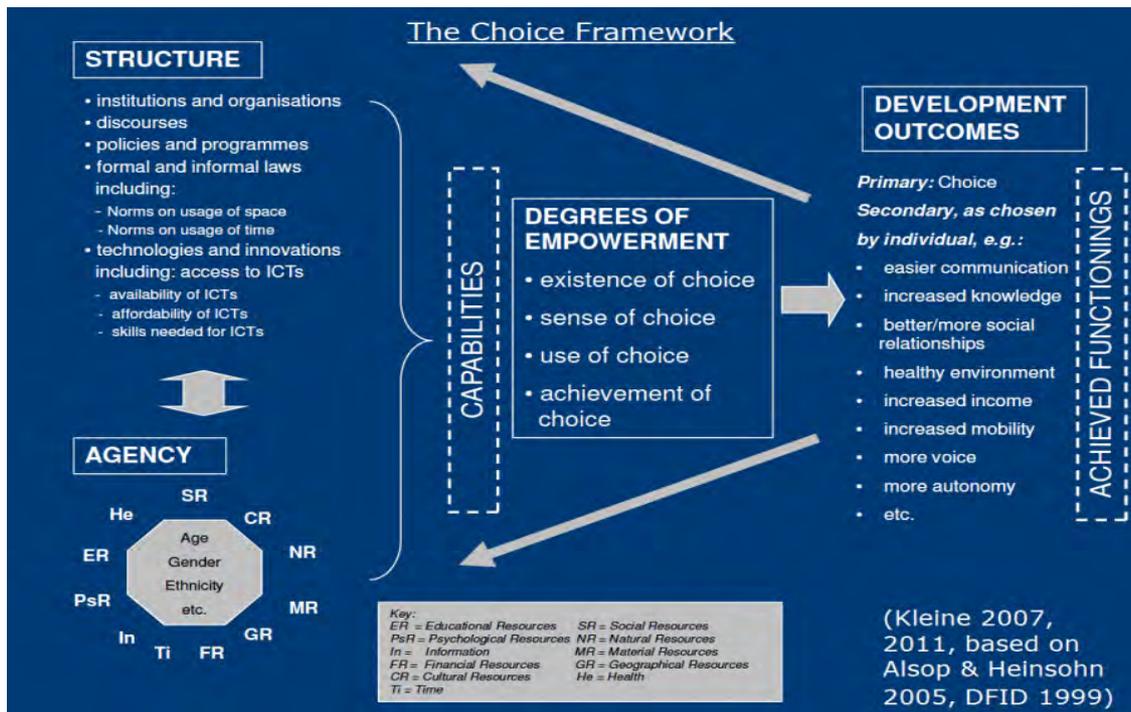


Figure 2: The Choice Framework (Source: Kleine, 2013)

Nevertheless, these choices can be enhanced or weakened by the existing structures, which mainly comprise institutions, policies and programmes, formal and informal laws and access, availability of technological innovations and ability to acquire skills to use them. In terms of technology it is important to assess accessibility and skills required to utilise them because these factors may

prevent adoption and use of technology. Finally, agency in the CF is mainly centred within the individual and it is characterised by a person's age, gender, and ethnicity among other attributes. At this point an individual is able to utilise resources and capitals within their capability set in order to fulfil their essential needs (Kleine, 2013). The individual's existing interrelationships, understood within this framework of agency, empowerment, structure and choice, will guide this study in analysing the development of ICTs and the ways in which this impacts on women in a rural agricultural context.

Kleine (2013) developed the CF as a concept which operationalises Sen's CA by incorporating Alsop and Heinsohn's (2005) concept of empowerment, as well as the features of DFID's (1999) Sustainable Livelihoods Framework. Kleine (2013) examines these elements from a technological perspective. To accomplish this, Kleine (2013) employs Gerster and Zimmermann's (2003) empowerment framework. The empowerment framework attempts to explain the extent to which existing technological structures in terms of access, availability, affordability and capabilities - skills needed to operate these technological implements - impact on an individual's choice (Gerster & Zimmermann, 2003). Put together, the CF presents a comprehensive understanding of development as a systematic process and proposes a people-centred context which will allow people to take charge in making choices that will lead towards fulfilling the lives they value. The components of the CF, namely outcomes, dimensions of choice, agency and structures are described in detail below.

2.2.1 Outcomes

Outcomes are a key indicator of what an individual accomplishes after making the choice that will help them fulfil the life they value (Sen, 1999). For example, the use of ICTs can be extremely beneficial to a person, especially if it is included within their capability set, because it provides them with more options to choose. To illustrate, ICT implements such as mobile phones can be used to enhance a person's capabilities, for instance, through communicating with friends and family, increasing knowledge, earning income, and saving money. It is however important to note that capabilities cannot be measured directly, hence the CF assists in disaggregating an individual's choices, and tries to discern how an individual chooses in order to advance towards achieved functionings (Kleine, 2013).

2.2.2 Dimensions of Choice

In the CF, Kleine (2013) integrates Alsop and Heinsohn's (2005) idea of empowerment. According to Alsop and Heinsohn (2005, p.6):

A person or group is empowered, if they possess the capacity to make effective choices: that is, translate their choices into desired actions and outcomes. The core objective of the empowerment framework is to assist in assessing an individual's degrees of empowerment achieved based on the existence of choice.

Alsop and Heinsohn (2005) consider an individual to be empowered if they have the capacity to make effective choices, which can influence their desired actions and outcomes.

Kleine (2013) demonstrated the sense of choice through her study of micro-enterprises in Chile. Kleine (2013) states that people were more familiar with technology services such as email and chat over other services such as voiceover and Internet protocol mainly because the government publicised the former more than the latter. It is important to note that agency is directly linked to the existing structures, which can influence and help an individual achieve the development outcomes that they aspire to accomplish (Alsop & Heinsohn, 2005). Thus, resources to which the individual may possess or have access influence the relationship between the degree of empowerment and development outcomes.

2.2.3 Agency

According to Kleine (2013), agency refers to the individual characteristics of a person such as gender, age, race and ethnicity. The agency octagon (Figure 2 above) is surrounded by a diverse amount of resources which may be accessed and utilised by the individual within a specific social, cultural, economic and political context.

The agency octagon consists of eleven resources, which are interconnected depending on an individual's conditions. The conditions that an individual experiences can influence the access to these resources. The eleven resources are listed as follows:

- *Material resources* mainly consist of machinery and necessary equipment, which are vital inputs that can facilitate the production process.
- *Financial resources* or 'financial capital' refers to the ability of an individual to access monetary and non-monetary forms of finance, for example savings, cash and loans, both

formally and informally. Financial capital is highly dependent on the existing formal and informal structures, which are capable of developing directives on matters concerning, for instance, conditions on lending to potential beneficiaries, such as collateral.

- *Natural resources* refer to occurrences in nature such as climatic conditions, geological structures, locality, access to water and good soil and land. People, for the most part, depend on natural resources and cannot do without them (DFID, 1999; Scoones, 1998).
- *Geographical resources* mainly consist of existing infrastructure, distance and proximity. Kleine (2013, p.47) cites Ilse Helbrecht (2005) who describes geographical resources as the attributes of a place, its “look and feel,” and the positive “vibes” that emanate from a location.
- *Human resources*, according to Kleine (2013), are divided into three parts: health, skills, and education, both in the formal and informal setting. The aspect of health is a key factor in Sen’s definition of development. Sen (2002) maintains that good health is necessary because it enhances an individual’s ability to make valuable choices that may lead towards achieving the life they value.
- *Psychological resources*, according to Kleine (2013), are mainly subjective, and include, for example, self-confidence, tenacity, optimism, creativity and resilience. Psychological resources help to understand the complex interrelationships attributed to, for instance, spirituality, and how agency derives strength from it. Kleine (2013) further argues that agency can strengthen or weaken psychological resources depending on the social and cultural environment of an individual.
- *Informational Resources*: Alsop and Heinsohn (2005) recognise that information is an essential aspect for an individual. For instance, education allows an individual to access information. Kleine (2013) cites Heeks’ (1999) idea, stating that informational resources to a large extent should be the focal point in ICTs and development. Hence, ICTs such as radio, TV and newspapers are regarded as an important source of information because the knowledge an individual draws from ICTs can be converted and utilised for a meaningful purpose.
- *Time*: According to Kleine (2013), the concept of time does not necessarily refer to the ultimate time that an individual possesses, but how the individual allocates their available time. In most cases, employees, institutions (e.g. medical and educational) as well as heads of households may control an individual’s time. Kleine (2013) asserts that the resource of time is imperative to an individual because it serves as a means of accessing other resources.
- *Cultural Resources*: Kleine (2013) defines cultural resources based on Pierre Bourdieu’s (1986) definition, beginning with a person’s environment, which in this case is referred to as

the embodied state (the 'habitus' a person lives in). The second resource refers to objects that have a personalised connection, hence, the objectified state (objects such as paintings, instruments and monuments that only the initiated can appreciate and use). The final cultural resource, according to Bourdieu (1986), is characterised by a person belonging to an institution which is well established, hence the institutionalised state, (the prestige accorded to, for example, academic titles or leadership roles). Kleine (2013) argues that Bourdieu's impression on cultural resources in this particular illustration is to a large extent centred on Eurocentric perspectives. Kleine (2013) contends that the concept of status should not necessarily be concentrated on the institutionalised state but can also be applied within indigenous culture.

- *Social resources*: can be referred to as existing social networks or group memberships that can support and facilitate livelihood outcomes (Alsop & Heinsohn, 2005; DFID, 1999). Social resources are associated with kinship, friendship, common classes or ethnic groups as well as informal communities (Kleine, 2013).

2.2.4 Social Structures

An individual's social structure is crucial since it acts as a guiding factor towards their resource portfolio (Kleine, 2013). However, a person's social structure is largely determined by an individual's agency. The aspect of social structure included in the CF integrates the concept of the Sustainable Livelihoods Framework (SLF) and Alsop and Heinsohn's empowerment framework. The empowerment framework by Alsop and Heinsohn (2005) is determined by two major factors: agency and opportunity structure. Here, agency denotes the assets an individual holds, such as physiological, informational, organisational, material, social, financial and human assets. These assets are inherently linked to an individual's opportunity structure, which is embedded in the context in which the individual operates (Alsop & Heinsohn, 2005).

The opportunity structure in the CF consists of formal or informal characteristics. Formal structures comprise the laws and regulatory norms at meso and macro level, whereas informal structures comprise the cultural norms and customs which govern people's behaviours at micro level (DFID, 1999; Duncombe, 2007). The element of structure in this context plays a significant role because it attempts to draw out how existing structures - both formal and informal institutions - can influence an individual's ability to utilise the latter towards achieving their desired outcomes (Alsop & Heinsohn, 2005). By way of illustration, existing formal structures can implement laws that are gender biased, or which discriminate against a person based on ethnicity, income or a range of other

factors. Feminists argue that some laws dictate how women use their time and this restriction may limit their freedom and opportunities to access essential resources which can enhance their livelihoods (Kleine, 2013). Therefore, it is important to note that power relations between structure and agency are prevalent and interconnected. Structure plays an important part not only in controlling people's behaviour, but it can also determine whether people can access sustainable resources which can facilitate individuals achieving their livelihood outcomes (Krantz, 2001; Scoones, 1998).

At present, ICT structures - technologies and innovation - are viewed as having two aspects where one viewpoint is termed as adverse while the other is termed as beneficial. Hence, the SLF describes technology as vulnerability based on the fact that even though it has the potential of benefitting the poor, it may not be accessible to certain people (DFID, 1999). On the contrary, the CF regards technology as an innovation, which people can use in diverse ways to increase their social resources, even though there is a cost involved (Kleine, 2013). By way of illustration, the spread and uptake of mobile phones, despite the charges involved, have contributed significantly towards employment creation, saving time, as well as enhancing communication (Plyler *et al.*, 2010). Mobile phones have also strengthened social interactions among kin and communities (Kiiti & Mutinda, 2011; Morawczynski & Pickens, 2009). Furthermore, technology, within structure, can also be viewed from a different angle, in terms of increasing the level of skills of an individual. Gerster and Zimmerman (2003, cited by Kleine, 2013) argue that the skills acquired to be able to operate these technologies can determine the extent to which a person can access and connect to these technologies. Kleine (2013) maintains that the acquisition of these skills influences an individual's choice in accessing technology.

As mentioned previously, it is important to note that an individual's access, availability and usage of technologies are interconnected with other aspects of structure such as institutions and organisations, formal and informal laws, to name a few (DFID, 1999; Kleine, 2013). It should be noted that structure is susceptible to change, and thus can impact on an individual's resources such that it can influence an individual's ability to increase or reduce their acquired resources (Kleine, 2013). Hence, structural changes can occur within short or long time spans. For example, advocating for the rights of women to inherit land may take a very long time to legislate. On the other hand, the rapid transformation and advancements in technological innovation can be difficult to regulate (Kleine, 2013).

Structural changes can also be influenced by collaborative decisions, which may hinge on existing political and democratic processes. Alternatively, there is a possibility that existing structures, for

example, NGO's, development agencies and government projects may engage and consult with communities at the grassroots level before altering existing structures (Kleine, 2013).

In conclusion, Kleine (2013) emphasises the importance of taking into account what people consider valuable to their lives, in addition to how existing structural barriers can be overcome to avoid restricting individuals from achieving anticipated development goals. The CF is a comprehensive, holistic and flexible tool, which takes heed of these various aspects, and guides this particular study which investigates how mobile money savings is facilitating development within the rural context. The CF will also assist in identifying how the existing structures, both at macro and micro level, influence the usage of this technology among the rural women involved in this study.

2.3 Conclusion

Sen's CA consists of two main concepts: 'functionings', the actions that an individual takes and 'capabilities', the opportunities and freedoms available to a person, which both act as a means of fulfilling an individual's purpose (Robeyns, 2006). Chapter Two provided a thorough consideration of the CA, including the main strengths and weaknesses of the approach. The CA allows a people-centred, humanistic approach to be adopted, which takes into account people's heterogeneous characteristics. Various studies that operationalise the CA and focus on the uptake and use of ICTs in particular were discussed, providing a background and context to how the CA has been applied in the past. Kleine developed the CF as a concept which operationalises Sen's CA by incorporating Alsop and Heinsohn's (2005) concept of empowerment, as well as the features of the Sustainable Livelihoods Framework. Even though the rural women who compose the unit of analysis in this study have access to land and are able to utilise the resources they possess, they nevertheless have low incomes and the CF allowed the researcher to interpret how existing formal and informal regulations within diverse institutions and cultural backgrounds can substantially affect how women choose and access these technologies to save their money. The CF is therefore an appropriate tool which assisted the researcher in analysing how the use of MMTs has helped female Kenyan farmers reach their achieved outcomes or functionings, within the given structural constraints.

Chapter 3: Literature Review

3.0 Introduction

This chapter will provide an overview of the growth and impacts of ICTs, particularly with regard to mobile phones and MMT technologies. A myriad of empirical studies that illustrate the impacts of emerging technologies, such as MMTs among low-income groups, have been undertaken. The chapter will begin with a consideration of the contribution of ICTs to development in low-income countries. Thereafter, a more specific discussion of MMTs and their contribution to the reduction of poverty and increasing livelihoods will be put forth, with specific reference to Kenya. While ICTs such as mobile phones are playing a role in transforming the financial sector and allowing low-income groups to access affordable and efficient financial services, various social challenges also accompany this development. These issues will be considered in the sections of the chapter to follow.

3.1 ICTs and their Contribution to Development

ICTs, in a broad sense, are defined as technologies that help transmit information through communication devices or applications such as radios, televisions, computers, cell phones, Internet and wireless networks (Perron, Taylor, Glass, & Margerum-Leys, 2010). ICTs are systems, which enable interactive communication between countries and people (Geldof & Unwin, 2005). A further aspect of ICTs in terms of their information transmitting function includes the fact that the attributes of ICTs allow users to build and create opportunities which facilitate development at both the national and personal level (Geldof & Unwin, 2005).

Previous studies have demonstrated that ICTs operate as mechanisms which have significantly transformed the socioeconomic and political lives of individuals globally. The use of ICTs is also considered as a means that can facilitate poverty reduction (Duncombe, 2007). For example, the use of ICTs among low-income groups has enabled these groups to strengthen their capacity in, inter alia, employment creation, access to business opportunities and carrying out financial transactions efficiently at reduced costs (Baliamoune-Lutz, 2003; Elder *et al.*, 2013; Sridhar & Sridhar, 2009). A leading example of the use of ICTs as a poverty reduction tool is portrayed in a rural fishing

community in Kerala, India, where access to mobile phones has helped local fishermen improve their income and efficiency by reducing waste within the fishing business (Abraham, 2006; Jensen, 2007).

Notwithstanding, the perception that ICTs can fast track development and reduce poverty in low-income nations has prompted debates among development policy experts. Some scholars argue that pressuring low-income countries to embrace ICTs may elicit misplaced priorities, especially if ICT programmes are given precedence over critical national development plans such as the provision of safe water, food security, and education among other essential matters of social welfare (Heeks, 1999; Torero & Braun, 2006). Furthermore, using ICTs as a poverty reduction tool may not work if they are not within the desired needs of the targeted users, such as those who are poor. For example, the Indian government established telecenters as a poverty reduction initiative in a rural community in Gyandoot, India, with the intention of expanding their services to rural the residents (Heeks, 2005). Although the project operated for a while, the initiative failed to take off as planned and collapsed within a span of two years due to low user rates (Heeks, 2005).

In the same manner, advocating for ICTs as a way of reducing poverty can be regarded as counterproductive, especially where the ICT value chain process is unregulated (May & Adera, 2011). For example, poor regulation of ICT industries may lead to acts of human rights violations, such as the use of child labour in mining the raw materials which are essential for the manufacture of ICT devices. Low paid child labour can force communities to live in persistent poverty (May & Adera, 2011). Similarly, ICTs may trigger intra-household conflicts, particularly in patriarchal cultures where the man is regarded as the head of the household and is hence entitled to the control of assets. This form of domination may have major repercussions within the household especially if the essential household needs are compromised (May & Adera, 2011).

The issue of uptake and adoption of ICTs by individuals in enhancing development is another area contested by scholars within the realms of academia, particularly in the field of development studies. Toyama (2012) argues that the use of ICTs is highly dependent on the capacity and intention of the user, and thus these technologies should be designed in such a way that will benefit disadvantaged users. He further states that these technologies can be more efficient if individuals or institutions have the knowledge and skills to use them. Toyama (2012, p.15) asserts:

Technology, no matter how well designed, is only a magnifier of human intent and capacity and not a substitute. If you have a foundation of competent, well-intentioned people, then with the appropriate technology they can amplify their capacity and lead to amazing achievement.

As stated previously, Duncombe and Boateng (2009) hold the view that there is a dearth of research that provides strong empirical evidence regarding the impacts of ICTs on society. Similarly, Heeks (2005) contends that a variety of research which examines the impacts of ICTs in developing countries is sparse and that, in addition, most studies lack sufficient theories and conceptual frameworks that could guide the development of an understanding of the effects of ICTs on users.

A few studies have attempted to narrow this gap by applying various theories and frameworks to analyse the impacts of ICTs on low-income and under-served groups (Andrianaivo & Kpodar, 2011; Diga, 2007; Gigler, 2004; Kleine, 2013; Vaughan, 2011). As an illustration, some studies have established that most households in developing countries reduced their basic budgets to fit the expenses used on these technologies (Andrianaivo & Kpodar, 2011; Diga, 2007). In addition, lack of education and low incomes prevent women from fully accessing and utilising ICTs that can further enhance their well-being (Deen-Swararay, Gillwald & Morreal, 2012). However, researchers such as Heeks (2009) and May and Adera (2011) argue that the uptake and adoption of ICTs with the aim of stimulating development in low-income countries should not compromise the provision of basic services including essential social services. Similarly, Deen-Swararay, Gillwald & Morreal, (2012) point out, governments should not solely focus on ICT policies to address accessibility and usage but should also be instrumental in addressing other existing policies in a way that allows women and girls to access and benefit from ICTs equitably. While the studies mentioned above do provide valuable insight, research gaps on the impact of ICTs, both at the macro and micro-level, still exist and research addressing these topics must therefore be conducted to provide a deeper understanding of the issue.

3.2 Growth of Mobile Money Transfer Technologies Services

Globally, the uptake, spread and penetration of mobile phones have gained considerable subscription growth. Statistics by ITU (2015) show that between 2001 and 2014, the use of mobile phones had risen to 95.5 per cent, and the use of fixed lines had declined by 15.8 per cent within the same period (see Figure 3 below).

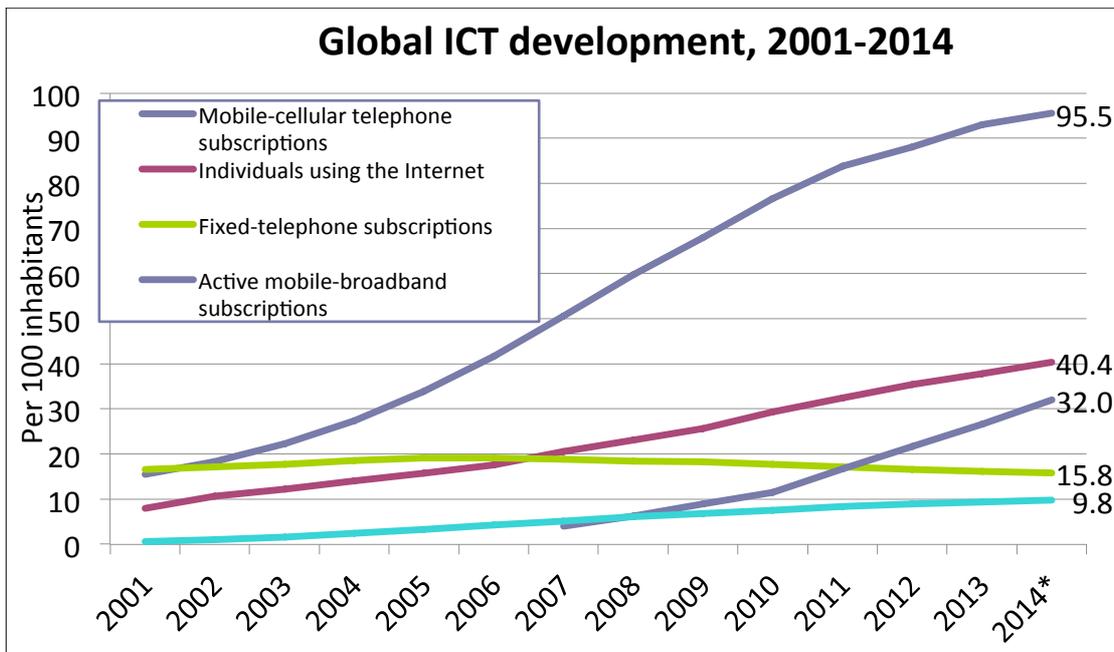


Figure 3: Global ICT Development, 2001-2014 (Source: ITU, 2015)

The increase of mobile phone subscription has subsequently resulted in the rise of high adoption rates of mobile phone applications such as mobile banking (m-banking), electronic money (e-money) and mobile payments (m-payments) amongst many of the available modes of transacting money using the mobile phone (Aker & Mbiti, 2010; Diniz *et al.*, 2011; Duncombe & Boateng, 2009; Maurer, 2012; Merritt, 2010). Hence, the increased adoption of MMTs has enabled the poor access to financial services, making it possible for them to carry out transactions using a mobile phone.

3.3 Adoption and Usage of MMTs and its significance on the livelihoods of the Poor in Middle Income and Developing Countries

The high uptake and adoption rates of ICTs globally, including MMT services, are distinct in every country and are highly dependent on the existing legal, social and economic structures within them. –The uptake of ICTs in this case mainly refers to the level of spread and incorporating ICT use whereas adoption refers to individuals making use of ICTs- To begin with, certain legal and regulatory policies such as weak risk management systems may put customers at risk and as a result this may restrain Mobile Network Operators (MNOs) from providing mobile phone based financial services independently (Merritt, 2011; Morawczynski, 2010). Secondly, some studies show that the use and adoption of MMT services vary and hence the uptake of these services has succeeded

among low-income groups in some developing countries, but not in others (Diniz *et al.*, 2011). At the same time, other studies point out that the main characteristics which prevent the uptake of MMTs among low-income non-users, are the lack of awareness, issues of trust, high transaction costs, language barriers and low literacy levels (Deen-Swarray *et al.*, 2012; Nandhi, 2012; Torero & Braun, 2006).

Several studies have assessed how MMT services have helped in transforming the socioeconomic lives of low-income groups. In some cases, the use of ICTs, mobile phones in particular, has also been used to replace or reduce the consumption of daily basic needs. A study carried out in six households in Katote, Uganda, alludes to this confirming that most households reduced certain food rations to enable them to buy mobile airtime (Diga, 2007). Equally, a study by Medhi, Gautama and Toyama (2009) on the uptake of m-banking services among low-income and low literate users (both users and non-users) in South Africa showed that the adoption of MMTs services such as WIZZIT (a South African Mobile Money Service Provider) was prompted either by a user's discretion or based on necessity. Medhi *et al.* (2009) assert that the respondents who worked as farm labourers in South Africa took up WIZZIT to send and receive money for their personal use. Employers also expected their employees to register with the service to enable them to receive their salaries into their bank accounts through the service (Medhi *et al.*, 2009). Subsequently, a study by Makore (2011) on the impact of WIZZIT among the urban poor in Johannesburg established that the service was used to complement the existing formal and informal financial services.

The uptake and adoption of MMTs is for the most part ingrained within the trust which users hold for the service. As an illustration, Medhi *et al.* (2009) argue that the slow uptake of mobile based banking services, such as WIZZIT in South Africa, was mainly due to lack of awareness and trust issues regarding the service. On the contrary, in Kenya, users of MMT services trust the mobile network provider, Safaricom, with their money more than M-PESA agents who serve as intermediaries who carry out their transactions (Medhi *et al.*, 2009; Morawczynski & Miscione, 2008). Initially, this was the case mainly because M-PESA agents were usually accused of 'stealing' money especially when a delay in the transmission of the money into the user's phones occurred (Morawczynski & Miscione, 2008). Altogether, the element of trust when implementing MMTs, according to Medhi *et al.* (2009), varies depending on the various m-banking services being offered.

The methods of communication used to disseminate information regarding the usage of MMTs services can serve as a barrier that impacts on the uptake, adoption and usage of these services among low literate and low-income users. Medhi *et al.* (2009) assert that most service providers use

too much jargon on their manuals and brochures, which, for the most part, is incomprehensible among users who have low literacy levels. For instance, users may find it difficult to navigate through the applications in their mobile phones when attempting to carry out m-banking transactions. In addition, users may find it difficult to locate symbols such as hash (#) or star (*). As a result of this, most users will consult peers or agents to help them carry out transactions on their behalf (Medhi *et al.*, 2009).

Overall, the adoption and use of MMTs largely depends on the user's needs, and usage is further influenced by existing laws, information dissemination, infrastructure as well as trust which exists between the MNOs and users. These factors are evidence that the use of ICTs and the MMT services offered differs from context to context.

3.4 Mobile Money Transfer Technologies in Kenya

The banking sector in Kenya has seen the establishment of extensive financial institutions that offer a variety of financial products. However, these products and services have failed to reach the unbanked and under-banked. This is mainly because most financial institutions are located in urban and affluent areas where people have regular income and access to financial institutions (Beck, Cull, Fuchs, Getenga, Gatere, Randa, & Trandafir, 2010). However, the emergence of MMT services in Kenya has contributed to expanding financial access, particularly among low-income groups (Kimenyi & Ndungu, 2009). MMT, also referred to as Mobile wallet (M-Wallet) and Mobile Banking (M-Banking), is a service that allows a person to carry out monetary transactions using a mobile phone (Merritt, 2010; Ramezani, 2008). Also known as Person to Person (P2P) payment service, MMTs allow users to pay utility bills using their mobile phones (Merritt, 2010). To date, Kenya has recorded high uptake rates of MMTs with over 23 million users of MMT technologies within the various mobile phone network providers such as Safaricom, Airtel, Orange and YU (Kimenyi & Ndungu, 2009). As such, at least 74 per cent of the population uses M-PESA as a money transfer, storage and payment platform service (Kimenyi & Ndungu, 2009).

In 2007, Safaricom spearheaded its innovative MMT called M-PESA ('M' for mobile and '*pesa*' which in Swahili means money) in Kenya. M-PESA is a service that enables users, for a nominal fee, to carry out monetary transactions such as payments of utility bills and storage of money using a mobile phone through the assistance of certified agents. Using proof of identification, a subscribed user is able to carry out a transaction by visiting a certified Safaricom agent. A

subscriber is also able to carry out a transaction using their M-PESA account by entering their personal identification number (PIN) on the phone. The subscriber is able to transact using the technology by withdrawing, sending and receiving money from users of M-PESA and other mobile money networks, or storing money in their mobile phone. Once a transaction is carried out, a notification is sent to the user as well as the receiver through Short Message Services (SMS).

M-PESA usage and adoption has experienced considerable growth. To date, the company still retains the largest market share since its launch in 2007. During this initial period, the service had over 1 million active M-PESA users, and as of the year 2013, the number of subscribed active M-PESA users had risen to 17 million (Safaricom Timeline, 2013). Compared to formal banking services, mobile phone banking transaction rates rose by 4.36 per cent in 2009, superseding commercial bank growth rates which rose by only 0.17 per cent (Kimenyi & Ndungu, 2009). As shown in Figure 4, Since the inception of M-PESA, total subscription of MMT services across all MNOs -Airtel, Orange among others- rose from 3 million subscribers in 2007 to over 25.4 million subscribers in 2014 (Central Bank of Kenya [CBK], 2015). Because of this, MMT subscribers are able to carry out transactions from 127,000 agents nationwide (CBK cited by The East African, 2015).

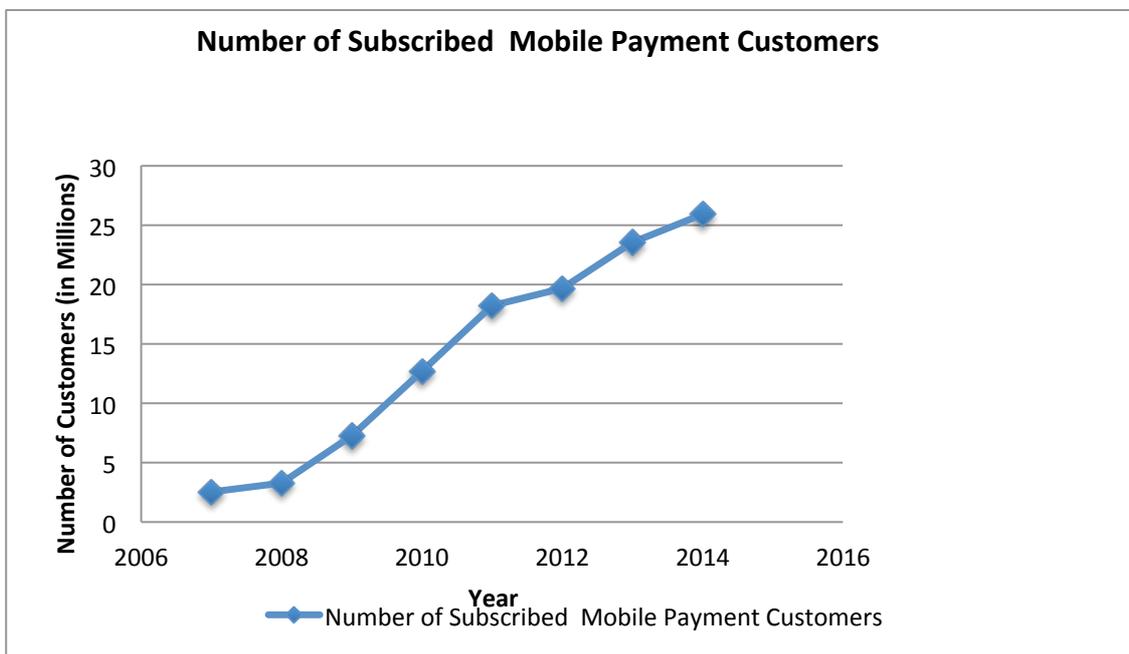


Figure 4: Number of Subscribed Mobile Payment Customers in Kenya 2007 - 2014

(Source: CBK, 2015)

The concept of M-PESA has expanded and its offering of other mobile banking products such as M-SHWARI bank accounts have made it possible for M-PESA users register for mobile accounts for free, access loans and earn interest from their savings from their mobile phones. This study

focuses specifically on savings activities using the mobile phone. Currently, mobile financial service products continue to expand in Kenya. For example Equity Bank, a local Kenyan bank, has been provided with a Mobile Virtual Network Operator (MVNO) licence by the Kenyan communication regulatory body (Okuttah, 2014). The thin Subscriber Identity Module (SIM) technology allows users from any MNO to carry out monetary transactions using their phone through their Equity Bank accounts (Okuttah, 2014). Even though the system has faced major opposition from the leading MNO, Safaricom, citing user security and privacy issues, Equity Bank has rolled out the technology at a pilot phase to about 200 000 of its customers (Okuttah, 2014). These upcoming trends in Kenya's m-banking market would be an interesting area to explore, particularly with regard to how these progressions would encourage low-income groups to access mobile bank accounts.

3.5 Impact of MMTs on the Livelihoods of Low-income Groups in Kenya

Studies on M-PESA in Kenya have mainly focused on the expansion and adoption of M-PESA services over time (Jack & Suri, 2010; Omwansa, 2009). Common findings characterise the use of M-PESA as a convenient, safe, affordable and efficient way of sending and receiving money (Jack & Suri, 2010; Kiiti & Mutinda, 2011; Morawczynski & Pickens, 2009). In terms of literacy levels and uptake of MMTs, a study by Jack and Suri (2010) demonstrated that most of the early adopters of M-PESA were highly educated, well-off and owned a bank account. Conversely, late adopters of M-PESA mainly used 'mattress banking' - storing money under a mattress or in a secret place - as a saving method, and non-M-PESA users were notably poorer with low education levels (Jack & Suri, 2010). With the exception of non-M-PESA users, early and late adopters of M-PESA used the service to store and accumulate money in case of emergency (Jack & Suri, 2010; Morawczynski & Pickens, 2009). Altogether, even though no interest on savings was incurred from the service, most users used M-PESA to save money (Morawczynski & Pickens, 2009).

Transactions using M-PESA proved to be useful to households. Previous studies have indicated that frequent sending of remittances through M-PESA increases rural household incomes from 5 per cent to 30 per cent (Kirui, *et al.*, 2012; Morawczynski & Pickens, 2009). Additionally, the use of M-PESA enhanced rural economies by financing human capital and physical capital in the agricultural sector (Kirui *et al.*, 2012; Morawczynski & Pickens, 2009). For example, most of the money sent through MMTs improved the economic activities of small-scale farmers by increasing the purchase of farm inputs and equipment (Kirui *et al.*, 2012). According to Plyler *et al.* (2010),

the use of MMTs also provided increased opportunity for employment creation, particularly where M-PESA shops were set up in the community. Findings from the study indicated that the M-PESA activities improved both financial security and food security, and also enhanced capital accumulation (Kiiti & Mutinda 2011; Plyler, *et al.*, 2010).

The study by Plyler *et al.* (2010) also examined the spread of economic benefits of M-PESA in rural and urban communities. The study established that the use of M-PESA had direct and indirect impacts on users and non-users in both rural and urban areas. The study showed positive multiplier effects of M-PESA among the rural and urban communities in terms of expanding economic opportunities such as job creation and income accumulation. Similarly a study by Morawczynski and Pickens (2009) on the impacts of M-PESA in urban and rural areas demonstrated that the use of M-PESA not only improved rural incomes but also increased women's financial freedom, making it possible to seek alternatives to receiving remittances from friends and relatives in situations where husbands had ceased remitting money home.

Kiiti and Mutinda's (2011) study examined the impact of M-PESA as a poverty reduction tool among 21 women's groups who were members of ROSCAs in Eastern Province, Kenya. This study established that the adoption of M-PESA helped in easing transport costs and enabled the women to carry out business transactions remotely in order for their goods to be delivered. In addition, the use of MMTs made it possible for unbanked women to send their ROSCA contributions on time (Kiiti & Mutinda, 2011).

While the studies discussed above illustrate the benefits of MMTs, there are certain challenges associated with the use of M-PESA. For example, Kiiti and Mutinda (2011) mention incidents of fraud, especially among women who have low levels of education. Furthermore, women with special needs, particularly the elderly, those with poor vision and those who are hard of hearing, expressed the view that their mobile phones were not user friendly (Kiiti & Mutinda, 2011). For instance, some women complained about the phones being inaudible or not 'talking'. In such cases, users would unknowingly seek advice from unscrupulous yet knowledgeable 'helpers', who would then convey a lesser amount of money than the original amount that the women expected to send from their phones, and instead take a portion for themselves (Kiiti & Mutinda, 2011).

It has also been noted that MMTs are associated with social challenges. As an illustration, Kiiti and Mutinda (2011) assert that the use of M-PESA may contribute towards the weakening of social networks, for example, reduced attendance at ROSCAs meetings. Sending payments through M-PESA resulted in high levels of absenteeism during the women's group meetings, undermining the social essence of the ROSCAs (Kiiti & Mutinda, 2011). Similarly, Morawczynski and Pickens

(2009) established that sending remittances using M-PESA resulted in women in rural areas experiencing infrequent visits from their husbands who reside and work in urban areas. The women in this study expressed the view that the M-PESA service threatened their marital relationships, fearing that their husbands would engage in extramarital affairs, which in turn would influence the infrequent sending of remittances to their rural homes.

In general ICTs, particularly mobile phones, have played a significant role in transforming the financial sector, making it possible for low-income groups to access affordable and efficient financial services. Nonetheless, it is evident that the introduction of these technologies has been accompanied by social challenges in terms of social interaction, literacy and affordability. One of the limitations of previous studies is that they lack a theoretical framework that guides and efficiently predicts and explains the outcomes of the studies (Duncombe & Boateng, 2009; Heeks, 2010). This study therefore attempts to fill this gap by applying the CF, which is premised upon Amartya Sen's CA, to assess the impacts of MMTs among rural women in Maragua, Kenya.

3.6 Conclusion

The literature review presented above examined the debates regarding the contribution of ICTs to development. There has certainly been significant growth and spread of ICTs worldwide. Previous studies have shown the extent to which MMTs enable the poor to access financial services. This chapter considered the impacts of MMTs across groups within various socioeconomic realms. The growth and uptake of MMTs in Kenya has risen significantly since the launch of M-PESA, allowing people to ease the flow of money in a convenient, secure, and affordable manner. However previous studies indicate that there have been concomitant social challenges such as the reduction of social interaction between community networks (ROSCAs) as well as at household level where relatives may work in distant locations. Despite the identified challenges, the sector continues to grow as new MNVOs such as Equity Bank launch 'thin SIM' technologies, which allow even the most vulnerable to be connected to formal banking through mobile services. Overall, MMTs play a crucial role in banking the unbanked.

Chapter 4: Methodology

4.0 Introduction

This chapter will provide a detailed account of the research methodology applied in this study and will offer a synopsis of the actual research process. The chapter begins with an overview of the qualitative research approach used in guiding the research process. A qualitative approach allowed the researcher to obtain rich data and an in-depth understanding of the topic under investigation, namely the uptake of MMTs among rural women in Kenya. The specific rural location focused on in the research, Gakoigo sub-location, will be described and the process of negotiating access to the area and the respondents will be expounded. Following this, the sampling technique, purposive snowball sampling, and the data collection instrument, a semi-structured interview schedule, used during the data collections process will be explained. Thereafter a discussion of the thematic data analysis method used to interpret the findings obtained in the study will be provided. Finally the limitations encountered in the study and how some of these were overcome by the researcher will be considered.

4.1 Statement of Research Approach

The primary goal of this study was to explore how saving using MMTs has helped to improve the livelihoods of rural women who are users of these technologies and to compare this with the experiences of women who are non-users. This research was conducted in a rural village called Gakoigo situated in the Nginda location, Maragua district, in Murang'a County, Central Province, Kenya (see Figure 5 below).

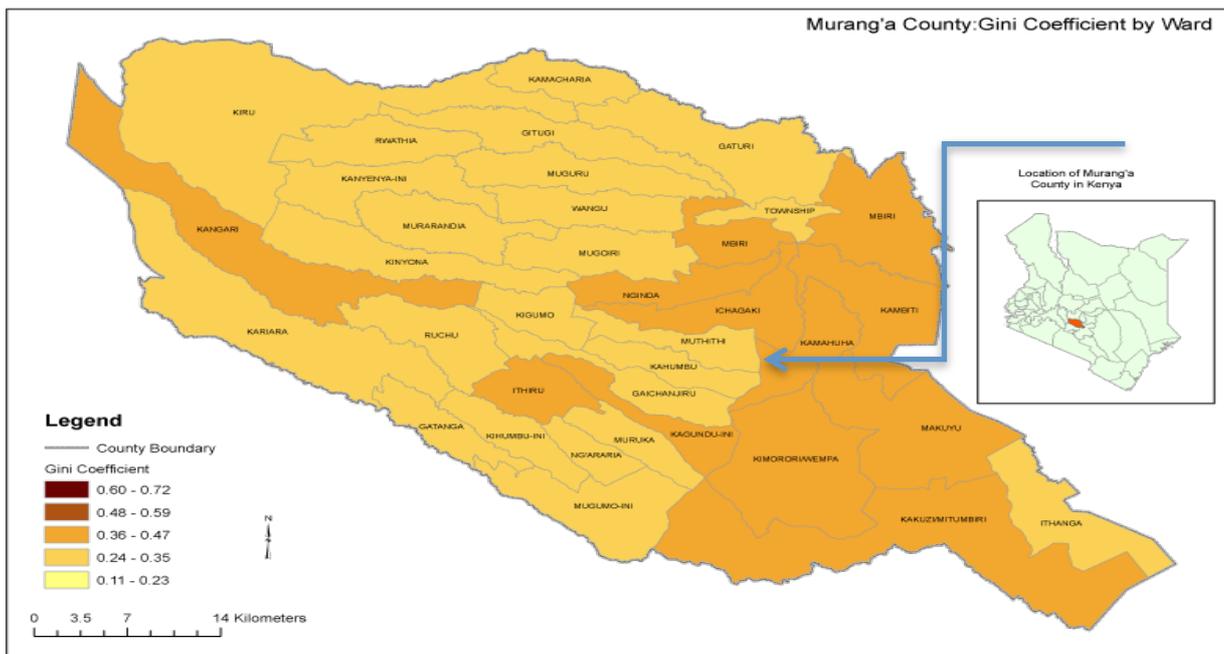


Figure 5: Map of Murang'a County (Source: Murang'a County Assembly, 2015)

There have been relatively few studies that focus on the impacts of MMTs among low-income groups in rural areas. This study specifically seeks to investigate the benefits of savings using m-banking services, particularly among women who earn low-incomes within a rural context. To achieve this, a qualitative research approach was found to be suitable for this study. This approach guided the researcher in examining, evaluating, as well as providing a deeper understanding of the choice of women to save using MMTs. According to Boeije (2010, p.11):

The purpose of qualitative research is to describe and understand social phenomena in terms of the meaning people bring to them. The research questions are studied through flexible methods enabling contact with the people involved to an extent that is necessary to grasp what is going on in the field. The methods produce rich, descriptive data that need to be interpreted through the identification and coding of themes and categories leading to findings that can contribute to theoretical knowledge and practical use.

To achieve a deeper understanding of the women's decisions, interview schedules were formulated and interviews were conducted during data collection in order to gather meaningful information on the respondents' experiences around the usefulness of various saving methods. The respondents were asked about both their formal (including using MMTs) and informal saving methods (ROSCAs), as well as the reasons as to why they preferred using one over the other or both modes

of saving. Overall, the qualitative research approach assisted the researcher to interpret, generate and explain judgments based on the information which emerged from the data.

The information acquired from the interviews provided rich data that allowed the researcher to link, interpret and draw results that are presented in Chapter Five in the research findings. The CF, a theoretical model developed by Kleine and discussed in Chapter Two, was applied in data analysis. The framework was found useful for this study because it assisted the researcher to understand and explain the research findings based on the theoretical concepts contained within the CF. Thus it proved to be as a useful guide to contextualise and analyse the research findings regarding how and why small-holder female farmers choose to save using MMTs, with the aim of expanding their capabilities in order for them to attain desired aspirations. To achieve this and verify the reliability of the research, emerging patterns from the raw data were coded and arranged thematically (Rudestam & Newton, 2007). The emerging themes were used as a guiding principle to provide a detailed account of the research findings, and the findings were analysed using the CF and also compared with previous studies discussed in the literature review.

4.2 Choice of Location

The research was conducted in Gakoigo sub-location within the Nginda location, an administrative division in the Maragua district in the Central Province, Kenya (see Figure 6 below). This area is approximately 110 km from the capital city, Nairobi. The district covers an area of 1065 km² and approximately 70 per cent of the area is predominantly agricultural. The terrain is mainly flat with gentle slopes. The research took place when short rains were expected. However during this time, it was very hot, the short rains were delayed, and signs of drought were evident because the landscape appeared very dry. Land preparation for potential rainfall was, nevertheless, on-going in spite of the delay of the rains.

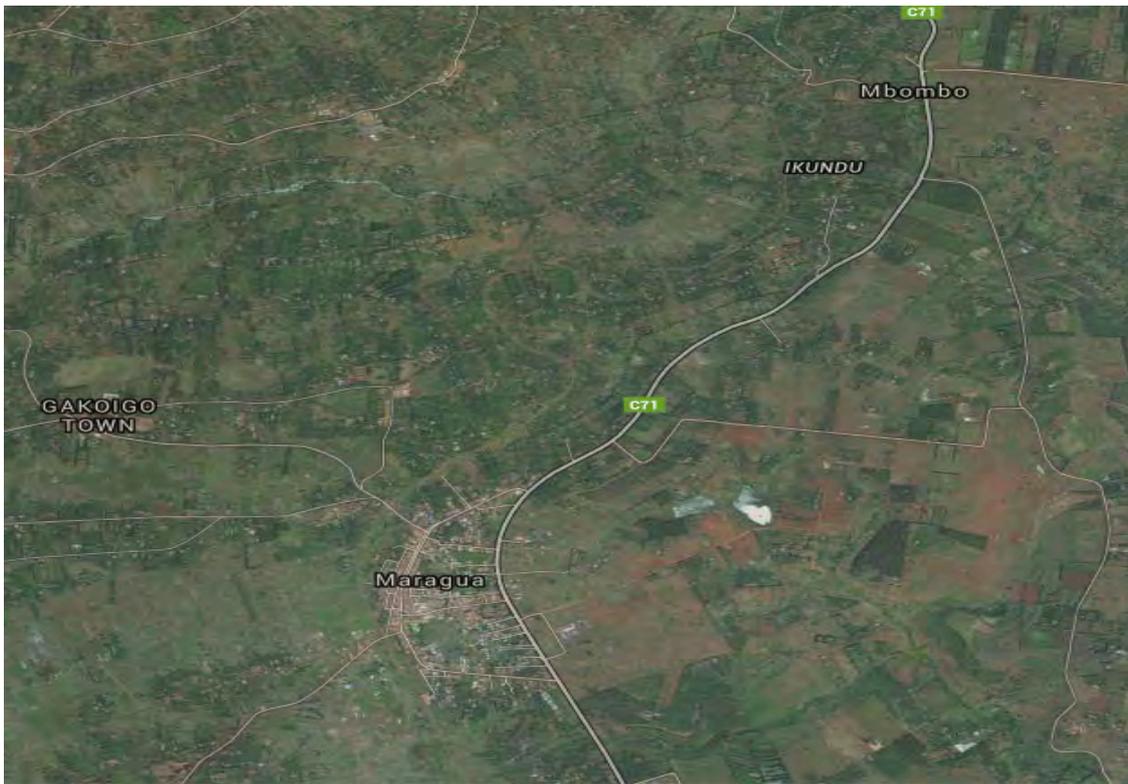


Figure 6: Map of Research Area Gakoigo Sub-Location (*Source: Google Maps, 2015*)

Major cash crops that are cultivated in Maragua range from coffee, macadamia nuts, avocados and bananas to staple foods such as maize, potatoes and beans. In addition, residents in this area also engage in non-farming activities such as small and medium enterprises. These informal business activities include: pottery shops, tailoring, makeshift greengrocers and tuck shops, among others, and these activities employ mostly women. Cash crop farming, subsistence and livestock farming are the predominant source of livelihoods in the area and agriculture is the principle source of livelihood in Maragua, which makes the location suitable for the study.

The respondents included in this study reside within the boundaries of the Gakoigo sub-location, and are specifically located in the sub-villages of Ikundu, Nyakagumo, Gakoigo, Ititu and Gitumbi. The distance between these rural areas and the main Gakoigo town areas ranges from 1 to 8kms. The selection of this particular location was also due to the close proximity to the researcher's home residence, which therefore eased logistical challenges in terms of accessing the area and allowed the researcher to keep expenses to a minimum.

Another reason for the researcher's choice of Maragua as the location of the study was based on the historical background of the area. In the late 1980's SAPs were imposed in Kenya, which had a major socioeconomic impact on rural women, particularly those who resided in coffee growing areas. For example, 'male deals' or informal collusion agreements on coffee crops were being

organised between rural women's husbands, the state and the WB, with the intention of attaining revenue as well as repaying debts to the international financial institution. Due to its male-exclusive nature, these arrangements did not benefit women in terms of revenue and livelihoods. Instead, these policies exploited women's labour and also impacted negatively on women's access to land for domestic food production (Brownhill *et al.*, 1997). As a result, women became poorer, their children were malnourished and the chemicals used on the coffee cash crop destroyed the formerly high soil quality.

It is because of these 'male deals' in the coffee sector that women who were members of various women's groups within Maragua were impelled to convene. The women chose to utilise their social resources in order to regain control of their natural and financial assets, which had been taken away from them. More specifically, the women retaliated against these oppressive structures by uprooting the coffee bushes and using them as firewood. Thereafter, the women replaced the coffee crops with locally tradable crops such as bananas and arrowroots (Brownhill *et al.*, 1997). The historical events in this area provide this research with a contextual understanding of a seemingly empowered group of women. The research asks how these same women within a rural setting adopt and utilise technologies, which enable financial access, and how these applications benefit them.

4.2.1 Ethical Considerations and Negotiating Access

Prior to embarking on fieldwork, ethical clearance was sought from the Research Ethics Committee at the University of KwaZulu-Natal (UKZN). The ethical clearance form (see Appendix 1) granted by the UKZN Research Ethics Committee was presented to the District Commissioner of the Murang'a County, and the Commissioner then provided the researcher with a permit (see Appendix 2), allowing the researcher to carry out the study.

The researcher made contact with a lead, a woman who also engaged in farm wage labour and who is also a member of one of the women's ROSCAs in the community. The lead was paid an equivalent to the standard wage (approximately USD \$2.50 per day) as per the agricultural industry in Kenya to assist the researcher and guide her around the villages. It was imperative to contact a lead who was a local resident because the female respondents were selected using a snowball sampling method and it was therefore necessary to reach out to respondents using a local resident. According to Biernacki and Waldorf (1981, p.153):

Having a locator in snowball sampling is akin to the use of significant information in the field of study... their use assumes their knowledge is differently distributed and that certain persons as a result of their past and present situations have greater accessibility and knowledge about a specific area of life than do others... they may be aware of potential respondents or may be more likely to have others reveal their potential to them.

Due to the nature of the lead's work, the research was carried out in the afternoon and the research took place depending on her availability. This was mainly because most respondents, including the lead, worked during the morning hours between 8 am to 12 noon. The interviews took place between 2 pm to 5 pm with the assumption that most respondents would be in their homes. However, in most cases the respondents were not found at their places of residence because most of them attended their ROSCA meetings after work. Nevertheless, respondents were eventually located when they were at home in the afternoon. In order to access the respondents, the researcher and the lead walked between one to two hours to the respondents' homes to collect data from them.

Prior to conducting the interviews, the researcher introduced herself to the respondents and explained the purpose of the research. Most of the communication in this case was conveyed in the local languages of Kikuyu and Kiswahili. The researcher also presented the letter from the District Commissioner as evidence to show that she had been granted permission to undertake the research. The researcher explained the respondent's rights as indicated on the consent form (see Appendix 3) in Kikuyu, and the respondents were required to give consent based on their understanding of the informed consent form as evidence that they had agreed to participate in the study before being interviewed. Bulmer (2008) emphasises that it is vital for the respondents to give the researcher consent, and also for them to be aware that they are being researched. For the most part, the consent forms were read out to the respondents; they preferred this mode of being informed about their participation in the research. In addition, it would be unethical to ask women with low literacy levels or poor eyesight to read and then sign the consent form. Hence during the research process, the researcher could not apply conventional ways of getting respondents to sign the consent form. The lead therefore acted as the witness as the consent form was read out and verbal consent was obtained from the respondents. The researcher ensured that the respondents did indeed understand the contents of the ethics form, and confirmed that they were willing to be interviewed.

Most respondents agreed to have the interviews audio recorded. During this process, concerns did arise, for example, concerning privacy matters, as one respondent queried:

"I hope this information will not be put on radio" (**Respondent 06**).

The researcher informed the respondents of the ethical requirements, and the actions that she would undertake in regards to managing and storing the information gathered from the field. Firstly, the researcher explained to the respondents that she was carrying out the study guided by the ethical standards set by the Research Ethics Committee of UKZN. The researcher assured the respondents that the information that they divulged would be safeguarded for her use only, and that the recordings and questionnaires would be discarded after five years. In addition, respondents were made aware that their names would be changed once the researcher wrote up her findings to ensure that the respondents remained anonymous and could not be identified. Finally, the researcher informed the respondents that she would go back to them and provide them with a summary of the research findings.

4.3 Sampling Method and Sample Size

A total of 28 respondents were selected using a purposive sampling method. The unit of analysis comprised 15 users and 13 non-users of MMTs. The purposive sampling method was found to be most applicable for this study because respondents had to be selected based on certain criteria that would allow the researcher to gather relevant data that would address the aims of the research. Respondents were chosen based on their use of MMTs or lack thereof in order to allow the researcher to acquire an understanding of the respondents' choices in using formal and informal saving methods. The study adopted a constructivist lens, following an interpretive approach as a means to understand each respondent's reality and experiences within this particular context (Guba & Lincoln, 1994).

4.3.1 Sampling Technique

The female respondents were selected using the snowball sampling technique. According to Bernard (2002), snowball sampling is suitable for helping the researcher access unreachable populations. In this case, the snowball technique was found to be appropriate because the researcher was able to identify the female respondents who fit within the stipulated requirements of the study. The help of a local resident assisted the researcher in locating the initial appropriate respondents. These initially identified respondents subsequently referred the researcher to other respondents who they knew and would be willing to participate in the research. The snowballing process continued

until the sample reached a saturation point comprising 15 users and 13 non-users of MMTs. The saturation point in this case demonstrated that there was no new information emerging from the interviews (Boeije, 2009).

The snowballing technique was applied because it was convenient, efficient and cost effective in creating a sample population for this study. In addition, this technique was relevant for this study because of the sensitivity of the research, which investigates the savings behaviour among low-income women's groups, which is considered a sensitive subject matter. The main setback for using this sampling technique is selection bias; some unknown, but key informants may have been left out from this study. In addition, the findings which emerge from this study may not be generalisable to other populations (Josselson & Lieblich, 2003).

4.3.2 Data Collection Methods: Semi-Structured Interviews

Face to face semi-structured interviews were carried out with the respondents who were women engaged in agricultural wage labour. This approach was suitable for this study because it provided the respondents with an opportunity to report their first hand experience of using MMTs as a saving tool. The information gathered from the respondents subsequently helped the researcher understand how MMTs influenced their financial habits. This method was found appropriate for this study because it gave the researcher an opportunity to build rapport and trust with the respondents (Louise & While, 1994). At the same time, conversational interview was appropriate for this study because it made it possible for the researcher to identify body language and non-verbal expressions throughout the interview process. The researcher had to engage 'double attention' during the interviews, which Wengraf (2001, p.194) explains as a process during which:

...you must be both listening to the informant's responses to understand what he or she is trying to get at and, at the same time, you must be bearing in mind your needs to ensure that all your questions are liable to get answered within the fixed time at the level of depth and detail that you need.

In this case, the interviewer listened keenly to the answers provided by the informants in order to capture vital and detailed information required for the study. Interviews took place from the 13th to 20th August 2013 and each interview lasted between 10 and 40 minutes. Due to the farming work, the interviewing times were difficult to schedule, hence no formal appointments were made with the

respondents beforehand. Most interviews were carried out in the respondents' homestead or on the farm. In most instances, the lead offered to assist the respondent with the work she was doing in order to enable the interview process to continue without interrupting the respondent's activities. This plan was effective especially in instances where the respondents were willing to participate. A mobile phone was used to record the interviews when respondents agreed to be recorded. For those who declined to be recorded, notes were taken instead. Only one MMT user, Respondent 19 declined to be recorded.

4.3.3 Research Instruments

The interviews were carried out using a semi-structured interview schedule and the unit of analysis focused on consisted of female small-scale farmers, both those who use MMTs and those who do not. Two sets of interview schedules were employed: one designed thematically for MMT users and one for non-MMT users. These interview guides were translated into Kikuyu and utilised by the researcher during the interviews (see Appendix 4, 5, 6 & 7). These semi-structured interview schedules were essential for the inquiry because of their flexibility that allowed the researcher to probe for more detail when necessary and in this way help substantiate the information that respondents recounted (Hutchinson & Wilson, 1992). In addition, each of the two interview schedules had a similar set of questions to enable comparison between the responses (Louise & While, 1994). Each interview schedule was divided into two sections. The first section consisted of questions regarding the biographical data of the respondent. This emerged as an important element during data analysis because there were clear differences in terms of age and educational attainment with regards to the uptake of MMTs as a savings mechanism. The subsequent sections of the interview schedule were designed to address the topics covered in the research questions in further depth.

Prior to embarking on the actual interviews, a pre-test was done on three respondents to ensure that the questions were concise, cohesive and easily understood by the respondents. In addition, the pilot test helped the researcher to understand the appropriate length of time required to conduct an interview. During the pilot study, the last section of the interview schedule, which included 'transforming structures and processes', had to be excluded because it was repetitive and became time consuming. However, one question from this section remained which was: 'In order of priority, what would you want to achieve in future?' (see Appendix 4).

Village		Number of Respondents Users	Number of Respondents Non- Users
Nyakagumo		3	3
Gakoigo		3	3
Ititu		3	2
Gitumbi		3	3
Ikundu		3	2
Total Number of Respondents		15	13
		28	

Table 1: Number of Respondents Interviewed

4.4 Data Analysis Method

Data analysis, according to Boeije (2010), mainly consists of grouping data in line with the research questions. In this study, after the researcher had concluded the data collection process, the research notes and recorded interviews were transcribed and translated from Kikuyu to English. The researcher read through the transcriptions meticulously and identified themes related to the research questions, which were categorised manually using a Microsoft Excel spread sheet. The themes were classified according to emerging patterns that arose from the responses elicited during the interviews. Lewins and Silver (2007, p.81) describe coding as:

...the process by which segments of data are identified as relating to, or being an example of, a more general idea, instance, theme or category. Segments of data from across the whole dataset are placed together in order to be retrieved together at a later stage.

The patterns emerging from the dataset were coded manually using Excel in relation to the research questions. This data coding was essential for this study because it helped the researcher to become familiar with and gain a more in-depth understanding of emerging categories, which facilitated a more thorough analysis of the data. The researcher was able to analyse, explain and effectively interpret the findings using the CF. Table 4 provides a summary of the key categories, which emerged from the data analysis process.

1. Uptake of MMTs based on age and education
2. How many women use MMTs to save
3. How using MMTs has impacted on women engaged in wage labour
4. The factors that facilitate women's access to the technology
5. The number of women who use MMTs to save
6. ROSCA membership
7. Financial Management comparing MMTs and ROSCAs

Table 2: Key Categories that Emerged from the Findings

Analytical categories derived from Excel were applied in line with the key groups within the CF which were initiated using NVIVO software. Parent nodes -from the CF, - and child nodes -from the emerging themes on Excel- were created in order to help position and integrate the manually coded themes that emerged from the research into the created nodes from the CF. To ensure validity and rigour for this study, the researcher attempted to triangulate the data by narration of the research experience from both users and non-users of MMTs, and to systematically analyse the findings using the CF. Information was also drawn from literature (e.g. journals, government reports, organisational reports and other reliable sources) to help explain the findings in a broader context. A detailed analysis of the findings will be provided in the Chapter Five.

4.5 Limitations of the Study

Most of the interviews were conducted in the vernacular, Kikuyu. Informed consent forms were translated to Kikuyu prior to the study, and later read out to the respondents. This is because some of the women did not know how to read and write while others had poor eyesight. Those who could read looked through the consent forms, but declined to sign citing security issues. In some instances, it was difficult to translate some English words into Kikuyu on the consent form. Therefore a lengthy practical explanation of the term was provided.

During the interview process there were some competing distractions, for example, neighbours would pass in front of the respondent's homestead and would greet the respondent and they would then have a chat for a while. Another distraction included instances where some respondents who were holding their babies during the interview became distracted because their babies would at times cry. This required a great deal of patience during the interview process since the researcher had to bring the respondents' attention back to the issue that was being discussed, which tended to prolong the interview process.

Even though permission was sought from the respondents before recording as mentioned earlier, one MMT user refused to be recorded whereas most respondents who were non MMT users declined permission to be recorded. There was a situation where a respondent agreed to be recorded, but once the interview commenced, she became silent. The interview was then terminated and another respondent was sought. This proved to be a challenge considering the limited time that was available for research.

In other cases, respondents gave one-word answers to questions, and this resulted in some of the interviews turning out to be short and not a great deal of data being collected from these respondents. Also, some respondents diverted their responses from the focus of the questions asked. The researcher had to try to guide the respondents back to the prescribed interview questions. This process took up a great deal of time. On occasions where the quality of information in these interviews was limited, the researcher opted to find other respondents to interview. Overall, the research process was time consuming and quite exhausting and there were times when the researcher was too tired to carry out interviews, so the process had to be postponed to a time when the researcher was better able to conduct a thorough interview.

4.6 Conclusion

This chapter reported on the qualitative approach, methodology and data analysis, which were found to be suitable for this particular study. The researcher conducted interviews with a sample of 28 respondents from Gakoigo sub-location, 15 of whom were users of MMTs, with the remaining 13 being non-users. The unit of analysis consisted of women who earn incomes from farm work in rural areas. Data collected during the semi-structured interviews was coded first manually using Excel, and NVIVO was thereafter used to categorise the data in terms of the various aspects of the theoretical framework. The theoretical framework applied by the researcher, namely the CA and CF, helped to link the patterns that emerged from the manually coded data. While certain limitations were faced during the research process, following the correct ethical procedures and implementing strategies that allowed the researcher to build rapport with the respondents ensured that the findings of the study can be considered valid and reliable, and can contribute to the existing body of knowledge which addresses the topic of ICTs and their impacts.

Chapter 5: Research Findings

5.0 Introduction

This chapter will provide a detailed account of the research findings drawn from the data, including the respondents' perceptions of choices taken regarding mobile phone use. The economic livelihoods and demographic characteristics of the respondents will first be considered. Thereafter, the themes that emerged from the data will be deliberated on. More specifically, the findings demonstrate how Kenyan women engaged in rural low-income agricultural activities are using mobile banking for savings purposes. This chapter will therefore examine how and why the respondents chose to use mobile banking services to save their income and remittances received from their next of kin, including how savings proficiently has helped them to produce further livelihood actions as well as meeting some of their aspired needs. Overall, the findings reveal that women chose to utilise informal saving methods over and above MMTs, citing low-income as well as poor self-discipline in mobile phone spending as the reason for limited utilisation of their MMT savings function.



Figure 7: A Closed M-PESA Shop in Maragua Town (*Source: Mbarathi, 2015*)

5.1 Economic Livelihoods and Characteristics of the Respondents

The sample in this study consisted of Kenyan women whose livelihoods depend on agriculture (see Table 4). The age bracket of the respondents ranged between 29 years old to 84 years old. The unit of analysis in the study was composed of women who were either married, unmarried, widowed or divorced and there were also single mothers amongst the respondents. All the respondents had children, some who were infants, others of school going age and yet others who were adults. The younger women below 40 years old had children who were either attending school or had dropped out of school. The respondents above 45 years old had adult children who had either completed high school or had dropped out of high school, and were either working or running their own businesses in other towns in the country.

The education level of the respondents varied between primary school to high school. Most of the respondents had not completed primary school, while some completed up to Standard 8 (see Table 4). Of the 28 respondents interviewed, two respondents indicated that they had completed high school up to Form 4 and some senior citizens (age 70 and above) attained education up to Standard 2 (according to the set education system during the colonial era). Table 3 below shows the equivalent international grades as compared to the Kenyan Education Standards. Five respondents stated that they had not acquired any formal education during their lifetime. Two respondents declined to mention their level of education. Altogether, the elderly respondents in this study who were age 70 years and above stated that they had dropped out of school because traditionally during Kenya's pre-independence, girls were not allowed to attend school or even continue with education.

Level of Education	Kenyan Education Standards	International standards Equivalence
Primary School	Standard 1-8	Grade 1-8
High School	Form 1-4	Grade 9-12

Table 3: The Kenyan Education in Comparison to International Education Standards

MMT Users				MMT Non Users			
Respondent	Age	Education Level	Farm work	Respondent	Age	Education Level	Farm work
06	50 yrs	Form 2	Own/Other	00	29 yrs	Class 2	Own/Other
07	43 yrs	Class 7	Own	01	Not sure (looks 65)	No Education	Own/Other
08	68 yrs	Class 6	Own	02	35yrs	Class 8	Own
09	40 yrs	Class 7	Own/Other	03	66 yrs	No Education	Own/Other
10	55 yrs	Class 5	Own	04	40 yrs	Class 5	Own/Other
11	57 yrs	Class 7	Own	05	Not sure (looks 75yrs)	No Education	Own/Other
18	60 yrs	Class 4	Own	12	29 yrs	Class 6	Own/Other
19	30 yrs	Form 4	Own	13	72 yrs	Class 2 (Before independence)	Own
20	42 yrs	Form 2	Own/Other	14	82 yrs	Class 2 (Before independence)	Own
21	47 yrs	Class 4	Own/Other/Sells pots	15	65 yrs	No Education	Own/Other
23	30 yrs	Class 8	Other	16	75 yrs	No Education	Own/Other
24	34 yrs	Form 4	Own/Other	17	35	Did not say	Own/Other
25	40yrs	Class 6	Own/Other	22	55 yrs	Did not say	Own/Other
26	39 yrs	Form 3	Own/Other				
27	52 yrs	No education	Own				

Table 4: Respondents' Profiles

Subsistence farming was the key source of livelihood among all the respondents. Some women farmed on their husband's land, others tilled land they had inherited from their parents while others cultivated on leased land. The average land size on which the women farmed ranged from one acre to three acres. After meeting their household food needs, all respondents sold their excess produce and some respondents also engaged in agricultural wage labour or in informal sector activities, for example, selling pots. It is important to note that farm work is seasonal and in most cases the environment has a significant impact on farm productivity, which was especially true during the period in which this study was conducted due to the erratic weather changes experienced.

The key crops cultivated by the study population consisted of maize, beans and potatoes among other crops. Bananas were the main crop that was locally tradable. The respondents nicknamed the banana cash crop a 'cheque' because it was usually a guaranteed crop, which can be exchanged for cash. Bananas would also be a form of extra income especially during lean times when work was not available. Selling farm produce, particularly the sale of bananas, was a primary means for the women to earn an extra income. It is therefore important to note that the prices of bananas fluctuate depending on the market demand and the status of the climate. Women were also prone to being exploited by middlemen who sold their products. For example, the average cost of a full bunch of large bananas would cost about USD \$5.70 at market price. However, middlemen would likely purchase the same bunch of bananas from the women at the price of USD \$2.85 or less, resulting in low returns from the women's crops.

Most women also engage in wage labour, which pays an average of USD \$2.28 per day to supplement their farming incomes. Wage labour activities take place in other small-scale and large-

scale farms where labourers engage in land cultivation, weeding, harvesting and feeding livestock, among other farming activities. However, most respondents stated that access to work depended on the season and that during low season there could be no work available. Work was however available during peak seasons, especially during planting, weeding and harvesting seasons. Regardless of these challenges, the women have managed to be resilient and have continued to serve their households in meeting their basic needs. This has also been made possible by receiving remittances from their next of kin. The subsequent findings will give an in-depth description of how women have managed to get through their everyday challenges, and how m-banking services have also helped them manage their day-to-day lives.

After the interviews, it was evident that the younger cohort of 30-50 year old women owned mobile phones compared to the respondents who were within the 60-80 year old cohort. The majority of the older age cohort did not feel the need to own a mobile phone. However, some stated that they would consider owning a mobile phone if the device communicated in their vernacular language. The few women within the older age bracket who owned a phone did so because their children sent remittances to them using MMTs.

As seen from the Table 4 above, MMT non-users were mainly the senior citizens who were between the ages of 55 to 82 years. Respondents in this cohort, who did not currently use MMTs, stated that they were not interested in using the service at all. On the other hand, there were younger MMT non-users, whose ages ranged between 29 to 35 years old, who asserted that the reason for not using MMTs was mainly due to not possessing a Kenyan national identification card, which is required in order to register and enable one to send and withdraw money. Most MMT users in this study made the decision to use MMTs on their own, while others were encouraged to use MMTs by their next of kin.

5.2 Uptake of MMTs based on Age and Level of Education

Drawing from the semi-structured interviews and observations, MMT users between the ages of 30 years to 68 years had an advanced level of primary and secondary education. In contrast, the majority of non-users in this study who were aged between 29 years and 82 years had limited education, or no education at all. The majority in this non-user group were elderly women who expressed no interest whatsoever in owning a mobile phone. However, some of the elderly users did acknowledge an awareness of the existence of MMTs.

“People here have phones and they say that they are going to Maragua to get money...I do not know what they call it... But I have never known what it does, because every one goes with their phone. I see people go in to the shop. I hear that they can send money in Kiambu [a town located 66 km away from Maragua] using the phone”

(Respondent 16).

Younger non-users explained that they were waiting for their identification cards in order to purchase a mobile phone and register their SIM cards. Nevertheless, some non-users were aware of how MMTs work yet they preferred to employ informal saving methods, which will be explained later in the chapter.

5.3 Financial Practices of Respondents

All the respondents in this study did not utilise formal banking services. Instead, MMTs were a preferred means of formally saving money. Similarly, respondents who utilised MMTs to save were also members of one or more informal saving groups such as ROSCAs. The women, both MMT users and non-users, participated in these savings groups where membership was based on their social and financial needs. Recurring ROSCA money contributions occurred on daily, weekly and quarterly bases. Other contributions were made during a crisis such as sickness or bereavement that occurred in the member’s household similar findings by (Collins et al, 2009). In addition, the use of ROSCAs included celebratory meetings like the ‘*Gùchkeria mùciari ngatho*’ which literally means, ‘thanking the parent’. This event takes place in turns when the women come together, and buy gifts for a member’s parents or guardian.

Type of ROSCA	How it works						
	Contribution frequency benefits	Number Membership	Purpose	Other activities	Income Generating Activities	Penalties Attendance	Penalties Delayed loan payments
Food ROSCA	Every 3 Months- helps sustain household needs	Depends on area-	To buy Food ege rice flour etc. Purchased in bulk and divided among members	Loan provided when needed	Interest earned from loans borrowed	Lateness Ksh 20	Yes
Ladies Club	Compulsory contribution of Ksh 200 once a week	Over 50 women	Merry go round		Cumulative fine of Ksh 50 for late contribution		Yes
Restoration ROSCA	Weekly contribution of Ksh 250 per week	65 Members	Merry go round 3 people benefit from returns every week		Rent out cutlery and cooking pots for events which occur locally -weddings, funerals etc.	Lateness Ksh 20 Noise during the meeting Ksh 20 Rudeness to fellow members Ksh 200	No
Funeral ROSCA 200	Members meet once a week and contribute Ksh 100	Membership based within proximity	Support during bereavement- Merry go round 15 people benefit from contribution	During funerals members contribute Ksh 10 to purchase firewood and water 20 litres.			No
Community ROSCA	Members contribute Ksh 300 after two months		Members contributions are used to visit their parents/relatives or during	During the visit day Ksh 200 is contributed for food		Ksh 100 fine for non attendance Delayed contribution Ksh 100	No
Loan ROSCA	Merry go round weekly contr	100+ members (divided in clusters (four groups) of btwn 25 people under one umbrella)	To provide loans (when members request) and accumulated contributions provided weekly members at a rotational basis		Provides loans to members. Members pay interest from loans		Yes

Table 5: Types of ROSCAs that the Women are Affiliated in {Key,1 : 1 USD equivalent to Ksh 87 as of September 2013} (Source: Mbarathi, 2014)

Some ROSCA memberships consisted of those, which offered financial services such as loans. In addition, some forms of ROSCAs also engaged in informal businesses such as hiring out cutlery and furniture for events. Yet other ROSCAs were in the form of ‘merry-go-rounds’ that enabled members to meet their household and life cycle needs. A merry-go-round in this context consists of members who contribute to a certain amount of money daily, weekly or monthly. Members are assigned numbers (depending on the group) and benefit from the collections on a rotational basis. For example, food ROSCAs and restoration ROSCAs are examples of the merry-go-round funding process. Each of the ROSCAs is governed by rules and regulations, which the members have to abide by. For example, members are fined if they delay their payments or are late to arrive for their meetings. In addition, misconduct within the group could result in one being expelled from the group and a more severe consequence is that a woman could be shunned from other ROSCAs. It is however evident that ROSCAs continue to play a significant role in creating economic resilience among women and continue to benefit and sustain their livelihoods.

5.4 Mobile Phone Ownership among MMT Users

Mobile phones are actively used in the community of Maragua. The data gathered revealed that some respondents own phones that were purchased by their next of kin so that the household members can keep in touch with their relatives as well as receive remittances from family members living in other towns. Some respondents also freely chose to acquire their mobile phones through their own savings, for example, by joining ROSCAs or by employing ‘mattress banking’. The perceived benefits of mobile phone ownership, in this case, were seen as highly valuable; the phone would enable the women to communicate with relatives, access farm work as well as send and receive money using MMT services. Amongst the respondents, the women have the sense of choice in taking up the mobile phone, and in some cases, in taking up MMTs as part of their many livelihood strategies.

5.4.1 Mobile Phone Use

According to the respondents in this study, the mobile phone served two purposes: 1) as a communication tool; and 2) as a medium of sending, receiving and storing money. The mobile phone was a vital communication tool, which helped friends and family keep in touch. The convenience of the mobile phone made it easier for the respondents to connect among each other and among potential employers when jobs were available.

“...so that I am able to communicate with people who are far, maybe being called for work because, always sending someone [physically] is not good...and even [calling a person makes it easy to] relay a secret [especially] if I do not want anyone [else] to know. ... But anyway, mostly it’s because of my children and my friends and not too much stuff” (Respondent 26).

5.4.2 Mobile Banking as a Savings Service

MMT users in this study indicated that they were utilising mobile banking transactions for everyday use. In many cases where mobile banking was used, the choice to use the savings component of the

service was for the most part as a temporary holding mechanism. In other words, once the recipient received money in their mobile phones, they withdrew it and put it to immediate use. Also, there was a limitation in the choice to use mobile savings due to low earnings acquired from farm incomes and a limited amount of remittances. Respondents felt that it would take too long to accumulate a large amount of savings on mobile savings to put towards one big project all at one time. In some cases, the respondents found the more optimal strategy was to invest the mobile money immediately on smaller components of larger, long-term projects as is indicated in the statement by the respondent below about building a toilet on her plot:

“...now let me say, in regard to putting together savings, I may receive some money today but then, it may take a long time before I receive some more money. Thus, you will not be getting often enough to put it together. Therefore, someone does something with it...with this money you have been given on a particular day...well this is what we do, we buy household goods...also for example building a toilet like this one (pointing at the toilet) I use that money to build it or even buying wood to build the toilet, it is built with that money” (Respondent 10).

The findings reveal that the mobile savings were not necessarily used for long-term savings for one large project, but that some users chose to use the mechanism for more short-term savings, which could be put together for smaller, specific assets.

In one case, however, the respondent had used mobile savings by keeping it within the phone until enough was accumulated to purchase a small water tank for water storage.

“...Yes I spent three months saving for that (pointing at the water tank)” (Respondent 19).



Figure 8: Water Tank purchased using MMT Savings (*Photo: Mbarathi, 2015*)

MMT users in this study stated that they receive remittances by mobile services, which were immediately put into use as soon as they were received. Remittances received within the household were mainly spent on education, purchasing household needs as well as farm expenses what the CF describes as educational and material resources. These findings show how women choose to utilise financial resources; in this case how remittances received via MMTs are used to attain their desired outcomes according to their needs and the things that they value.

A respondent provides an example of choosing to use mobile savings to reach a set goal amount in order to purchase one smaller productive asset (in this case, a cow) along with other household items.

“...In case I want to do something I accumulate some money using M-PESA until the money reaches the amount needed to undertake the intended task... yes I have bought a cow and I use the rest for household necessities...” (Respondent 09).

Most respondents acknowledged MMT services for enabling them to save money as well as save time, considering that they have many responsibilities to attend to both on and off the farm. The instant notifications received on their phones indicate that money has been remitted, which helps them plan ahead and withdraw the money without wasting time. This is contrary to the traditional

ways of receiving remittances through the post office or by public transport, which often take time and effort in order to be able to access remittances. The respondent below gives an example comparing previously having to use the post office for remittances and the use of mobile phone transactions:

“I bought a mobile phone because I want to talk to my children who are far and [...] maybe they want to talk to me. They may also send me a few pennies. [Before] people used to suffer [when] going to the post [office] you see now [with the phone,] you can talk to someone instantly, and you can tell [the person] what you want, [and they can also tell] you their problems. Therefore, mobile phone is good; it helps with a lot of things” (Respondent 10).

5.5 Saving using MMTs and ROSCAs

It is however important to note that most respondents took a pragmatic approach in managing their financial resources. Since most of them were members of ROSCAs, they used MMTs to complement their current financial activities. Some respondents argued that it was easier to access money through their ROSCAs, especially if their phones were lost. In addition, some respondents preferred ROSCAs because they instilled discipline in managing their money as opposed to having money handy in their phones, which they would end up spending. Respondent 7 illustrates below why she prefers to store money in a ROSCA. According to her, the ROSCA instils a sense of discipline and helps restrain her from misusing money compared to if she stored money in her M-PESA account, which would prompt her to use all her money.

“I do not like storing money in M-PESA because, because if I store money using it, you know if you store in the ROSCA it is within the ROSCA and it will not be easy to ask for the money just like that. But if I store it in M-PESA and I have saved lets say Ksh 500, I will just punch the buttons and withdraw my money. I like storing little money in my M-PESA like Ksh 10000 or Ksh 5000 but if it is a lot of money let it stay with the ‘teacher’(the ROSCA Chairlady) [in the ROSCA kitty]” (Respondent 7).

Aware that mobile savings are usually received in small amounts, respondents use mobile money combined with their diversified savings portfolio towards larger expenses or assets. For example, Most MMT users revealed that money received from MMTs and ROSCAs was spent on vital day-to-day requirements. For instance, one respondent used this combination of savings to pay for

school fees. School fees were the most commonly mentioned expense item as shown by the response below:

“...you see with M-PESA [there is very] little [money] that remains in my phone... [Therefore], I have not reached [to a point that will allow me to remain] with extra money that I can save, because I will keep some (in the ROSCA) until my turn comes...I use money immediately I receive it...even [with] ROSCA money I have already planned for it, if it is school fees I pay or if it is food I buy...” (Respondent 21).

5.6 The Role of MMTs and ROSCAs in assisting Women to achieve their Desired Outcomes

The achieved outcomes identified by the MMT users in this study were mainly directed to educational purposes, especially the ability to pay for school fees for children. School fees were paid for children attending secondary school. Even though the Government of Kenya has put into effect a policy on free primary education, parents still have to pay for school uniforms and bus fare, among other basic necessities, required for pupils to attend school. There are a variety of options for savings given that most respondents utilised MMT services, however, most of the MMT users still preferred storing their money within their specific ROSCAs. According to the findings, ROSCAs were a form of social security among the respondents both for MMT users and non-users. Most non-users claimed that these systems provided them with some form of economic security especially in cases where they were faced with a particular misfortune. Accordingly, the majority of non-users were more inclined to join a ROSCA than choose MMT savings. ROSCAs were necessary for the women to put aside part of their incomes as well as to benefit from the returns offered by the group. A non-user stated that being a member of a ROSCA is very important because the members help each other manage tragedy without pressure. In addition, fellow members from the group can come together to assist. Here, she uses an example of a funeral, which is a very expensive affair particularly in rural areas:

“I liked it because it [is of assistance when one faces] a problem...for example if someone died they (the ROSCA members) would contribute for you, they help you during the funeral arrangement and they bring foodstuff including sugar... that is why I liked it... yes because I have no one to help me, my husband does not have relatives... we have been living on our own... yes and that’s how [survive]” (Respondent 13).

Respondents were well aware of the on-going risks of saving with ROSCAs, including the chances of an untrusted member absconding with the group's money. The reason for persisting with their traditional methods of savings is because some respondents did not trust themselves to save and store money using mobile savings. Some respondents hold the view that keeping their money within mobile savings opens them up to the easy temptation to withdraw and misuse the money. However, the respondents are also aware that there are costs involved when carrying out withdrawals, which means that they reduce the number of times that they withdraw money.

Regarding preference for using the ROSCAs or close contacts for storing their savings, one respondent mentions the possibility of the mobile phone being 'lost'. While she knows that she can still retrieve her personal M-PESA account through a new SIM card, there can be a delay in accessing money in emergencies if the phone is lost and a new SIM card has to be obtained. However, funds can be accessed immediately, without any waiting period, from colleagues and ROSCAs, as exemplified in the excerpt below:

“...what I can say, storing money with the ROSCA is better than storing using M-PESA because sometimes the phone can get lost, and I may stay for a while without withdrawing the money stored in my M-PESA. So even if it is in the ROSCA, I will go see the secretary then I can ask for the money. Because we do not finish all the money... You may [have] a problem and you may tell the members that you would like to receive this kind of money and they give it to you...I use it to pay for my children's school fees or sometimes my child wants [me to purchase a pair of shoes], [I will] withdraw it (the money) instantly and [use it] immediately” (Respondent 25).

Finally some respondents stated that they did not save using mobile banking savings because their low incomes are too little for earnings to be kept electronically. Usually such earnings are spent for immediate needs as soon as they are received. The money left over in M-PESA is perceived as not enough to then keep for savings within mobile phone services. A user who earns money from wage labour explains how difficult it is to save money based on the nature of her work. In addition, she does not feel it necessary to store money in the phone because the money she is able to save is insufficient.

“I have never stored money using M-PESA, I do not have a bank account. One earns money from farm work, and the money earned is spent immediately to purchase goods at the shop in the evening. Or, if you save some money, you will save very little, and you will not need to keep it in the phone. You will just keep it in the house to accumulate” (Respondent 18).

As an achievement of choice, all mobile phone users who used MMT services were happy with their own use of the M-PESA services because it allowed them immediate access to cash and offered security and cost effectiveness. This finding is consistent with the findings of a previous ethnographic study in Kibera by Morawczynski and Pickens (2009) because respondents in both studies have corresponding views of receiving their money within their convenience.

“...I liked it because it you receive money instantly. For example, I may need money maybe from my children if I tell her/him that I want money. I ask her if she can send me some, and the money comes in a minute... also if I want to send money to them the money reaches them instantly” (Respondent 15).

Respondents were however aware of the recent rise in transaction prices (see Appendix 8) and this was cited as a disadvantage of MMTs. During the study, one respondent indicated that the increase of transaction costs was a challenge for her:

“...there is no major disadvantage except for high transaction fee for withdrawing cash, that's it” (Respondent 9).

There is still an advantage of timeous cash access when storing the money electronically rather than physically as mentioned by this respondent who asserts that the money is stored in a secure manner and can be easily accessed when needed:

“...the goodness of saving with M-PESA is because the money will be collected in one place compared to keeping it in the pocket... Because if you store the money in the pocket, unplanned needs will arise ...however, if you store it using M-PESA, I would not go and say that I am going to buy sugar...I will be able look for other means of getting money to buy sugar. My mind will not be on the money in my M-PESA account because the money is not in my hands” (Respondent 9).

As mentioned earlier, there would be delays in receiving money once it was requested through a phone call to, for instance, a relative. Receiving money can still be done the ‘traditional’ way, which is through sending funds via the post office or through public transport. The respondents who had access to MMTs no longer considered this mode of remittance adequate. This is because carrying out transactions using the mobile phone alleviates the extra efforts needed on the sender’s part. For example, the sender can avoid the hassle of queues and thereby minimise the time wasted when sending money through MMT services. Two respondents are in favour of these benefits:

“I bought a mobile phone because I want to talk to my children who are far, and also maybe they want to talk to me. They may also send me a few pennies. And also how

people used to suffer or always going to [the post office to send and withdraw cash], [...] now you can talk to someone instantly, and you tell him/her what you want [and also they can communicate] their problems. Therefore, [a] mobile phone is good [because] it helps with a lot of things” (Respondent 10).

“...I just use it (the mobile phone) to withdraw the money that is sent ...but the goodness is [that] the person who sends me the money does not need to stop working and come here, therefore she can send me money if she is in town...” (Respondent 14).

Undoubtedly, mobile banking use has been seen as an achievement of choice by MMT users, especially with regard to remittances, as it has helped many of the users to save time when receiving money. The ability to send remittances through mobile banking is considered a success to the women in this study because they can conveniently undertake planned activities which require the timely receipt of money. A timely payment is necessary in some cases, such as paying school fees as well as maintaining their homesteads and running their households. Most respondents were happy about mobile banking services because they stated that using the service had helped them to receive money on time and had reduced the waiting time. In addition, the service was complimented because of the respondents’ ability to communicate with family members as well as the possibility to request assistance.

5.7 Emerging Themes from the Study

Several themes emanated from this study, which may need to be explored further in future research. Firstly, there was the issue of intra-household conflict, particularly around mobile phone ownership. This was apparent during one particular interview, especially after the researcher asked one respondent if she had ever owned a phone, and from her response, her body language revealed a sense of irritation when she stated that her husband took the phone away from her:

*“I had [a phone] once, I used it for a short time then my husband took it”
(Respondent 00).*

This case is consistent with Robeyns’ (2003) study, the findings of which showed that gender discrimination is present within social structures, particularly within the household level. Even though access to MMTs is easily attainable within this context, gender bias can reduce the chances of women making use of existing resources, which might be beneficial in improving their

livelihoods. The uptake of these technologies is influenced by the needs and wants of the users, but such aspirations can be prevented due to existing informal laws such as cultural norms, as indicated in this particular case.

Lastly, during the course of this study other MMT products offered by MNOs were on the rise. In this case, M-PESA's Okoa Jahazi may be of interest, especially in establishing how such new value-added services offered by MNOs can contribute to poverty reduction.

5.8 Conclusion

Most respondents agreed that convenience has been brought about through the use of mobile phones. More specifically MMTs play a vital role as tools that are used to send and receive money. However, the findings of this study revealed that few respondents utilise the service fully as a means of saving their earnings and remittances. The women in the study preferred to either spend their money as soon as they received it or to store it in ROSCAs for safekeeping. While most respondents received money through their mobile phones, the money was either spent immediately to pay for their children's school fees or some respondents used the MMTs to store money for a short period of time in order to purchase small assets such as water storage tanks and livestock. In summary, MMT use helped the women in this study to save time and also enabled them to access money in a cheap and efficient manner, which then made it possible to meet their day-to-day needs. It is evident that the full utilisation of MMTs is mainly influenced by the women's circumstances; in this case using informal saving methods remained a preferred means of saving money.

Chapter 6: Discussion and Conclusion

6.0 Introduction

This chapter will discuss seven themes that emerged during the study (see Table 2, Chapter Four). The research focused on how access and utilisation of MMTs to save money benefits female smallholder farmers in rural Kenya. The themes were analysed using the CF. The CF was useful in guiding the analysis of the data by allowing the researcher to identify the existing connections between the roles of structure - ICTs vis-à-vis the current agricultural policy - including the extent to which these structures have enhanced choice among low-income groups in rural areas. Above all, this chapter attempts to establish whether these structures have enhanced or weakened the development process in the unit of study in light of the fact that existing structures can influence the sense of choice within human agency. In this case, human agency refers to the decisions made by rural women who derive their incomes from agriculture.

This holistic CF assisted in fulfilling the research objectives for this study by allowing the researcher to: 1) provide an understanding of how saving through the use of MMTs impacts on the livelihoods of poor women in rural Kenya; and 2) examine how the use of MMTs helped women cope with day to day activities. The CF specifically helped the researcher to assess the aspect of choice by examining why users choose to take up MMTs. The findings were also incorporated within Sen's (1999) concept of development by examining the development process that allowed the women in this study to achieve their desired outcomes and acquire the things they value. The discussion to follow will highlight how existing structural institutions such as ICTs, the use of mobile phones and access to MMTs in particular can influence policy, programmes and laws, which can promote or discourage the uptake of the mobile phones as a saving tool.

6.1 *The Role of Structure and Agency, the Impact on Choice and the Influence on Development Outcomes*

Existing social, economic and political structures can influence the increase or decrease of the uptake and full utilisation of MMTs to a degree that can change a user's anticipated development outcomes (Duncombe, 2007; Messer & Townsley, 2003). The research findings in this study have determined that the interplay between structure and agency plays a critical role in influencing choice among MMT users. The GoK, through the Ministry of Information Communications and Technology, together with the CBK has been instrumental in creating a system that opens mobile banking access to low-income users. This initiative has ensured that sound ICT policies and regulations have been put in place to allow and to govern innovation amongst MNOs (Okinda & Adera, 2014). Moreover, this has made it possible for mobile phone owners to access financial services, enabling them to send and receive money in a safe and efficient way using their mobile phones (Morawczynski & Pickens, 2009). This feature illustrates the key role that structure plays in expanding people's freedom towards achieving the life they value. The collaboration between the GoK and the CBK has thus promoted a favourable environment, which supports ICT innovations, and at the same time safeguards users and ensures that they benefit from these innovations.

According to Kleine (2013), the concept of development outcomes within the CF manifests in two distinct ways, namely primary and secondary. Primary development outcomes refer to the choice, which is available to an individual whereas the secondary outcomes relate to what an individual has chosen in order to achieve their desired aspirations. Previous studies, in accord with the results of this study, have demonstrated that technological innovation can improve the livelihoods of low-income groups to a certain extent (Kirui *et al.*, 2012; Morawczynski, 2010; Plyler, *et al.*, 2010; Vaughan, 2011). One of the key findings in this study was that most women chose to own a phone - which in this case is described as a material resource - in order to communicate with family, friends and business contacts. In addition, the mobile phone also acted as a useful tool among MMT users, because it made it possible to send, receive and save money using a mobile phone.

6.1.1 Sense of Choice

This study established that MMT users exercised their sense of choice by making an effort to either acquire mobile phones on their own, or through gifts from their next of kin. In this study, all the respondents who owned a mobile phone asserted that they were gaining from the benefits of mobile phones, particularly from the devices' convenience in facilitating communication with their next of kin as well as enabling them to easily access jobs. Additionally, through ownership of a mobile phone, the respondents felt an increase in their freedoms to save and store money in their phones,

which allowed them a favourable environment to make choices that would be beneficial to their lives. This finding is in agreement with Pickens and Morawczynski's (2009) study that showed that access to MMTs enabled women to transact and save money and 'hide' it from their husbands.

Another observation drawn from this study was that almost all the respondents who were MMT users taught themselves how to use the mobile phone by trial and error. While, the remaining respondents who owned mobile phones sought assistance on how to operate their devices from their next of kin, friends and M-PESA agents. The effort invested in learning how to operate a mobile phone shows the user's capability to own and use the mobile phone as they endeavour to achieve their wants and needs. More specifically, respondents who owned a mobile phone were able to call their next of kin, as well as to transact money using MMTs when the use of these technologies was most convenient for them. Additionally, the use of MMTs not only enhanced access to cash but also made it possible for respondents to save time when collecting remittances from MMT agents. In other words, MMT users in this study have been able to balance their work on the farm as well as have the ability to access money effectively through MMTs. This finding further supports Kleine's (2013) assertion that, in spite of the cost, access to mobile technologies such as mobile phones has made it possible for individuals to use time efficiently within existing formal and informal structures. In addition, access to money has made it possible for MMT users to meet their day-to-day domestic needs on time, for instance, remitted money has helped MMT users to improve their households by undertaking construction projects and repairs within their homesteads. Also, access to money through MMTs has enabled users to cater for their children's educational needs on time. The ability of rural women to access money through MMTs has also played a significant role in enhancing human resource, in this case education resource, as a means of instilling skills and knowledge that will benefit their children in future.

6.2 Structural Barriers Encountered by Users after MMT and its Influence on the Achievement of Choice

The findings of this study do not support previous research which suggests that access to ICTs can increase rural incomes and reduce poverty (Kirui *et al.*, 2012; Morawczynski, 2010; Plyler, *et al.*, 2010). A possible explanation for this might be that not many studies have been conducted that take into account pre-existing circumstances such as gender within a specific context, for example, poor rural women whose livelihoods depend on agriculture. While the findings of this study cannot be extrapolated to all women who derive their livelihoods from agriculture, the study has established that although MMT users received remittances through their mobile phones, most respondents

indicated that the money they received was not sufficient to necessitate long-term saving using M-PESA.

Within a broader sense, a key observation from this study suggests that the nature of work - in this case earning an income from agricultural work and produce - can impact on the full utilisation of MMTs among users. This is because some respondents' capability sets consisted of access to natural resources such as water and land - either through inheritance or leasing - which is regarded as a key resource for agriculture. Previous studies indicated that the current agricultural policies in Kenya are restrictive to small-scale farmers (Alila & Rosemary, 2006). Although the GoK has made an effort to transform the agricultural sector to accommodate smallholder farmers by drafting the ASDS, its execution to benefit the farmers is yet to materialise, on that account, this study demonstrates that the respondents have been prevented from executing their capabilities fully to allow them achieve the lives that they value. Hence, most respondents stated that they lacked access to essential farm inputs such as updated information, irrigation systems, improved tools, finances and markets to sell farm produce.

The lack of adequate farm inputs hinders the development process among smallholder farmers. This further restrains them from earning productive returns from their yield. If the aforementioned needs were met smallholder farmers would be likely to benefit from improved incomes derived from enhanced farm production. Furthermore, this would also facilitate value addition and present a fair playing field in terms of accessing markets. Access to improved farming methods among female smallholder farmers still proves to be a barrier, in all probability due to the effects of SAPs which played a key role in reforming Kenya's agricultural sector. The agricultural reforms embedded within the SAPs are aimed at integrating rural economies into the globalized market. However, to date these trade policies have not benefited rural farmers because more focus is centred on macro-economic growth, which is a common feature in most developing countries (FAO, 1999). Hence the current agricultural policies in Kenya continue to favour large-scale farmers over small-scale farmers. The majority of small-scale farmers are women who are therefore often side-lined during policy making. This has resulted in the absence of financial capital, a lack of updated information and a shortage of viable markets causing rural women to experience poor returns from their outdated farming methods. For the most part, the challenge of not being able to access financial assistance and other support such as information to improve the capability set which women have access to obstructs the development process, which further hinders the expansion of an individual's freedom to achieve their aspired goals.

6.2.1 Existing Structural Barriers that Affect the Achievement of Choice: an Illustration

As mentioned earlier, most respondents cited the lack of access to up to date information on current agricultural practices and lack of access to equipment and tools as barriers, which prevented them from farming effectively. Results in this study also demonstrated that the capability sets of respondents differed to varying degrees, in ways that were likely to prevent respondents from utilising MMTs fully. A notable example is the case of Respondent 26, who stated that she obtained skills on improved farming methods through a local farming training programme within the area. In addition, the local government in Maragua has initiated projects, which have made it possible for the local community to access water - a critical natural resource in agriculture - through the Constituency Development Fund (CDF), a government-funded rural poverty reduction initiative. Regardless of the skills obtained or the increased access to water, Respondent 26 argued that insufficient financial capital prevented her from purchasing farming tools - material resources - which were essential for her to exercise her acquired farming skills. This illustration brings to light how some structural components can encourage an individual's sense of choice while other components can prevent or constrain the individual's capability to carry out new undertakings towards achieving their desired outcomes. In other words, the lack of financial access is one of the key factors which hinders the efforts of Respondent 26 to fully utilise MMTs. Notwithstanding, Respondent 26 has chosen to own a phone, and has taken the initiative to obtain knowledge about modern farming skills, a means of enabling her to fulfil her aspired needs. Furthermore, Respondent 26 maintains that if she had a way of obtaining financial resources, it would allow her to purchase the right farming equipment that will allow her to take up farming on a full time basis. Respondent 26 asserts that once this is accomplished she will have sufficient income, which will enable her to save using the mobile phone.

The example discussed above can be related to Sen's (1999) claim that in order to attain development, the state must ensure that it creates a suitable environment for marginalised groups to fulfil their desired aspirations. Existing structures should enable a person to exercise his or her capabilities, which would then allow them to pursue a better life towards improving their well-being (Sen, 1999). In addition, the SLF illustrates that existing formal and informal structures can promote or constrain agency (DFID, 1999). Findings of this study suggest that improving the agricultural policy to adequately address the needs of low-income smallholder farmers would in all likelihood increase the income that they are able to generate, and subsequently influence and enhance the uptake and utilisation of MMTs. A further positive consequence could be that improvement of income would enable these farmers to upgrade to formal banking services.

The aforementioned illustration also assists in providing an understanding of the role of ICT policy within a developing country context. The literature discussed in this study has shown how the successful uptake of MMT technologies varies within different socioeconomic and geographical contexts. This research presents additional evidence on how ICT policy in Kenya has allowed MMT access to rural areas such as Maragua. The results of this study indicate that there is limited use of MMTs among this group of rural women because of low incomes. Applying the CF as an analytic tool has assisted in identifying this gap in terms of the lack of uptake of MMTs. Undoubtedly, there appears to be a lack of supportive policy implemented within Kenya's agricultural sector to help promote and expand smallholder farming. Drawing from these findings, it is evident that in order for ICT policies to achieve the goal of reducing poverty the objectives should be in line with the needs of the target group, in this case small-scale farmers. This can be accomplished by strengthening the agricultural policy in Kenya in such a way that it accommodates small-scale farmers, in pursuance of maximising the use of ICTs as a medium of poverty reduction. Using the CF as a conceptual tool has also guided this study in identifying the existing policy challenges, which hinder uptake of MMTs. In this case it is deduced that strengthening the agricultural policy to an extent that it improves the ability of rural women to increase their income can allow them to enhance their uptake of MMTs to save.

6.3 Use of Choice and the Uptake and Use of MMTs versus ROSCAs

Organisations and institutions play a considerable role in enabling MMT users expand capabilities and choice in adopting and using MMTs. According to the findings of this study, MMT users maintain that M-PESA agents played a key role in showing them how and assisting them to carry out transactions using MMTs. This validates the role of structures, for instance the Communication Authority (CA) in Kenya that regulates the ICT sector and MNOs who license agents - the majority of whom are shop owners located in various towns nationwide - so as to ensure that users can access their services in an efficient manner. As a result, the choice of MMT users is enhanced making it possible for them to access and save money in their phones in order to accomplish their day-to-day needs. Respondents in this study indicated that they were mainly assisted by M-PESA agents who were mainly kiosk owners or mobile phone cum electronic shop owners. According to the respondents, it was easy to access the M-PESA agents because most shops were situated within strategic locations within Maragua and Gakoigo Town or their environs.

The respondents who had successfully taken up and used MMTs managed to save time as a consequence. Similar to previous studies by Kiiti and Mutinda (2011) and Morawczynski (2011), results from this study demonstrate that ICT innovations such as MMTs in Kenya allow women to manage their time efficiently making it possible for them to carry out transactions cheaply, quickly, and in a convenient manner, particularly in the event of paying for school fees or catering for sudden emergencies which may occur. This research shows, that current structures can determine the freedom the respondents in this study possess. For example, existing cultural norms within most rural communities in Kenya dictate that the women's role in society consists of nurturing, food production and maintaining their households. This is similar to other developing countries, where the roles and duties performed by rural women is in most cases unpaid and confined within the household or on their farms (Lahiri-Dutt, 2012; Sparr, 1994). Even though this was the case among the respondents in this study, some MMT users chose to store their money remitted by next of kin in their phones in order to achieve personal short-term goals such as the purchase of water tanks, livestock and other aspired needs.

The uptake and use of MMTs as a saving tool has had a significant impact on the livelihoods of rural women in this study. In contrast, however, the results in this study show that not all MMT users saved money in their mobile phones and hence, similar to non-users, most MMT users to a large extent relied on informal saving methods to store their money. These results differ from Pickens and Morawczynski's (2009) study, which demonstrated that rural MMT users who received remittances from urban areas for the most part took up MMTs as a primary means of saving their money as compared to informal saving methods.

6.4 Use of Choice and the Uptake and Use of MMTs and Level of Education

Another important finding in this study is that one of the key determining factors for choosing to use MMTs was the level of education of the users. The level of education is indicative of choice of using MMTs among women who engage in agriculture. For this reason, this study attests that the level of education plays a critical role in determining whether an individual subscribes to MMT services. In reference to Table 4, most women who were MMT users had a higher level of education as compared to MMT non-users, who either had low levels of education or none at all. At the same time it should also be noted that, regardless of the education level, both users and non-users of MMTs were members of informal saving groups, which have always been readily available to them before the introduction of MMTs. Concerning the element of choice in the uptake of MMTs as a saving method based on literacy levels, this study established similarities to the findings

expressed in the study by Medhi *et al* (2009), which indicated that low literacy levels among low-income groups can hinder users from choosing to use and adopt mobile phones as a saving tool via MMTs. This is substantiated in this study as most of the respondents who had low literacy levels did not use MMTs. In addition, the majority of non-users in this study were elderly and did not feel the need of owning a mobile phone. This shows that even though MMTs are accessible and affordable to some extent, factors such as the level of education and advanced age can impact on the uptake of MMTs. Although most non-users did not choose to utilise MMTs as a saving tool, they had other options such as choosing to use existing social resources such as ROSCAs which were appropriate and convenient for them to save and to fulfil their desired outcomes.

Becoming a member of a ROSCA in rural areas plays a crucial role in the lives of low-income groups. Respondents in this study chose to engage in informal saving groups because it assisted the women to spread their financial risk as well as to enhance their purchasing power. That is to say, ROSCAs provide a form of insurance which caters for the livelihood and needs of their members, be it in form of money, food or social support during difficult times. For example, being a member of a ROSCA provided the women with some form of social and financial protection, which were cited as useful means of coping with emergencies especially when sickness or death occurred. Overall, similar to findings by Collins *et al.*, (2009); Fonchingong, (1999); Klonner, (2003) this study demonstrates that both users and non-users utilised informal saving methods as a substitute to maintain their cash flow in order to achieve their desired livelihood objectives.

The following conclusions can be made from this study: firstly, access to MMTs provides women with an alternative choice of saving money; secondly, it is evident that in this particular context the opportunity to form and be a member of an informal saving group still remains a predominant method for storing financial capital, thus making it a preferred practice that institutes expanding the individual's freedom. Hence, both users and non-users of MMTs are able to attain their achieved outcomes by choosing to utilise MMTs and/or informal methods to save. Therefore, access to financial resources through both methods has enabled rural women achieve the lives they value in line with Sen's (1999) idea of development.

6.5 Achievement of Choice: Adoption and Usage of MMTs among Female Smallholder Farmers

According to Alsop and Heinsohn (2005), the possibility of a person to make a choice that is beneficial to them is hindered unless they are empowered. Being empowered makes it possible for them to make choices that will help them achieve their aspired outcomes. The rural women in this study had various options to choose from in terms of using MMTs or informal saving methods. The main objective of this study was to determine whether female smallholder farmers in Kenya utilise MMTs to save. Key findings indicate that, essentially, most users did not save money in their mobile phones largely because they did not have sufficient income worth storing in their M-PESA accounts for a long period of time. Furthermore, it was also noted that when respondents received their remittances via M-PESA most of them withdrew the money immediately and either allotted the money towards their domestic needs or diverted the extra money to their affiliated ROSCAs as will be explained in detail in the following section.

6.5.1 Managing and Spending Remittances: MMTs versus ROSCAs

With regard to spending and managing remittances, while some MMT users spent their money immediately to pay for children's education or immediate household needs, most MMT users transferred the extra money from their phones to ROSCAs. Some MMT users in this study indicated that they saved money using 'mattress banking' - storing money under a mattress or in a secret place. Whereas some MMT users saved their funds in their phones for a short period of time, roughly between one to six months, to purchase assets such as water tanks and livestock among other needs.

What emerged strongly among MMT users was that ROSCAs were the preferred method of accumulating their money. One major reason cited for favouring ROSCAs was because it helped the respondents to maintain financial discipline, which is similar to findings in previous studies by Gugerty (2007) and Rutherford (1999). The ROSCA money contributions were not easily accessible, and they also preferred to receive their money when it was their turn to benefit from the rotation once reached. Users indicated that ROSCAs prevented them from misusing their money. Respondents felt that saving using MMTs would tempt them to withdraw their money. For instance, Respondent 7 remarked, "*I will just punch the buttons and withdraw my money*". Respondent 7 further expressed that saving using MMTs was a disadvantage because a transaction fee was charged when withdrawing money, and this cost easily depleted their savings.

Even though membership in different types of ROSCAs varied among the respondents (see Table 5), most respondents suggested that storing money in ROSCAs was more convenient because they could access their money when they needed it. Also, respondents stated that ROSCAs also served as an insurance that catered for life cycle risks, such as sickness and funerals. The tool also assisted as a means of maintaining household food security. Additionally, ROSCAs also functioned as an investment bank where women could take a loan and pay back this money with low interest. Finally, the respondents used the ROSCA as a means of venturing into informal business; for example, one group would hire out cutlery, tents and seats at a modest fee for public events within the community.

This form of flexibility and income generating activity has made ROSCAs a preferred option for women both users and non-users of MMTs in order for them to save money. This study also established that social networks remained strong among MMT users. As a result, being a member of a ROSCA strengthened the existing social resources in Gakoigo, by providing support to the respondents both financially, through income generation projects and loans, as well as psychologically during bereavement and sickness. In addition, this study established that informal saving methods (i.e. ROSCAs) among MMT users strengthened the sense of community, particularly pre-existing social networks, which however is contrary to Kiiti and Mutinda's (2011) study which found social resources among MMT users weakened as a result of using MMTs. Although access to MMTs was possible among rural women, the majority chose to use informal saving methods as a means to store and accumulate their money safely and also as a way of restraining them from misusing their earnings.

6.6 Conclusion

The aim of this study was to explore how MMTs have facilitated financial access as well as enhanced the livelihoods of female smallholder farmers in rural Kenya. Sen's CA and Kleine's CF were found suitable for analysing the results for this study in order to gain an in-depth understanding of how and why women choose MMTs as a saving tool. This is because these frameworks highlighted how existing structures and opportunities influence expansion of freedom and choice in regard to uptake and adoption of MMTs in the economic lives of the unit of study. Furthermore, the frameworks assisted in identifying gaps which exist between an individual's agency and opportunity structure and how altering these structures - in this case study, ICT and agricultural policies in Kenya - can constrain or improve an individual's access to resources.

This study applied a qualitative approach using a purposive sampling method. Respondents in this study were selected using a snowball sampling technique. Data was gathered using a semi-structured interview schedule when interviewing the respondents involved in the study. Approval to conduct the interviews was sought from the District Commissioner in Maragua prior to the commencement of the data collection process. The sample of respondents in this study consisted of both users and non-users of MMTs. Selecting both users of MMTs and non-users of MMTs helped the researcher to provide a comparison of the financial saving habits between both groups, as well as to ensure the validity and reliability of this study. In addition, including both groups in this research assisted in revealing why the non-users chose not to take up MMTs as a saving mechanism. Applying a qualitative approach in this study was relevant because it guided the researcher in interpreting the findings as well as in highlighting vital components that influence the uptake and adoption of MMTs among female smallholder farmers. In addition, it made it possible to apply Sen's idea of development in a systematic manner, with respect to establishing how MMTs help users expand their desired freedoms. The CF was also applied in this study to help in providing an understanding of the significant role of existing structures and opportunities present in influencing choice either positively or negatively among the unit of analysis. There are however limitations to the qualitative approach such as the fact that the findings and conclusions pertaining to this study may not be generalisable to other contexts. It is thus unknown whether a similar study applying diverse research methods may draw similar interpretations.

The findings from this study demonstrated that financial returns obtained from the agricultural sector are insufficient and thus have prevented women in this case study from utilising MMTs to their full capacity. Previous literature has demonstrated that the ICT sector in Kenya has accomplished a technological breakthrough in allowing low-income groups access and the ability to transact and make use of financial services using mobile phones. In addition, several studies have concluded that the adoption and uptake of ICTs is capable of reducing poverty levels within low-income groups. However, findings of the current study have been unable to demonstrate that ICTs in the form of MMTs can fully reduce poverty within this research context. Hence, the capacity of MMTs to transform the livelihoods of rural women in Maragua and lift them out of poverty is yet to be achieved. The findings of this study suggested that three major factors prevent the uptake and continuous use of MMTs as a saving tool, namely, the level of education, advanced age and lastly the amount of income earned from agricultural labour and production. These are among the key factors that prevented the uptake and adoption of MMTs among the respondents.

Low levels of education and advanced age were common reasons cited by non-MMT users as to why they had not acquired a mobile phone. Although MMT users appreciated the fundamental

purpose of MMTs as value-added services, which had been useful tools in terms of saving time and money when carrying out transactions, this study demonstrated that saving using MMTs is underused as a saving tool among the unit of study. In order to compensate for this gap most respondents, both MMT users and MMT non-users, chose to utilise informal saving methods such as ROSCAs to help sustain their day-to-day needs. A possible explanation for this result is that ICT innovations have not effectively assisted poor female small-scale farmers to increase their incomes in a way that allows them to save extra money, although several respondents in this study assent that MMTs have some basic contributions to their everyday life. This is mainly because of the poor policies within Kenya's agricultural sector, which still embody the remnants of SAP policies that continue to undermine rural women's ability to improve agricultural productivity. Based on these conditions, there is a need for harmonisation of policies in both the ICT and agricultural sector in order to respond to the needs of the poor.

An implication of these findings is that both ICT and agricultural policies should be taken into account when implementing measures to address issues of poverty in rural areas. For low-income groups to benefit from the ICT sector, it is important that the Kenyan government complies with the current constitution, which stipulates devolving of central power to local constituencies. This process should ensure that the relevant concerns of low-income groups in these local constituencies are addressed and that these groups are not left behind in terms of poverty alleviation. Hence, low-income groups within the agricultural sector should be included in policy- and decision-making and should also be engaged in discussions about innovations which may be capable of meeting their needs and thereby improving their well-being.

Altogether, it is important to note that the ICT sector in Kenya's financial market is evolving rapidly and emerging innovations are on the increase, leading to rapid transformation within the sector. However, even though the government has provided support towards the growth of ICTs, financial institutions have taken up the cue and taken the initiative to create new financial products, which are likely to cater for low-income groups. For example, new financial innovations such as 'thin SIM' technology introduced by Equity Bank may have the potential to make it possible for low-income users to instantly open bank accounts using their mobile phones (Okuttah, 2014). Therefore, further research regarding this initiative is required to assess its impact on low income groups.

Considering that these innovative financial products may soon be available to the rural poor, lack of proper agricultural policies, which support access to information, finance, farm inputs, wider markets and value-added produce initiatives, will not only hinder the development process, but will

also prevent the rural poor from earning better incomes. This will thus decrease their chances of utilising their freedom to achieve the lives they value. As a result, ICT innovations within the financial sector will remain unused, bringing about inequality within the rural population.

In summary, ICTs have the potential to improve the livelihoods of the poor, however, their agricultural income also has to improve. There remains interest in and the ability to use MMT services among rural women. Current structural constraints ingrained in the agricultural sector serve as a major barrier for access to and use of MMTs, therefore restricting women from fully utilising these financial tools.

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Appendix 1: UKZN Ethical Clearance



16 February 2014

Ms Nduta M Mbarathi (211550939)
School of Built Environment & Development Studies
Howard College Campus

Protocol reference number: HSS/1480/013M
Project title: The impact of saving using Mobile Money Transfer Technology on the livelihoods of rural wage-earning women: A case study in Maragua District, Kenya

Dear Ms Mbarathi,

Full Approval – Expedited

In response to your application dated 12 August 2013, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol have been granted **FULL APPROVAL**.

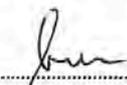
Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

Please note: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully


.....
Dr Shenuka Singh (Chair)

/ms

cc Supervisor: Professor Imraan Valodia
cc Academic Leader Research: Dr MP Sithole
cc School Administrator: Ms Meera Dalthaman

Humanities & Social Sciences Research Ethics Committee

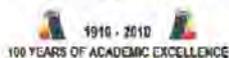
Dr Shenuka Singh (Chair)

Westville Campus, Govan Mbeki Building

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Telephone: +27 (0) 31 260 3587/83504557 Facsimile: +27 (0) 31 260 4606 Email: ximbao@ukzn.ac.za / snymanm@ukzn.ac.za / mohunp@ukzn.ac.za

Website: www.ukzn.ac.za



Funding Campus:  Edgewood  Howard College  Medical School  Petermaritzburg  Westville

Appendix 2: Authorisation Letter from the District Commissioner of Maragua

OFFICE OF THE PRESIDENT

PROVINCIAL ADMINISTRATION & INTERNAL SECURITY

Telegram: "DISTRICTER", MURANG'A SOUTH
Telephone:
Fax: 020-2026091
E-mail: dcmrgsouth@yahoo.com



DEPUTY COUNTY COMMISSIONER
MURANG'A SOUTH SUB-COUNTY

P. O. BOX 8
KENOL

When replying please quote

Ref. MAR/CORR/3/3/112

12th September 2013

M/S NDUTA MBARATHI
P.O BOX 119
MARAGUA

RE: RESEARCH AUTHORIZATION-

Above mentioned subject refers;- reference is made to your letter date 12th September 2013 committing yourself to conduct a research on – ***“Impact of mobile money technologies on the livelihoods of rural wage-earning women in maragua district.*** You are hereby authorized to proceed with the same.

A handwritten signature in black ink, appearing to read 'G.M. Kigochi', written over a horizontal line.

DISTRICT COMMISSIONER
MURANG'A SOUTH

G.M.KIGOCHI
DEPUTY COUNTY COMMISSIONER
MURANG'A SOUTH SUB-COUNTY

Copy to: The Professor Imraan Valodia
University of KwaZulu Natal, Durban
South Africa

Appendix 3: Informed Consent English

Informed Consent Form

I, Nduta Mbarathi, student number 211550939, I am doing research on *The impact of saving using Mobile Money Transfer Technology on the livelihoods of rural wage-earning women: A case study in Maragua District, Kenya.*

This research is done in order to fulfill the requirements for a Masters degree in Development Studies under the supervision of Prof Imraan Valodia from the School of Built Environment and Development Studies at the University of KwaZulu-Natal. I am going to invite you to be part of this research. This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions, you can ask them of me or my contact details are below:

Nduta Mbarathi, Masters Student,

E-mail ndutsmbara@yahoo.com

Cell: +27 74 281 7031

School of Built Environment and Development Studies, University of KwaZulu-Natal, Durban

To understand how saving using MMTs have impacted on the economic lives of women the study will also examine how the use MMTs help women cope with day-to-day challenges and risks.

This research will involve your participation in an up to one hour-long interview, where the interview will be recorded in audio-format. The information gathered will be kept in secured storage. Excerpts from the interview may be part of the final research dissertation. Do you give your consent for:

(please tick one of the options below) to be used in the report?

Your name, position and organisation, or	
Your position and organisation, or	
Your organisation, or	
None of the above	

You do not have to take part in this research if you do not wish to do so. You may refuse to answer any question or stop participating in the interview at any time that you wish without your reputation being affected or any other consequences.

Please sign this form to show that I have read the contents to you

----- (signed) ----- (date)

----- (printname)

Appendix 4: Informed Consent Kikuyu Translation

Informed Consent Form

Kikuyu Translation

Njitagwo Nduta Wa Mbarathi thomagira bururi wa South Africa, degree ya Masters Nũmba ya thukuru_211550939.

Ndireka kigeranio gia kumenya uria thimo cia moko citeithagia atumia aria marutaga wiiiira wa kiibarua. Nigwienda kwoya kahinda gaka taa ithaa rimwe uguo, uundeithie na gucokia ciuria iria ngukuuria kuringana na kwenda gwaku, gutari na kuhinyirurwo ni mundu.

Ingetwa kuuga ciugo ũtaranyita no ũnogamie nigetha cokere.

Ungikuruo na ciuria inge no ungingyirĩ na numba ĩcĩ.

Nduta Mbarathi, Masters Student,

E-mail ndutsmbara@yahoo.com

Cell: +27 74 281 7031

School of Built Environment and Development Studies, University of KwaZulu-Natal,
Durban

No uuhe ruutha rwa kwandika ritwa riaku kana aca;

Permission to audio tape

Interview ni ya nuthu ithaa

Nindetekera no wonanie ritwa riakwa Aca ndukonanie ritwa riakwa

----- (Kiara) ----- (Muthenya)

----- (Riitwa)

Appendix 5: Interview Schedule English M-PESA Users

The impact of saving with Mobile Money Transfer Technology on the livelihoods of rural wage-earning women: A case study on Maragua District, Kenya.

Respondent: _____

Date: _____

M-PESA Users

A: Bio Data

1. How old are you?
2. What is your education level?
3. How many children do you have?
4. Where do you live? (In your own homestead or have you rented a place?)

B: Wage Employment Status

1. Are you currently engaged in farm wage labour?
2. If yes (Probe) For how many years have you worked farm wage labour?
3. How many times a week do you work?
4. Have you ever experienced a lack of work?
5. How often do you experience lack of work?
6. What do you do when this happens?
7. Could you give me an estimate of how much you earn (monthly, weekly, daily).

C: Mobile phone ownership and saving using the device

1. Do you own a mobile phone?
2. How did you come to own/acquire it?
3. What inspired you acquire a mobile phone?
4. Have you saved money before?
5. What methods of saving do you use?

D: Impact of using MMT within the Sustainable Livelihoods Framework

D1. Financial Capital

1. Currently what saving method are you using? (MMTs or informal saving methods or both)
 - a. If both MMTs and Informal savings why?
 - b. If using still using informal saving methods why?
2. Which MMT have you subscribed to
3. What inspired you to start saving using (The named MMT)
4. How long have you used this particular MMT as a saving mechanism?
5. How often do you save your wage earnings?

6. Are there other ways you use your MMTs, for example by receiving remittances?
 - a. How often do you receive remittances?
 - b. Could you give me an average amount of what is sent?
 - c. How do you use it?
7. In your view is there a difference in saving using MMT's and your previous saving method?
8. How far do you travel to collect your money using the MMT's saving method? (Probe) how do you get there? (E.g. do you walk? take transport?)
9. How much do you pay for transport? (If they use transport)
10. What are the risks of using this method as a saving mechanism?

E: MMT's contribution to livelihoods

E1. Risks and vulnerabilities

1. How has saving using the MMT helped you manage to cope with risks (e.g. sicknesses, death)?
2. How about when there are no jobs what happens during this period?

E2. Livelihood assets/Capitals

1. Please tell me how saving using MMT's helped you? (**NB this section will be administered according to the SLF themes that the respondent brings up during the interview.**)
 - 1.

E2.1 Human Capital

1. How has the use of MMTs influenced the way you pay school fees?		
2. Have your children completed school?	How many boys	How many girls?
3. Have your children be chased out of school because of lack of school fees?		
4. How about dropping out of school because of lack of school fees?		
5. What chances are there that the boy or girl child will advance their education? (Probe) at what level?		

E.2.2 Natural Capital

1. Do you own land? (Probe) How did you acquire it? (E.g. purchase, inheritance,)
2. How has saving using MMTs helped you in purchasing productive assets? (E.g. buying a piece of land, renting a piece of land,)
 - a. (Probe) Can you list other assets you have managed to purchase using MMTs?
 - b. (Can you recall how many years ago you managed to achieve (the mentioned) assets?
 - c. Have you secured a title deed for this asset (if respondent has bought land)
 - i. What challenges did you face when trying to acquire this asset?

E.2.3 Physical Capital

1. In what other ways has saving using your current saving method helped you improve the existing assets (i.e. structures in your household e.g. Improved roofing, build toilet etc.)?
 - a. How long did it take you to upgrade the structures in your homestead?
 - b. How long did it take you to access water from the local authorities in your homestead? (If water supply comes from the Maragua council)
 - c. What challenges have you faced in making this possible?

E.2.4 Social Capital

1. Has using current saving method helped you make decisions on how to spend your money?
2. How has it helped build networks in your community and household?
3. In your view in what ways have you benefitted from of saving using current saving method?
4. How has using your current saving method helped you to help others in need?

E.3 Transforming structures and processes

1. In order of priority, please mention assets that you would like to invest in future?
2. Will you make this decision yourself or will you engage your family/spouse in making this decision?

Appendix 6: Interview Schedule English- Non M-PESA Users

The impact of saving with Mobile Money Transfer Technology on the livelihoods of rural wage-earning women: A case study on Maragua District, Kenya.

Respondent: _____

Date: _____

Non M-PESA Users

A: Bio Data

1. How old are you?
2. What is your education level?
3. How many children do you have?
4. Where do you live? ({Probe} In your own homestead or have you rented a place?)

B: Wage Employment Status

1. Are you currently engaged in farm wage labour?
2. If yes (Probe) For how many years have you worked farm wage labour?
3. How many times a week do you work?
4. Have you ever experienced a lack of work? ({Probe} how often?)
5. What do you do when this happens?
6. Could you give me an estimate of how much you earn (monthly, weekly, daily).

C: Saving Method

1. Do you own a mobile phone? If No Why?
2. Would you acquire a mobile phone if given a chance?
3. If you had an opportunity to own a mobile phone would you save using MMT's
4. Have you saved money before?

D: Impact of using Informal saving methods within the Sustainable Livelihoods Framework

D.1 Financial Capital

1. Currently what saving method are you using? (Depending on the response e.g. Mattress banking, ROSCA's or other)
 - a. Why do you prefer using the mentioned saving methods?
2. How often do you save your wage earnings?
3. How often do you meet for your ROSCA? (If the respondent is a ROSCA member)
4. What inspired you to join a ROSCA? (If the respondent is a ROSCA member)
5. How long has been a member of the ROSCA?
6. Are there other ways you receive money e.g. through remittances?
 - b. How do you receive the remittances
 - c. How often do you receive remittances?
 - d. Could you give me an average amount of what is sent?
 - e. How do you use it?
7. What are the benefits of using current saving method?

8. How far do you travel to collect your money using the current saving method?
(Probe) how do you get there? (E.g. do you walk? use transport?)
9. How much do you pay for transport? (If they use transport)
10. What are the risks of using this method as a saving mechanism?

E: MMT’s contribution to livelihoods

1. Please tell me how saving using the current saving method has helped you? (**NB this section will be administered according to the SLF themes that the respondent brings up during the interview.**)

Protecting them from risks and vulnerabilities

1. How has saving using current saving method helped you manage to cope with risks (e.g. sicknesses, death)?
2. How about when there are no jobs what happens during this period?

E2 Livelihood assets/Capitals

E2.1 Human Capital

1. How has the use of your method of saving influenced the way you pay school fees?		
2. Have your children completed school?	How many boys	How many girls?
3. Have your children be chased out of school because of lack of school fees?		
4. How about dropping out of school because of lack of school fees?		
5. What chances are there that the boy or girl child will advance their education? (Probe) at what level?		

E2.2 Natural Capital

1. Do you own land? (Probe) How did you acquire it? (E.g. purchase, inheritance,)
2. How has saving using the current saving method helped you purchase productive assets? (E.g. buying a piece of land, renting a piece of land,)

- a. (Probe) Can you list other assets you have managed to purchase using your current saving method?
- b. (Can you recall how many years ago you managed to achieve (the mentioned) assets?
- c. Have you secured a title deed for this asset (if respondent has bought land)
- d. What challenges did you face when trying to acquire this asset?

E2.3 Physical Capital

1. In what other ways has saving using your current saving method helped you improve the existing assets (i.e. structures in your household e.g. Improved roofing, build toilet etc.)?
 - d. How long did it take you to upgrade the structures in your homestead?
 - e. How long did it take you to access water from the local authorities in your homestead? (If water supply comes from the Maragua council)
 - f. What challenges have you faced in making this possible?

E2.4 Social Capital

1. Has using current saving method helped you make decisions on how to spend your money?
2. How has it helped build networks in your community and household?
3. In your view in what ways have you benefitted from of saving using current saving method?
4. How has using your current saving method helped you to help others in need?

E3. Transforming structures and processes

1. In order of priority, please mention assets that you would like to invest in future?
2. Will you make this decision yourself or will you engage your family/spouse in making this decision?

Appendix 7: Interview Schedule Kikuyu Translation M-PESA Users

The impact of saving using Mobile Money Transfer Technology on the livelihoods of rural wage-earning women: A case study on Maragua District, Kenya.

Respondent: _____

Date: _____

A: Bio Data

1. Wina Miaka igana?
2. Githomo giaku wakinire kirathi kiriku?
3. Wina ciana cigana?
 - a. Aanake?
 - b. Airitu?
4. Uikaraga Ku? (Gwaku kana gwa gukombora?)

B: Wage Employment Status

1. Kahinda gaka niurutaga wira wa kibarua mugunda? (Probe) If yes, urutaka wira uyu kahinda ka miaka igana?
2. Urutaga wira uyu maita maigana gwa kiumia?
3. Wira uyu niwagaga ringi na ringi? (Probe) ta maita maigana uguo?
4. Wira waaga wikaga atia?
5. Uthukumaga mbeba ta cigana kwa (mweri, kiumia o muthenya).

C: Mobile phone ownership and Usage

6. Wina thimu ya moko?
7. Niki giatumire uigwe niukuenda kugura thimu ya moko?
8. Ni kugura wa gurire kana nikuheo, **Probe eg by saving for it, gift etc.**
9. Uhuthiraga mutambo uriko timuini yaku? (Probe) Umihuthirita kahinda kaigana atia?
10. Nuu wa kuonirie kuhuthira mutambo uria urahuthira (M-PESA, Airtel, Yu Cash)?
11. Wendeire mutambo uria urahothera nikii?
12. Niatia utendete kuri mutamboini uria urahothera?

D: Impact of using MMT within the Sustainable Livelihoods Framework

D1 Financial Capital

1. Mundu naigaga kamuthiru handu, Niuri wagia kamuthiru?
2. Wigaga gikundinii, timuinii kana ku? (MMTs or informal saving methods or both)

- a. If both MMTs and Informal savings (Nikii?)
- b. If using informal saving methods (Nikii?)
3. **Hena ngurani kuiga mbeba ba gikundi kana timuini??**
 - a. (Probe) (Wauga iii Nikii)
 - b. (Probe) (Wauga aca Nikii)
4. Ni Uhuthiraga M-PESA kuiga kamuthiithu?
 - a. (Wauga iii wigaga Maita maigana?)
 - b. Wauga aca, ni wigaga mbeba cia kibarua?
5. Njira uria woigaga mbeba cia guthukuma ukiothera M-PESA?
 - a. Kuringana nawe ndarira uria wonete na M-PESA?
 - i. M-PESA iguteithagia atia?
 - ii. Ni mathina mariku wonete na M-PESA?
6. Kuringana nawe ni uhuthiraga mbeba iria watumirwo M-PESA ini ni andu angu undu ungi ?
 - a. Wauga iii maita magiana?
 - b. No unjiri utumagirwo mbeba cigana uguo?
 - c. No unjiri, Uhuthiraga mbica ici watumiru atia?
7. Uhuthiraga kahinda kaigana atia guthiee kuruta mbeba kuma Agent wa M-PESA? (Probe) Uthiaga ho atia? (E.g. maguru? Woyaga Ngari kana nduthi?)
8. Urihaga mbeba cigana okorwo woyaga ngari kana nduthi? (If they use transport)
9. M-Pesa iguteithetie atia?
 - a. Weega waguo?
 - b. Ooru waguo?

E: MMT's contribution to livelihoods

E1 Risks and vulnerabilities

1. Ndarira mathina maria woonete na M-PESA?
2. M-PESA iguteithetia atia wina mathina ta kurwara, gikuo?
3. M-PESA iguteithetie atia utari na wira? Ta njira uria wikaga mahindaini ta maya (riria utari na wira)

E2 Livelihood assets/Capitals

E2.1 Human Capital

1. M-PESA iguteithe atia kurahirha thukuru?		
2. Ciana ciaku niciriikitie thukuru?	Anake aigana?	Airitu aigana?
3. Ciana ciaku nicri ciaingatwo thukuru niundu wa kwaga mbeca cia thukuru?		
4. Ciana ciaku icitigite guthii thukuru niundu wa kwaga mbeca?		
5. Kuringana nawe niurona chiana ciaku thuhii na tuiritu tugithii na mbere na thukuru? Uroona magikinya githomo nginya ha?		

E2.2 Natural /Physical Capital

1. Ta ndaarira nikii uhotete kugura na mbeca iria uigite na M-PESA?
 - a. Huhotete kuiga mbeca icio kahinda kaigana atia? (no uririkane?)
 - b. Niugurite mugunda na mbeca ici? (if respondent has bought land)
 - i. Nithiina uriku woonete ukigeria kugura indo ici wanjira?
2. Ta ndaarira uria M-Pesa iguteithetie kugura indo muciiini uyu waku?
 - a. Gwaka mucii? Structures in your household e.g. Improved roofing,
 - b. Gwaka kiooro?
 - c. Kugucia maai?
3. How long did it take you to upgrade/build?
 - a. Gwaka mucii? Structures in your household e.g. Improved roofing,
 - b. Gwaka kiooro?
 - c. Kugucia maai?
4. Ni thiina uriku woonete ukigeria gwika maundu maya?

E2.3 Social Capital

1. Uria uigaga mbeca ciaku utethikete atia? Ndaara?
 - a. Wega wayo?
 - b. Ooru wayo?
2. Uria uigaga mbeca ciaku iguteithetia atia nigetha uteithie andu angi?
3. Kuringana nawe uria uigaga mbeca ciaku iteithetie mwuingi atia?

E3. Transforming structures and processes- FGD

1. Niatia ungienda unlikorwo na kamoitho niatia ungienda gwika miaka ino yukite?
2. Niwe ukutua itura kana niukuria andu aku?

Non-M-PESA Users

The impact of saving using Mobile Money Transfer Technology on the livelihoods of rural wage-earning women: A case study on Maragua District, Kenya.

Respondent: _____

Date:

A: Bio Data

1. Wina Miaka igana?
2. Githomo giaku wakinire kirathi kiriku?
3. Wina ciana cigana?
 - a. Aanake?
 - b. Airitu?
4. Uikaraga Ku? (Gwaku kana gwa gukombora?)

B: Wage Employment Status

5. Kahinda gaka niurutaga wira wa kibarua mugunda? (Probe) If yes, urutaka wira uyu kahinda ka miaka igana?
6. Urutaga wira uyu maita maigana gwa kiumia?
7. Wira uyu niwagaga ringi na ringi? (Probe) ta maita maigana uguo?
8. Wira waaga wikaga atia?
9. Uthukumaga mbeba ta cigana kwa (mweri, kiumia o muthenya).

C: Saving Method

10. Wina thimu ya moko? (Acokia aca niki?)
11. Ungikorow na kahinda no ujure thimo ya moko ?
12. Ungikoruwo na kahinda ka gukorwo na thimo ya moko no uhuthre M-PESA?
13. Niuri waiga kamuthito?

D: Impact of using Informal saving methods within the Sustainable Livelihoods Framework

Financial Capital

14. Thaa ici uigaga kamuthito atia?
 - a. Wendete kuiga mbeba uguo wa gweta nikii?
15. Wouigaga kamuthithu kahinda kaigana atia?
16. Kiama kiria ukoraguo mushamanagia maita maigana? (If the respondent is a ROSCA member)
17. Waingirire kiama nikii? (If the respondent is a ROSCA member)
18. Ukoretwo kamaini giki kahinda kaigana atia?
19. Hena undu ungi utumagirwo mbeba kuma na nja?
 - b. Utumagirwo mbeba ici atia?
 - c. Utumagirwo mbeba ici matia maigana?
 - d. No unjire ni ta mbeba cigana uguo?
 - e. Uhuthagira mbeba ici atia?
20. Wega wa kuiga mbeba ciaku uria woigaga ni kii?

21. Urihaga mbecha cigana okorwo woyaga ngari kana nduthi? (If they use transport)

22. M-Pesa iguteithetie atia?

f. Weega waguo?

g. Ooru waguo?

E: MMT's contribution to livelihoods

E1 Risks and vulnerabilities

23. Ndarira mathina maria woonete na M-PESA?

24. M-PESA iguteithetia atia wina mathina ta kurwara, gikuo?

25. M-PESA iguteithetie atia utari na wira? Ta njira uria wikaga mahindaini ta maya (riria utari na wira)

E2 Livelihood assets/Capitals

E2.1 Human Capital

1. M-PESA iguteithe atia kurihirha thukuru?		
2. Ciana ciaku niciriikitie thukuru?	Anake aigana?	Airitu aigana?
3. Ciana ciaku nicri ciaingatwo thukuru niundu wa kwaga mbecha cia thukuru?		
4. Ciana ciaku icitigite guthii thukuru niundu wa kwaga mbecha?		
5. Kuringana nawe niurona chiana ciaku tuhii na tuiritu tugithii na mbere na thukuru? Uroona magikinya githomo nginya ha?		

E2.2 Natural /Physical Capital

5. Ta ndaarira nikii uhotete kugura na mbecha iria uigite na kiama giaku/(or mentioned saving method)?

a. Huhotete kuiga mbecha icio kahinda kaigana atia? (no uririkane?)

b. Niugurite mugunda na mbecha ici? (if respondent has bought land)

i. Nithiina uriku woonete ukigeria kugura indo ici wanjira?

6. Ta ndaarira uria M-Pesa iguteithetie kugura indo muciiini uyu waku?

a. Gwaka mucii? Structures in your household e.g. Improved roofing,

b. Gwaka kiooro?

c. Kugucia maai?

7. How long did it take you to upgrade/build?

a. Gwaka mucii? Structures in your household e.g. Improved roofing,

b. Gwaka kiooro?

- c. Kugucia maai?
- 8. Ni thiina uriku woonete ukigeria gwika maundu maya?

E2.3 Social Capital

- 4. Uriaugaga mbecha ciaku nigutethetie kubanga mbecha ciaku? Ndaara?
 - a. Wega wayo?
 - b. Ooru wayo
 - 5. M-Pesa iguteithetia atia nigetha uteithie andu angi?
 - 6. Kuringana nawe M-PESA iteithetie mwuingi atia?
- E3. Transforming structures and processes- FGD**
- 3. Niatia ungienda unkikorwo na kamoitho niatia ungienda gwika miaka ino yukite?
 - 4. Niwe ukutua itura kana niukuria andu aku?

Appendix 8: MPESA Transaction Rates 2015 & 2014

Transaction amount from M-PESA Agent		Transfer to M-PESA Users	Transfer to Unregistered Users	Withdrawal from M-PESA Agent	Transaction amount from M-PESA Agent		Transfer to M-PESA Users	Transfer to Unregistered Users	Withdrawal from M-PESA Agent
Minimum amount	Maximum amount				Minimum amount	Maximum amount			
10	49	3	N/A	N/A	10	49	1	N/A	N/A
50	100	5	N/A	10	50	100	3	N/A	10
101	500	27	66	27	101	500	11	66	27
501	1,000	33	66	27	501	1,000	15	66	27
1,001	1,500	33	66	27	1,001	1,500	25	66	27
1,501	2,500	33	66	27	1,501	2,500	40	66	27
2,501	3,500	33	88	49	2,501	3,500	55	88	49
3,501	5,000	33	105	66	3,501	5,000	60	105	66
5,001	7,500	55	143	82	5,001	7,500	75	143	82
7,501	10,000	55	171	110	7,501	10,000	85	171	110
10,001	15,000	55	220	159	10,001	15,000	95	220	159
15,001	20,000	55	237	176	15,001	20,000	100	237	176
20,001	25,000	82	275	187	20,001	25,000	110	275	187
25,001	30,000	82	275	187	25,001	30,000	110	275	187
30,001	35,000	82	275	187	30,001	35,000	110	275	187
35,001	40,000	82	N/A	275	35,001	40,000	110	N/A	275
40,001	45,000	82	N/A	275	40,001	45,000	110	N/A	275
45,001	50,000	110	N/A	275	45,001	50,000	110	N/A	275
50,001	70,000	110	N/A	330	50,001	70,000	110	N/A	330

Source: Wamathai (2013)

Source: Wamathai (2014)

Other transactions

Other Transactions	Ksh
All Deposits	FREE
M-PESA Registration	FREE
Buying Airtime through M-PESA	FREE
M-PESA Balance Enquiry	1
Change M-PESA PIN	22

Source: Wamathai (2014)