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**MOBILE MONEY AS A STRATEGY FOR FINANCIAL
INCLUSION AND IMPROVING LIVELIHOOD OF RURAL
CONSUMERS IN ZIMBABWE**

By

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ABSTRACT

Mobile financial services have posed as a potential remedy to the financial inclusion challenge for the disadvantaged communities. The main aim of the study was to assess whether the deployment of mobile money services has increased the accessibility, financial inclusion and led to improved economic well-being through the development of a structural model demonstrating how mobile money service usage impacts on the livelihoods of rural households in Zimbabwe. To accomplish the above stated objectives, the study used a composite approach, a partially mixed sequential dominant design, with the quantitative approach dominating the research design. The quantitative method, together with the qualitative approach, was employed for the comprehensive research design (mixed methods) where the use of focus group discussions (FGD) was utilised to gain an understanding of users' experiences in using mobile money in the study area. The FGD results were then used to develop measurement scales for mobile money impact variables / factors. To select the sample size of 367 respondents in Kwekwe Rural District, also known as ZIBAGWE, a multi-stage random sampling method was used in this study. To gather data for the study, a questionnaire developed and used as a research instrument targeted rural household heads. The findings of the study revealed that on the access and usage of financial services, there was great improvement in accessing financial services with the emergence of mobile money services compared to bank access in terms of distance walked to the nearest branch by the rural people before the mobile money alternative. Education had a strong bearing on mobile money usage as shown by a Chi-square value of 62.80 and a p-value of 0.000. To analyse data, structural equation modelling was employed to test and validate the model. The structural equation modelling was performed in two stages, where the first step entailed the estimation of the measurement model through the confirmatory factor analysis and the second step involved the estimation of the structural model by examining the structural relations as hypothesized in the model. The results showed that the measurement model fits data satisfactorily and the proposed model fits well the observed data as shown by the goodness of fit indices (CMIN/df = 2.798, GFI = 0.842, CFI = 0.954, TLI = 0.947 and RMSEA = 0.072). Similarly, on the structural model, the results showed that the structural model fits the data well, attaining the fit indices CMIN/df = 2.631, GFI = 0.846, CFI = 0.956, TLI = 0.951 and RMSEA = 0.068. Given these fit indices, the model can be used with confidence to conclude on the stated research hypotheses. Most of the relationships in the structural model were significant at least at the 95% confidence interval. Overall, the study concludes that mobile money has potential positive impacts on the rural livelihoods as demonstrated by positive effects of the factors in the structural model. The study recommends

that mobile network operators and financial regulators need to continue with the promotion and encouragement of mobile financial services usage by all economic players in the different sectors of the economy. Consequently, if total adoption and acceptance were to be achieved in all customers, businesses and service providers, the demand for cash will be reduced, especially in the rural communities where adoption by businesses and service providers is lagging behind. The study findings have far reaching implications with regards policy making on rural livelihoods. The study provides evidence on how mobile financial services impact on rural livelihoods. Therefore, policy makers can craft policies (financial inclusion) that will promote and improve access and delivery of financial services to the rural people.

DEFINITION OF KEY TERMS

The following definitions are used in the context of this thesis:

Mobile money:

It is a service that allows electronic monetary transactions to be executed over the mobile phone. It includes services like funds transfers, savings, cash-in and cash-outs, long distance remittances, bill payment and airtime purchase. It also includes several other new applications and innovations in electronic transacting that have been developed in individual countries in the past few years.

Mobile Financial Services:

It is a term that is used synonymously and interchangeably with mobile money and basically defined just the same as mobile money. It is generally regarded more all-inclusive of a range of financial services done electronically than does the term mobile money.

Financial Inclusion:

It is the universal access by individuals at a low cost to a wide range of financial services offered by responsible financial systems. The extent of financial inclusion differs from country to country and is measured in relation to financial services available in each individual country context.

Structural Equation modelling

It is a family of statistical techniques that examine a series of causal relationships simultaneously by allowing researchers to test and validate multivariate models.

Mixed Methods:

It is a research method that involves collecting, analysing and interpreting qualitative and quantitative data within a single study for the purpose of increasing breadth and depth of understanding. It results in the collection and presentation of two sets of data; qualitative and quantitative data.

ABBREVIATIONS

AMOS	Analysis of Moment Structures
ANOVA	Analysis of Variance
ATM	Automated Teller Machines
AVE	Average Variance Extracted
CFA	Confirmatory Factor Analysis
EFA	Exploratory Factor Analysis
ESAP	Economic Structural Adjustment Program
FDI	Foreign Direct Investment
FI	Financial Inclusion
GDP	Gross Domestic Product
HHH	Household Head
HTA	Home Town Associations
ICTs	Information and Communication Technology
ISALs	Internal Saving and Lending Schemes
MFS	Mobile Financial Services
MM	Mobile Money
MMU	Mobile Money Usage
MNO	Mobile Network Operators
OECD	Organisation for Economic Co-operation and Development
POS	Point of Sale
POTRAZ	Post and Telecommunications Regulatory Authority of Zimbabwe
PSU	Primary Sampling Units
ROSCA	Rotating Savings and Credit Associations
SACCO	Savings and Credit Cooperatives
SEM	Structural Equation modelling
SMEs	Small to Medium Enterprises
SMS	Short Message Service
RBZ	Reserve Bank of Zimbabwe

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The utilisation of mobile banking to bridge the gaps in infrastructure that impede the realisation of an all-encompassing financial ecosystem has generated a lot of enthusiasm among scholars and other relevant stakeholders. This has been more pronounced in third world countries, particularly in sub-Saharan Africa (Dermish, Kneiding, Leishman and Mas, 2012), where the rates of financial exclusion are generally on the high. This makes alternative forms of financial inclusion highly effective, and therefore, highly welcome. Traditionally, services in the developing countries have targeted the affluent customers who reside in the cities, leaving the bigger population of poor customers who stay in remote underdeveloped rural communities financially excluded (Hinson, 2011). Mobile banking has, therefore, generally been universally accepted as a panacea to the banking woes of the rural majority in most of the developing countries. Mobile banking has, however, had different success stories in different countries in, especially, Africa.

In the context of limited banking facilities for the totality of the world's rural populations, the key financial predicaments pointed out by financial institutions, as indicated by research, have revolved around the initial cost of setting up the requisite infrastructure; costs associated with the operation of financial institutions; and the low likelihood of realizing reasonable profitability, if any, from providing services to these customers, due to the low levels of disposable incomes of this demographic group (Alexandre, Mas and Radcliffe, 2011, Dermish et al., 2012, Goss, Mas, Radcliffe and Stark, 2011, Alleman and Rappoport, 2010, Mas, 2010b). In Southern African countries like Zimbabwe, such rural communities rely, for subsistence, on small scale farming, which has very little surplus from which income is generated. Mobile Network Operators (MNOs) have expanded their network coverage in the last couple of years, with availability of ever cheaper mobile phones having consequently improved mobile phone penetration throughout the rural communities of Zimbabwe. The higher levels of mobile phone distribution, and the resultant mobile money service usage, has circumvented the brick and mortar banking infrastructural requirements in developing countries (Oluwatayo, 2013, Alexandre et al., 2011, Flores-Roux and Mariscal, 2010, Jack and Suri, 2011, De Sousa, 2010). The benefits of mobile communication networks include: the enablement of free flow of information; real time delivery of mobile communication messages; facilitation of more efficiency in markets, hence developing entrepreneurs. The foregoing consequently leads to financial innovation, allowing the use of mobile

phones as conduits by which previously unbanked, and therefore financially excluded rural communities may have efficient access to financial services. This study focused on the usage of mobile money services, and the attendant potential impact of these mobile financial services on the economic well-being of the previously unbanked marginalised communities in rural Zimbabwe.

Anyasi and Otubu (2009) define mobile money as a range of banking services that may be accessed by a customer via the mobile phone device. Mobile banking, by nature, envisages the accessing of finance and ancillary services to the previously marginalized communities that results in the reduction of the latter's poverty (Kasseeah and Tandrayen-Ragoobur, 2012, Dolan, 2009). The aspect implied in this definitions of mobile money is the improved financial inclusion of previously unbanked communities, communities previously financially excluded due to long distances to banking infrastructure and due to costs of traditional mainstream banking. Kopala (2010) defines this concept of financial inclusion as the provision of financial services to the remote and marginalized category of people at a very low cost. This definition fits well with mobile money in most countries, as its key feature has been the low cost of transacting it comes with. Chibba (2009) underscores the significance of financial inclusion in addressing the challenges of poverty among the poor. Chibba (2009) opined that the solution to poverty lay in the provision of access to financial services and equity to all citizens regardless of economic status.

The penetration and pervasiveness of mobile phones, even to the most inaccessible parts of the world, has made them the most common communication technology available for use by everyone, (Griffin, 2013, Tobbin, 2012), even the poorest of the poor. It has risen to become the most and widely adopted technology in less than twenty years of its introduction to the rest of the world (Jack and Suri, 2011). Its accessibility and functionality has enabled it to be used in innovative ways across a spectrum of fields, including the banking sector (Etzo and Collender, 2010). Its adoption for financial solutions, this study holds, is one of the most important developments the world has done in the last few years. As such the prevalence of this technology has motivated practitioners, development organizations and policy makers to question how mobile phones can be used for social and economic development by the emerging economies. It goes without saying that the developing world has welcomed the usefulness in financial solutions of mobile technology more than the developed countries. It is acknowledged, however, that less focus has been made on economic, social and cultural issues in relation to the use of this technology in the banking sector to serve the unbanked rural communities (Donner and Tellez, 2008), a factor that developing countries still need to give serious attention to.

The greater part of the population of sub-Saharan Africa has no access to any sort of formal financial services, either due to distances between rural communities and the banking infrastructure that is usually in the urban areas or due to the inhibitive costs involved in formal financial services. Studies conducted

by a number of scholars (Alexandre et al., 2011, Mas, 2010b) revealed that the extent of such marginalized populations is pegged at 75%. In Zimbabwe, the majority of the formal branch networks (81.3%) are located in urban areas. That implies that seventy percent of the population relies on eleven percent of the bank branches of banking services dedicated to it (Reserve Bank of Zimbabwe, 2007; World Bank, 2012). Recently, to make things worse, access to money on automated machines, which were the sole sources of hard cash for some rural communities, came to an abrupt end at the height of cash shortages. The option of cash back also recently started diminishing due to heightening cash shortages in Zimbabwe. As a result of all the above factors, the travelling of long distances to the nearest banking halls is inevitable for those that will be seeking financial services. Such travels denude or exhaust the rural dwellers' already scarce disposable incomes as they use it for bus fares to the nearby financial institutions to access financial services. The state of road infrastructure has not made the situation better, as transporters have taken advantage of this to heighten bus fares on the affected routes.

When compared to regional scores on branch outreaches, Zimbabwe ranks very lowly. For instance, South Africa's banked population stands at 63%, while Namibia is at 62%, and Swaziland stands 44% while Zimbabwe is at a distant 24% (FinMark Trust, 2012). At 76%, the unbanked population in Zimbabwe is way too significant to ignore. Consequently, it is of paramount importance to ensure that these potential consumers of financial services are roped into the mainstream economy as opposed to the black market economy they have been actively involved with in the past. A plausible method of doing so could be the adoption of contemporary forms of mobile money services.

The objectives of financial inclusion entail inter alia; the provision of vital banking services to all; social and economic development inculcating a savings culture among the communal households; eradicating poverty and enhancing overall economic growth. The mobile money facility has the ability to overcome barriers encountered by traditional banks to enhance higher levels of financial inclusion among the rural communities. This is due, in part, to its ability to overcome the distance barrier that traditional banking institutions face and also due to the low costs associated with mobile money. Therefore, it is imperative to note that technology is being used to inform and shape organizational strategy to reach underserved markets (Kalakota and Robinson, 2009). The service lacuna highlighted above has led to efforts being made by Zimbabwean banks and mobile network operators aimed at exploiting banking opportunities in the rural areas. These efforts have birthed a variety of mobile money services. These services, albeit a struggling national economy, have been welcome and have already started making a difference in the livelihoods and economic opportunities of the previously unbanked rural populace in the country. Certain significant levels of financial inclusion seem to have been attained already. Table 1.1 below outlines some of the products and services Zimbabwean banks and mobile network operators have launched in relation to mobile money services in the past few years:

Table 1.1: Deployments of Mobile Money in Zimbabwe

INSTITUTION/Bank/ MNO	MOBILE PRODUCT
FBC	Mobile Moola
Kingdom Bank	Cellcard
Tetrad	eMali
CABS	Text cash
Interfin Bank	Cybercash
Telecel	Telecash
Netone	One Wallet (now One Money)
Econet Wireless	Eco Cash

Source: Kufandirimbwa, Zanamwe, Hapanyengwi & Kabanda (2013)

Econet wireless' Eco cash has the highest number of subscribers to their mobile money service. Econet Wireless is by far the biggest mobile network operator in Zimbabwe and one of the largest in the region. The subscriber base was predicted to be about 2 million subscribers and thus it has captured the greater portion of the mobile money market share (Kufandirimbwa, Zanamwe, Hapanyengwi and Kabanda, 2013). Eco cash is arguably the fastest growing mobile money service both in terms of reach and revenue in Africa after the Kenyan M-Pesa. This study therefore sought to examine the effects of mobile money service in improving the economic well-being of the rural people in Zimbabwe.

The term mobile banking refers to a range of services that enable people to carry out banking activities using a mobile phone. Its common features include such services as stock trading; checking of account balances; cash deposits and the withdrawal of cash respectively; transferring of funds; savings; loans; off-shore funds transfers as well as bill payments (Kasseeah and Tandrayen-Ragoobur, 2012, Donner and Tellez, 2008, Jenkins, 2008). Transfer of funds can be between an individual's many accounts and account types, for example between a current account and savings account in the same bank. It can also be in the form of sending money from one person to another, from one bank to another. The terms mobile banking and mobile money have been used interchangeably in many studies (Kasseeah and Tandrayen-Ragoobur, 2012, Ismail and Masinge, 2012, Alampay, 2010, Kim, Shin and Lee, 2009). While such concurrences abound, Donner and Tellez (2008) are of the view that there is no one size fits all type of mobile banking. Variations in structure document so far show that the types are country specific though there are basic features that are found in any mobile money ecosystem. Access to mobile phones promises thousands and millions of users living in developing countries to be included in contemporary banking services via the mobile phone. These populations would have remained excluded were it not for the mobile money services (Ismail and Masinge, 2012). The huge mobile phone coverage in rural Africa has the potential to translate into huge mobile money coverage in these previously marginalized and previously financially excluded populations. Mobile financial services present a huge likelihood of growth opportunities for financial institutions and mobile network operators, including providing opportunities for mobilizing savings by the rural communities, and ensuring access by the

same rural dwellers to hitherto non-available financial services (Bandyopadhyay, 2010). This is estimated to translate into involvement in economic activities of the rural communities, which has the potential to significantly and positively transform state nations' economic statuses.

There has been a steady growth of mobile communication worldwide in the past few decades. Cell phone coverage has spread to most parts of the world, reaching the previously unreachable remotest parts of most developing countries, especially in Africa. This has been necessitated by the development of smart phones that are multi-software enabled, allowing experimentation with them in many spheres, including financial applications and banking solutions. The growth of mobile communication has not come without several other positives. Therefore, the diffusion of the mobile money service is irretrievably linked to the growth of mobile communication in developing countries. The more the mobile networks penetrate into nation states' remotest parts, the more people are able to utilize mobile banking and the more people are financially included. They also automatically start participating in economic activities of their countries. While in the rural areas there are still issues to do with signal strength and challenges with keeping mobile phones charged in many rural areas in African countries (Jack and Mars, 2014), cell phone coverage in Africa has increased significantly in the past few years to more than 60% (ITU, 2012, Aker and Mbiti, 2010). Exceptionally, in Namibia coverage is as high as 98%, which is almost universal coverage (Stork, 2011). Further, the problem with rural electrification has been circumvented by bringing in alternative power sources like portable solar chargers for keeping the mobile devices charged. Significantly then, state nations need to increase investment in mobile communication networks through strategic partnerships with private mobile communication operators in order to increase financial inclusion of their populations, especially the previously marginalized sections of the communities.

In Zimbabwe, major cities have nearly 100% mobile phone coverage in terms of households with at least a mobile phone (Broadcasting Board of Governors, 2012). Questions now are no longer about whether or not the country is covered in terms of cell phone network but on such things as whether cell phones should be integrated into the school curriculum or major communication policies of government departments. As a result, mobile banking has utilized the communication channels available to deliver to the masses services previously unthinkable. In the process, both mobile communication and mobile money have gone a long way in alleviating poverty in especially the rural areas worldwide. The two have obviously influenced each other's further growth and spread, as telecommunications infrastructure has allowed mobile money processes to develop while the need to access mobile money has attracted populations to subscribe to certain telecommunications networks.

The provision of mobile financial services has grown undoubtedly in scope and sophistication over the last decade owing to a large population that is unbanked. In developing countries a compelling size of the population does not have a connection with formal banking facilities, due to both geographical reasons and cost reasons. Such populations have been categorized either as ‘excluded’; ‘unbankable’ or ‘underserved’ (Kasseeah and Tandrayen-Ragoobur, 2012, Griffin, 2013). This has, in part, been due to such factors as: distance from the urban areas; limited bank branches in semi-urban areas; minimum account opening requirements and exorbitant account maintenance charges among others. Further, to open a bank account most banks request proof of employment and proof of residence and these automatically exclude peasant and subsistence farmers, informal miners and vendors who make the majority of the rural populations. A survey conducted by McNaughton (nd) found that if banks could relax their stringent requirements on account opening, the poor would be more willing to become part of the banked population. According to McNaughton (nd) the less privileged customers are extremely bankable, an assertion based on a microfinance sector survey conducted. On the strength of the foregoing assertion it may be concluded that mobile financial services could be a panacea for the financially excluded populations as well as those with limited avenues to brick and mortar financial services in yet to be developed economies, particularly in Africa. As a result, mobile money platforms are the best inclusion development the previously marginalized citizens needed, which opens pathways to banking possibilities and money saving platforms.

The utilization of mobile banking services present opportunities which were previously unavailable for enabling trade among transacting parties in commodities as well as financial services (Kasseeah and Tandrayen-Ragoobur, 2012). Among the continents that have adopted mobile money services it is in the poorer continents that the platform has recorded significant levels of adoption and success. This is because it is in these economies that financial exclusion levels were very high; and, as the above section indicates, financial inclusion or exclusion is irretrievably linked with level of poverty and nature of remoteness. Africa has recorded the introduction of such mobile money facilities, of which the most successful appears to be Kenya's M-Peas which boast of over 14 million registered users. Such a high level of registered mobile money users exemplifies potent technology based innovation for the previously underprivileged and financially excluded communities (Wooder and Baker, 2012). Due to the prevalence of a well-developed alternative electronic payment systems in the developed world in general such as in those found in the USA and in the majority of European countries, the penetration of mobile money has been insignificant in those regions. Although Japan is a highly developed country studies conducted on the country (Merritt, 2011, Au and Kauffman, 2008, Porteous, 2006) found that it has the most successful mobile money ecosystem, probably due to country's highest mobile phone penetration in the world. In the following section (1.3), attention is on the preliminary assessment of previous studies that examine how mobile money impacts livelihoods of its users.

Duncombe and Boateng (2009) contend that by 2009 not many studies had been conducted focusing on assessing the impact of mobile money on populations. Their argument is premised on the levels at which such innovations were by that time. The above researchers discovered that a significant number of these contraptions were still at fledgling stages of development and implementation. However, Etim (2011) explores how adoption and use of mobile telephone helps to alleviate the credit problem. Their findings indicate that in Sub-Saharan Africa, the adoption of mobile phones has led to home grown developments in the delivery of financial services through mobile telephones. Bhavnani, Chiu, Janakiram, Silarszky and Bhatia (2008) examined the contribution of mobile phones in poverty reduction among the rural communities. They noted positive effects on the well-being, job creation, increased productivity as well as enhanced entrepreneurial activities. Furthermore, they also established that there were reduced transport costs, improved access to information and markets as a result of mobile phone diffusion and usage. Research also indicates that mobile communication brought with it a significant increase in the participation of the previously marginalized communities in the many spheres of their countries, especially politically, socially and economically. Aminuzzaman, Baldersheim and Jamil (2003) particularly investigate the impact of village Pay Phone (PPP) focusing on socio economic development of rural communities and they note that there were positive effects on transport costs and family relations. Medhi, Ratan and Toyama (2009) investigated the aspects that determine the uptake and usage of mobile money services by the low income communities in a developing country. Their study findings pointed out a number of aspects influencing the uptake and magnitude of usage of mobile money services. These factors include the household type, main service adopted, rate of adoption, ease of use and usage level. Furthermore, the study carried out by Aliero and Ibrahim (2012) sought to determine whether access to financial services reduces poverty in Nigeria's rural areas. The study employed a multi-nominal logit model to examine the relationship. A negative relationship between poverty level and access to financial service was found, though with high probability of reducing poverty.

Duncombe and Boateng (2009) sought to improve and expand existing research by analysing extant literature on the potential of mobile banking in increasing access to financial services by the poor. Their research identified weaknesses and gaps in existing studies/ research on issues relating to financial services needs and the measurement impacts and hence they conclude that the salient aspects have been neglected. Macharia and Okunoye (2013) attest that studies linking adoption, use and impact on economic development and wealth creation are scarce. Also, their analysis revealed that past research neglected the needs of the poor and focused much on business models and service delivery innovation. Similar conclusions were arrived at by Donner and Tellez (2008) who noted the need to specify mobile banking services within the context of the financial needs of the poor without tampering with the existing communication networks. Impact studies can be made stronger by scanning complimentary literature, using multiple methodologies and theoretical perspectives in order to answer questions about adoption and impact of mobile banking (Duncombe and Boateng, 2009, Donner and Tellez, 2008).To

augment the lacuna identified in preliminary review, the study therefore, aimed at examining the impact of mobile money in rural Zimbabwe. The research potentially overcomes the identified limitations by adapting cross-cutting relevant themes from a wide range of subjects with studies from ICT for development; technology and innovation; banking and finance; economics; development studies as well as information systems and management (Duncombe and Boateng, 2009, Donner and Tellez, 2008). Duncombe and Boateng (2009) note that most studies either used quantitative methodology which is usually more representative in terms of sampling but does not add much to theory or qualitative aspects which emphasizes on the analysis of individual cases, with less attention on population and sampling but generating in-depth data concerning processes. Therefore, the present study fills in the identified gap by focusing on the impact of mobile financial services to the rural people. The current study further covers the gap by addressing methodological weaknesses of previous studies by adopting a mixed-methods approach. The extent to which mixed methods overcome the highlighted weaknesses of past research is elaborated in the methodology section later this chapter.

1.2 Research Problem

Zimbabwe is a country faced with a plethora of problems ranging from social to economic challenges. In particular, the financial sector is characterized by lack of confidence in the banking sector, currency costs and liquidity problems, leading to currency uncertainty while accessibility and financial exclusion are mainly experienced by the disadvantaged and the rural people. The rural people reside far away from the developed towns and cities where financial institutions are established and operate and therefore they do not have avenues to affordable and appropriate financial products and services from formal mainstream financial providers (Godinho and Singh, 2013, Hinson, 2011, Mas, 2010a). The rural unbanked include traders, micro-businesses, workers and people who do not have bank accounts but have unmet needs for banking services due to lack of contact and geographical reach of brick and mortar banking services (Hinson, 2011). There is high financial exclusion of rural people in Zimbabwe characterised by lack of access to financial services, no bank accounts and limited lines of credit. These major problems expose the rural people to expensive informal sources of finance. The net effect of these problems is increased poverty. In the Zimbabwean context, there is no single study (to the researcher's knowledge) that has been conducted to measure the service needs of the rural people and the impact of mobile financial services on their livelihood (Duncome and Boateng, 2009; Donner and Tellez, 2008). Therefore, the study sought to establish the extent to which the provision of mobile financial services has increased and enhanced rural livelihood of the rural people in Zimbabwe. One of the assumptions on which this study was premised is that poverty in rural Zimbabwe was largely exacerbated by the rural communities' long time exclusion from key financial institutions, and therefore lack of financial services in the past decades.

1.3 Aim of the Study

The aim of the study is to assess whether the deployment of mobile money services increased accessibility, financial inclusion and led to improved economic well-being of the rural communities in Zimbabwe.

1.4 Research Objectives

The major aim of this research study was to develop a model on the effects of mobile money for financial inclusion with particular focus on rural households in Zimbabwe.

The following are the specific objectives the study set out to achieve:

1. To determine the penetration and levels of usage of the mobile money service by the rural communities in Zimbabwe.
2. To determine the effects of mobile money services on the welfare of the rural households in Zimbabwe.
3. To identify challenges and opportunities of mobile money usage in rural Zimbabwe.
4. To suggest ways to improving mobile financial services to the rural people in Zimbabwe.

1.5 Research Questions

The study aimed at answering the following questions:

- 1) What are the usage levels of mobile money by the rural communities in Zimbabwe?
- 2) What are the effects of mobile money services on the livelihood of the rural communities in Zimbabwe?
- 3) What are the challenges and opportunities of mobile money usage in rural communities in Zimbabwe?
- 4) How can mobile financial service be improved in rural communities in Zimbabwe?

1.6 Research Methodology

The study used a mixed methods approach due to the complicated nature of features that link mobile money, poverty and livelihoods (Sife, Kiondo and Lyimo-Macha, 2010). The mixed methods approach is defined as a 'research method that involves gathering, synthesizing and describing data using qualitative and quantitative methods within a single study so as to enhance broadness, intensity, verification and validation of the research findings' (Leech and Onwuegbuzie, 2009, De Lisle, 2011). The study employed a partially mixed sequential dominant status research design where qualitative and quantitative approaches were done contemporaneously dominated by the quantitative methodology (Leech and Onwuegbuzie, 2009, De Lisle, 2011). The quantitative approach was employed as the

comprehensive research design for the research study with the qualitative method used for developing the survey instrument (Sife et al., 2010). Though still in its adolescence stage, the mixed methods design brings on board the attendant benefits of using both qualitative and quantitative methods, attenuating the limitations of each methodology (Sife et al., 2010, Leech and Onwuegbuzie, 2009). De Lisle (2011) noted that some aspects of research come out clearly when they are captured using a multiplicity of approaches such as the use of the mixed methods approach. Alvez & d Calas (1996), cited by Sife et al. (2010), further stress the importance of formulating multidisciplinary approaches to consider challenges and prejudices enabled by ICTs. The research design employed in this study is shown in Figure 1.2.

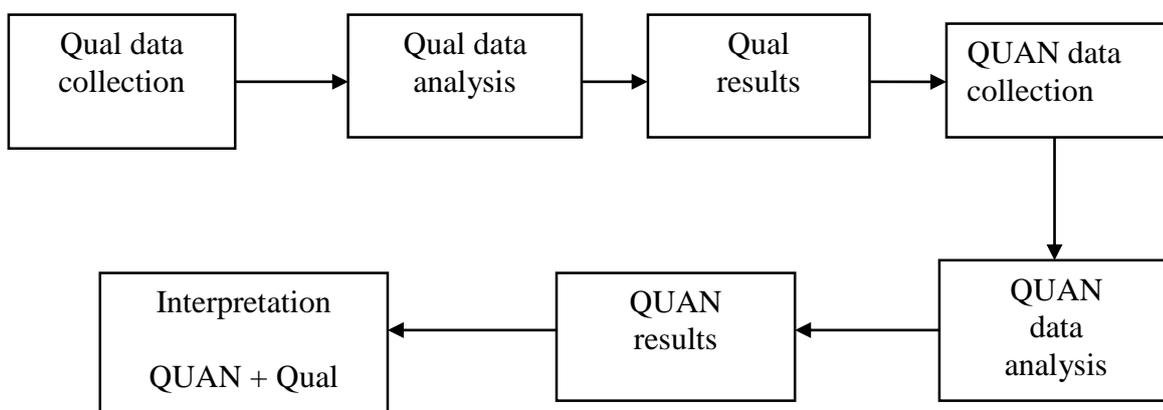


Figure 1.1: Partially Mixed Sequential Dominant Design

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

Source: (Sife et al., 2010, Leech and Onwuegbuzie, 2009).

1.7 Population and Sampling

The research was carried out in the Midlands Province of Zimbabwe. The Midlands Province was drawn from other provinces using a purposive sampling approach (Macharia and Okunoye, 2013). Zimbabwe has ten geopolitical regions classified as provinces. The Midlands Province is centrally located in the country and is capitalized by Gweru, which is one of the four biggest cities in the country. It has a diverse ethnic grouping of people. The midlands province is administratively demarcated into 14 districts. The districts range from the northern to mostly the southern part. The districts comprise Gokwe North, Gokwe Town, Gokwe South, Kwekwe Rural, Kwekwe City, Gweru Rural, Gweru City, Chirumanzi, Shurugwi Rural, Shurugwi Town, Zvishavane Rural, Zvishavane Town and Mberengwa. For the purpose of this study, eight rural districts constituted the sampling frame. Mining and farming serve as the main livelihood activities, with cattle ranching playing a lesser role. The province was

purposively chosen due to its extremes of development, mixed cultures and mobile phone coverage (penetration).

The target population of the study comprised of all rural communities, targeting household heads that owned mobile phones used in the Midlands province (Sife *et al*, 2010). Table 1.2 shows the composition of the population by age and gender.

Table 1.2: Populations by age and gender for the Midlands Province

Age Group (Years)	Male (%)	Female (%)	Total (%)	Number
0 – 4	7.6	7.7	15.3	246 482
5 – 9	6.7	6.8	13.5	218 543
10 – 14	6.9	6.8	13.8	222 489
15 – 19	5.6	5.9	11.1	179 147
20 – 24	4.1	4.9	9.0	144 973
25 – 29	3.7	4.4	8.1	131 095
30 – 34	3.2	3.5	6.7	107 205
35 – 39	2.6	2.7	5.3	85 352
40 – 44	1.9	1.9	3.8	61 473
45 – 49	1.1	1.4	2.5	40 497
50 – 54	1.0	1.6	2.6	42 290
55 – 59	0.9	1.2	2.1	35 041
60 – 64	0.7	1.0	1.7	27 691
65 – 69	0.6	0.8	1.4	21 950
70 – 74	0.5	0.6	1.1	17 182
75+	0.8	1.0	1.8	28 909
NS	0.1	0.2	0.3	4 622
TOTAL	48.1	51.9	100	1 614 941

Source: ZIMSTATS (2012)

1.8 Sampling Procedure

The study employed a multi-stage random sampling method in choosing the research participants. Three stages of drawing the sample elements were utilised as described below:

- i. **Stage one:** this stage entailed the selection of the district where random sampling was used in selecting two districts out of the eight in the Midlands Province. District population sizes were as shown in Table 1.3:

Table 1.3: Target Population Size by District

Rural District	Population Size
Zvishavane Rural	72 513
Mberengwa	185 757
Chirumanzu	80 351
Kwekwe Rural	174 727
Gweru Rural	91 806
Gokwe North	240 352
Gokwe South	305 982
Shurugwi Rural	77 570
TOTAL	1 229058

Source: ZIMSTATS (2012)

- ii. **Stage two and three:** This stage involved the selection of wards and villages, this involves stratified random sampling of villages based on their local government wards. The selection of the villages was based on the mobile network coverage in line with the sampling approach employed in similar study conducted by (Sife et al., 2010).
- iii. **Stage four:** This constituted the last stage of where household were chosen. Households with mobile phones constituted the sampling units of the survey where household heads were chosen as respondents since in rural setups the majority of material assets tend to be concentrated in ownership at the household head level.

The focus group discussion participants were selected using purposive sampling. The respondents were chosen on the basis of social and economic characteristics and experience in utilising mobile money services was done. The results of the focus group discussion were analysed before the development of the questionnaire. The sequence was necessitated by the need for data convergence of qualitative and quantitative data where two group of respondents might possess different characteristics (Sife et al., 2010). Primary data was gathered through a survey method where the instrument used for data collection was a questionnaire. After an in-depth analysis of focused group discussion results, the next step was the development of a questionnaire. To add on, questionnaire measures were developed from group discussions and some questionnaire items were adopted and modified from previous studies, for example, (Gross, Hogarth and Schmeiser, 2012, Ismail and Masinge, 2012, Sife et al., 2010). Questions with Likert type scales were utilized due the nature of the constructs mobile money with its effects on livelihood which tend to be quite broad as it contains a multiplicity of aspects that are amenable to measurement using single items. In general, the questionnaire consisted of the following sections: demographic profile, mobile money access and usage, mobile money impact related data.

It is important to determine the sample size required in order to achieve an appropriate statistical power for a proposed model before data collection procedures (Hoe, 2008). In structural equation modelling, a sample size of between 200 and 400 respondents is deemed appropriate (Bagozzi and Yi, 2012, Kline, 2012, Iacobucci, 2010, Lei and Wu, 2007, Hair, Black, Babin, Anderson and Tatham, 1998). Macharia and Okunoye (2013) and Lei and Wu (2007) highlight the need for an appropriate sample size in multivariate research, recommending a sample that is 10 times or more the number of constructs used in the model. However, Hair et al. (1998) warn that a sample size larger than 400 leads to high sensitivity and results in poor fit for the goodness-of-fit measure. Therefore, in this study a sample size of 367 was used for a questionnaire while 6 focus group discussion interviews were conducted with interview questions not exceeding 8 as shown in the Table 1.4:

Table 1.4: Sample Size

Instrument	PSU1	PSU 2	PSU 3	TOTAL
Focused Group Discussion	2	2	2	6
Questionnaire	123	122	122	367

Source: Krejcie and Morgan (1970)

Key PSU=Primary sub-units

Focused group discussions were conducted with the help of two trained assistants. The respondents aged 20 years and above were drawn from a sample frame of 8258 household head as shown in Table 1.5:

Table 1.5: Target population

WARD NUMBER	NUMBER OF HOUSEHOLDS(HH)
WARD 10	1297
WARD 11	1367
WARD 13	1282
WARD 15	1450
WARD 16	817
WARD 21	2045
TOTAL	8258

Source: ZIMSTATS (2012)

Using the formula developed by Krejcie and Morgan (1970) for determining the sample size, a sample size of 367 was calculated as follows:

$$S = X^2NP (1-P) / [d^2 (N-1) + P (1-P)].$$

[Where S= Sample size, N = Population size, X^2 = Value of Chi-Square @ $df = 1$ at the desired confidence interval from the tables, P = Population proportion (assumed to be 0.5), d = degree of accuracy. Given that N =8258, $X^2=2.71$ @ 10% confidence interval, P=0.5 and d=0.1, then the sample size is $S = X^2NP (1-P) / [d^2 (N-1) + P (1-P)] = 2303003.15/6272.3775= 367.$]

1.9 Study Assumptions

The study assumed a uni-directionality of influence, that is, mobile money leads to improvement on the economic welfare of rural people. Another assumption was that mobile money will continue to grow and rural people will continue to adopt and use it, while mobile network operators will also continue to expand their networks to cover the remotest rural locations in Zimbabwe. Further, the study assumed that mobile money was a solution to the financial and micro-economic woes of the previously financially marginalized and unbanked rural communities in Zimbabwe, which was assumed to increase their sustainability economically. These were based on that mobile money in Zimbabwe is growing to be the major form of financial inclusion for especially the previously financially excluded rural populations of the country.

1.10 Dealing with bias

A number of measures were taken in order to deal with research bias in conducting data collection. When collecting data using focus group discussions, first the interview guide was designed in such a way that interview questions focused on the respondent's true point of view and not necessarily imply a true answer and open-ended questions were used. Also, the use of a probe, follow up and exit approach was used in structuring the guide. There was attempt to maintain neutrality and remain objective in the manner in which the discussions were lead and issues were presented in a simple manner. Respondents were given equal chances to express and give their views.

1.11 Ethical Considerations

It is generally believed that ethical procedures are intended to guide all researchers so that no harm is done to survey respondents and that no respondent participates without his/her consent (Gilman, 2008). In this study, the first thing was to seek ethical clearance to ensure that the measurement instruments did not violate respondent rights. Ethical clearance was secured from the University of KwaZulu Natal's Ethics Committee. The researcher explained the purpose and nature of the study to the participants and the potential impacts of the study on the respondents and their communities were also explained to the participants in detail. In the actual data collection process, respondents were not required to disclose their names or any personal details when completing the questionnaire. Confidentiality of the data

provided by the respondents was ensured by leaving out the section on personal details on the questionnaire and they were assured that the information provided was used strictly for the purpose of this study only. Respondents participated freely in the study and no financial rewards were given or promised to them for participation in the study. Further, the respondents were informed of their rights in the study, specifically the right to withdraw from the study at any stage of the study if they felt it was important for them not to continue with the study or if they felt they were not supposed to respond to a specific question.

1.12 Overall Significance of the study

The study aimed at demonstrating the effects of mobile money services on the economic well-being of rural households in Zimbabwe. The main focus was on how mobile money improves their access financial services. Through a structural model, mobile money usage was shown that, it actually, has some positive impacts on the livelihood of the rural households. The study has significance to many stake holders, like policy makers, service providers and the government.

- Policy makers will find some insights on how they can develop policies that will further enhance an inclusive financial system. Mobile money usage has shown that it can reduce the financial inclusion gap. Therefore, the results of this study provide the basis for policy formulation or enhancement towards an all-inclusive financial system.
- Service providers will find the findings of this study very significant. The service providers include retailers, network operators and financial institutions. For the retailers, the study provides a pointer to opportunities to be explored as far as embracing a cashless society driven by digital money.
- Network operators will find the study helpful in that it has provided some of the challenges encountered by users particularly those that reside in the rural set up. In most cases they face intermittent network problems, where they are unable to access mobile money services due to unavailability of network services. The results of the study will help in developing products that meet the needs of rural communities given the limited financial services they are offered.
- To the Government, the present research findings are very significant in the sense that it shows the effects of its regulation, level of infrastructure development whether it improves rural livelihood or not. The poor infrastructural setup in rural communities is now overcome by mobile money development though it has its own challenges. The challenge has been eliminated. The mobile money growth presents an opportunity for the government to solve the cash crisis that has persisted over the years.

1.13 Study limitations

The reviewed literature indicated that improvements on financial access by the poor and the financially excluded could result in positive pathways out of poverty through various ways. The study managed to demonstrate this through a tested model. However, problems relating to measuring the variable and collecting data can affect the generalisation of the findings. Therefore, the challenges that confronted this research need to be considered and examined carefully:

- The study used cross-sectional data that were not collected under controlled conditions rather than using longitudinal data when considering changing situations of respondents' overtime. The kind of data collected under cross-sectional can be affected by the experience of the respondent in a given situation and thus affecting their response which could be different if the data was collected over a long period of time.
- There was difficulty in establishing proper measurement of the relationship between mobile money and welfare due to scarce and limited scales that were previously developed and used in this new field. The challenge was exacerbated by the lack of available data directly linking the study variables. However, new scales were developed and then through SEM an attempt was made to validate and test the model using given data and finally satisfactory fit indices were found.

1.14 Contribution of the study

The study was envisaged to make a contribution in three unique ways. Firstly, the present research was envisaged to beef up the scarce and sparse literature on how mobile money assists the rural people to access financial services, thereby saving their meagre incomes. Secondly, the study has the potential to contribute to literature on how to integrate productivity-based needs of the rural communities with mobile based financial services, providing practical solutions to the sustainability and financial needs of the rural populace in Zimbabwe. Finally, the study develops a model that explains the link between usage of mobile money service and the well-being of the rural people, potentially leading to increased uptake of mobile money service in the rural and remote areas of the country.

1.15 Organisation of the study

The rest of the thesis is thus structured in the following:

Chapter two: This is the first chapter in literature review, where an overview of the financial services in Zimbabwe is presented. It provides a brief historical development and growth of the banking services in Zimbabwe. It further reviewed literature on mobile financial services in particular mobile money developments in Zimbabwe, trends in Africa and the rest of the world at large. *Chapter three:* The

chapter presented literature review on theories that have been developed and have bearing on mobile financial services and their impact on the financially excluded individuals. Also included are the impacts factors that are later used to develop a model and they provide the theoretical underpinnings of the study. *Chapter four*: It is the continuation of the literature review chapters as it mainly focused on the pathways (relationships) or linkages that exist among the constructs in the study. It discusses the empirical evidence on these relationships and proposes a hypothesis for each variable. Finally, the chapter ends with the construction of a structural model based on these variables. *Chapter five* relates to the study methodology as it identifies the research methods used in the study. It discusses the study population, sampling and sample sizes used in the research. Furthermore, it explains the instrument used to gather data, how the instruments were developed and the data collection procedure used. It ends by highlighting data analysis techniques used in the research. *Chapter six* presents the qualitative data analysis. Qualitative data analysis outcomes were used to develop to help shape the questionnaire instrument by identifying the impact factors. The focus group discussions were employed to gather preliminary data. *Chapter seven*: The chapter presented the quantitative data and its analysis. Most significant in the chapter was the presentation of the structural model. The model was tested and validated and it provided the major findings of the study. The study findings were presented and discussed in the context of existing empirical literature. *Chapter eight* marks the final chapter of the thesis, where the study findings are summarized and the conclusions drawn in the light of set objectives. Finally, the findings-based recommendations were made. The figure below presents a pictorial

organization of the study. Figure 1.2 shows the organization of the study in a diagrammatic way and how the thesis chapters flow.

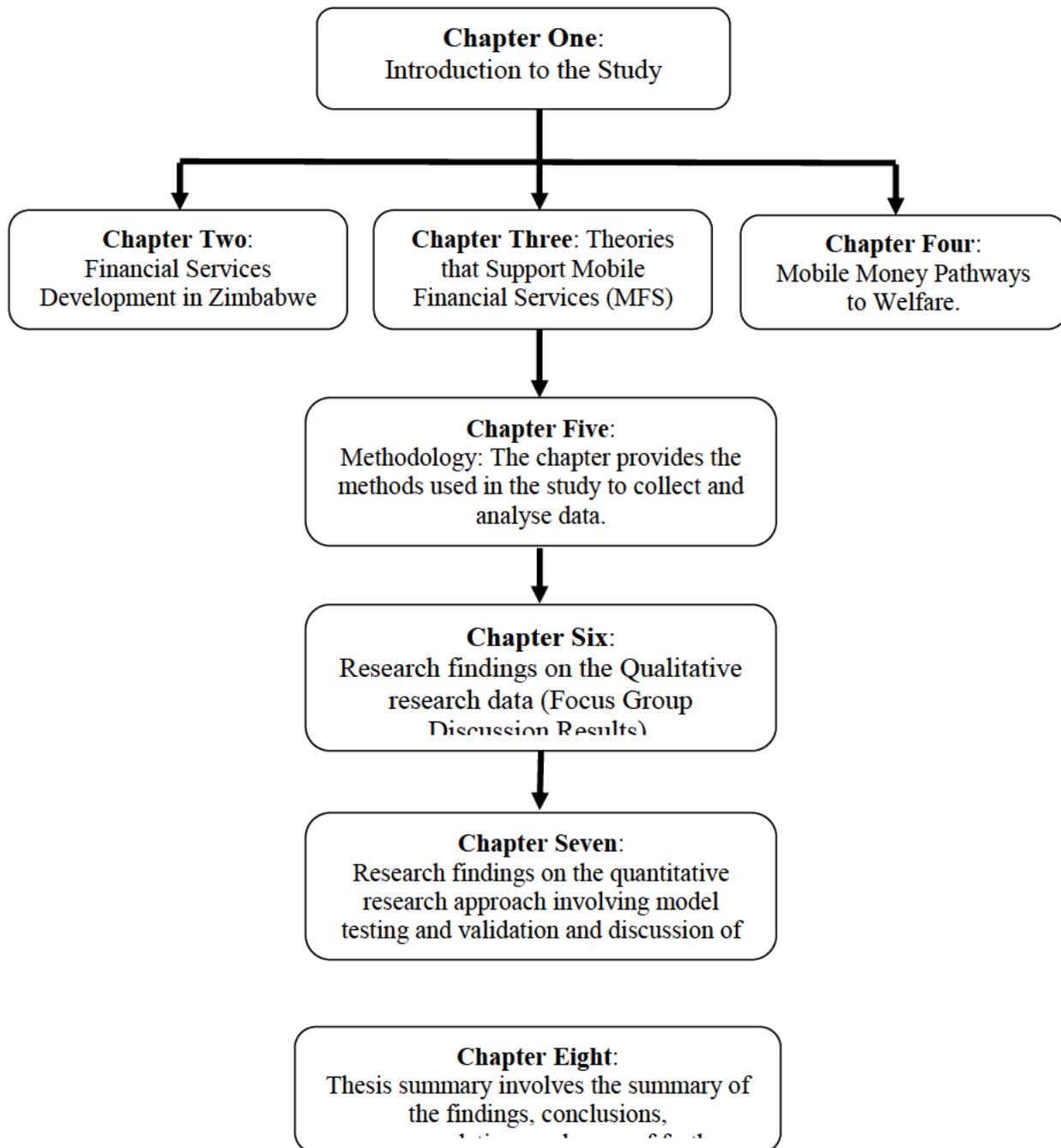


Figure 1.2: Thesis organisation

Source: Developed by the researcher

1.16 Summary

The chapter discussed the background to the research problem, provided preliminary literature review, thereby identifying the major theories used in the study. Preliminary empirical evidence on the study variables was also reviewed and provided the existing gap in literature. In addition, the chapter stated and discussed the research problem, research questions, objectives, assumptions and highlighted the major contributions of the present study. It also discussed the methodology used in this research, research design, population, sample size, validity and reliability tests used and the data analysis procedures used. The structure and time frame on each chapter was also presented. The next chapter reviews literature on the financial services environment in Zimbabwe. It reviews in detail financial inclusion and how mobile financial services can resolve the problem of financial exclusion in developing countries.

CHAPTER TWO

FINANCIAL SERVICES ENVIRONMENT IN ZIMBABWE

2.1 Introduction

In the preceding chapter, the study presented the introduction to the research, background to the study and issues related to the research problem, and methods employed to investigate the research problem at hand. As the general introduction to the study, the preceding chapter also highlighted the major methodological approaches, the extant literature and data collection and analysis procedures, ethical issues and theoretical underpinnings of the study. The present chapter focuses on literature review on the issue related to mobile finance, the financial environment and the status of financial inclusion. The chapter is structured as follows: Section 2.1 reviews the history of financial services in Zimbabwe. Section 2.2 provides the state of access to financial services in Zimbabwe, Section 2.3 discusses the mobile money service, Section 2.4 presents mobile money development while Section 2.5 discusses financial inclusion. The general role played by a literature review is that of contextualising the study and synthesizing extant knowledge with regards to the research topic, questions and the prevailing research problem. According to Machi and McEvov (2016), one of the aims in reviewing literature is to identify and define unanswered questions as they relate to a study's research problem. This also has the double effect of identifying the gaps in existing studies and creating a platform for the closing of these gaps in the study. Further, the review provides frames for the study, as it also shapes the results of the study (Henning, 2004) and helps devise theoretical and analytical frameworks that are used as a basis for the subsequent interpretation and analysis of data at hand (Bell, 2010).

2.2 The Financial Situation in Zimbabwe

A lot of factors have influenced the financial situation in Zimbabwe, especially in the past two decades. Firstly, the political situation, affected by several issues including the land question and social disillusionment, deteriorated in the early 2000s and did not have any major improvements ever since. Eventually, the economic situation, owing to the same unfavourable developments in the same period, also deteriorated and inflation was unstoppable, going at some point to as high as 231 million percent (Munangagwa, 2009, Kanyenze, 2004). Due to the land issue and consequent political developments in Zimbabwe, the country also suffered economic exclusion from some big economies on which it was dependent like the United Kingdom and the European Union. Consequently, Zimbabwe lost its currency and introduced bearer bonds. The economy worsened during the era of bearer bonds. These were phased

out in 2009 at the height of financial challenges and Zimbabwe introduced the multi-currency system, categorically excluding a Zimbabwean currency, and mostly including the United States Dollar, the British Pound, the Euro, the Yuan, the South African Rand and the Botswana Pula. One of the major effects of these developments was the depreciation of the banking system and the ballooning of the parallel market for cash. As a result, in some instances there was more cash in the streets of major cities in Zimbabwe than in some of the country's banks. This was due to the fact that Zimbabwe's major trading partner is South Africa, creating the need to always convert all the other currencies into the

South African Rand (Kramarenko, Engstrom, Verdier, Fernandez, Oppers, Hughes, McHugh and Coats, 2010), which has its own set of problems.

The latter development discussed above was exacerbated by the depreciation of funds in people's bank accounts, owing to very high service charges in the banking sector. Workers were the hardest hit and the majority started depending on loans for any developments, both economic and personal. The interest rates charged on the loans were very high and many struggled to repay the loans. As a result of all the above, the populace lost faith in the banking system and the informally employed and some institutions started hoarding cash and the formally employed made sure as soon as their salaries went through into their bank accounts they withdrew all the money from their accounts (Zimbabwe Coalition on Debt and Development, 2016). Eventually, all these factors led to the cash shortages experienced in the past two years to date where Zimbabweans have to stand in long queues to access their money from financial services institutions. The cash shortages were seriously affecting the social and economic well-being of Zimbabweans (Zimbabwe Coalition on Debt and Development, 2016). Further, Zimbabwe re-introduced the bond system through bond coins, and later bond notes. The country also emphasized soft money, which was not congruent with what they needed to do with their money; which is to convert it to the South African Rand for trade purposes.

The financial situation in Zimbabwe in the past few years has been one of exclusion from multilateral institutions such as the World Bank and the International Money Fund (IMF) that extend lines of funding to most economies in the world. It also continued to be blacklisted by major economies like the United States of America and Britain and the Common Wealth. Lately, there has also been an increase in the country's domestic debt. There was marked decline of the availability of credit in the last two decades (Poulton, Davies, Matshe and Urey, 2002). The IMF (2017) report indicates that Zimbabwe is in debt distress, as both international and local debts are mounting uncontrollably, crippling even the country's private sector. This is indicative of financial instability, calling for financial sector reforms to achieve financial stability for the Zimbabwean economy (Bonga, Chikeya and Sithole, 2015). The nation's debt to the private sector only cripples the only operational sector in the country in the past few years.

One positive result of the challenges faced by the financial sector in Zimbabwe over the past decade has been the development of mobile money services. These have come and been adopted in response to the cash shortages experienced by the country. Riding on telecommunication developments in the country in the last two decades, mobile money services have grown steadily over the years and they have somehow ameliorated the financial services challenges in the worsening financial situation in the country. Led by telecommunication companies, mobile money has roped in the banks to provide mobile money services to their customers. The rural Zimbabwe, previously excluded from the banking system,

has benefited the most from mobile money development as it created an environment of a cashless society and promises to relieve them from over dependence on the cash economy, which is obviously wrought with a plethora of challenges. The cash economy, characterized by inefficiencies owing to the size of the population versus the Automated Teller Machine (ATM) network ratio and a branch network which is limited to urban areas, has faced many debilitating challenges in the past few years. Suri, Jack and Stock (2011) noted a similar trend in other sub-Saharan countries, with Kenya being a particular case in point. Consequently, this has a negative effect on rural economic activities as only important transactions were taking place, limiting the development of rural economies. By the end of 2017, the Automated Teller Machine system in Zimbabwe was involuntarily disabled to bring order into access to the limited cash, bringing back the long queues in the banking halls.

2.3 History of Financial Services in Zimbabwe

The bulk of the existing current financial supervisory and regulatory architecture obtaining in Zimbabwe was passed on by the colonial government at independence in 1980 (Nhavira, 2010). The Reserve Bank of Zimbabwe inherited and supervises a sophisticated financial sector comprising of the commercial banks, merchant banks, post and saving banks, discount houses, building societies and finance houses (Matapure, 2009). Prior to financial liberalization, the state had major influence in financial services sector where financial institutions were also pursuing specialized financial service provision. Commercial banks were confined to accepting deposits and withdrawals and extending lines of credit to their customers. On the other hand, merchant banks were restricted to offering export finance. The activities of financial institutions were highly specialized as evidence by the fact that institutions like Barclays Bank were known for financing agricultural activities, merchant banks were involved in financing the mining sector and building societies specialized on mortgage services while discount houses intermediated between banks and the Reserve Bank of Zimbabwe (Matapure, 2009). Moyo (1998) noted the high entry barriers to the financial services sector where it became the preserve of the major players. Banks formed cartels so as to reduce competition among the industry players. These institutions entered in agreements that allowed them collude on issues like interest rates and this adversely affected the bank customers by killing the innovative drive to improve products and services (Moyo, 1998).

However, the situation changed in 1991 when the government liberalized the economy through the introduction the Economic Structural Adjustment Programme (ESAP) (Moyo, 1998). The objectives of liberalization were to create more like a free market economy with the state having less intervention in economic matters. The role of the state was reduced to that of providing an enabling environment through policy formulation and regulation (Moyo, 1998). Consequently, during this period up to 1996 the central bank was able to control the surge in money supply. This was as a result of the discount

houses converting non deposits in to treasury bills, however this was a temporary stop gap measure as broad money began to surge as the deposits were now directed to the commercial banks (Moyo, 1998). Several other effects of the Economic Structural Adjustment Programme have been discussed at length by many researchers (Kawewe and Dibie, 2000, Kanji, 1995, Tekere, 2001, Makoni, 2000). With the advent of financial liberalization, some of the delineations became blurred and a number of new financial institutions emerged. The government, through the Ministry of Finance and the Reserve Bank of Zimbabwe, began issuing out new licenses to financial players such that between 1993 and 2003 there was an upsurge on banking institutions (Nhavira, 2010). As a result, the RBZ was able to arrest, though temporarily, the surge in broad money during the first three quarters of 1996 because discount houses converted the bulk of their non-bank deposits into treasury bills. However, the growth in broad money resumed but with deposits being channelled through commercial banks. Further some of the banking institutions that opened doors during this period have since closed doors due adverse regulatory environment, deteriorating economic activity, and financial challenges that bedevilled the country in the latter years (Nyoka, 2015).

As a result of financial liberalization, the late 1990s saw the emergence of competition in the financial services sector. This is evidenced by the adoption of new technologies to improve delivery of services in an attempt by banks to distinguish themselves from their competitors (Matapure, 2009). Banking organizations such as Standard Chartered Bank and Central Building Society (CABS) introduced automated teller machines (ATMs) and point of sale (POS) terminals and saw the creation of the ZimSwitch facility (TechZim, 2011). The switch enabled the cross platform use of cards, thereby facilitating the switching of transactions between banks. However, at the earliest threat of cash shortages in the country some of these facilities were temporarily suspended. For example, when the 2017 cash crisis started worsening almost all the banking institutions in the country switched off their ATMs and suspended the ZimSwitch facility. The only facility that remained functional was the Point of Sale machines, especially in retail shops. The point of sale facility has been welcomed by the generality of Zimbabweans in the face of worsening cash shortages, as it offers an alternative in the era of soft money. In the past, the Point of Sale was accompanied by the cash back facility, which allowed the banking population to buy a few groceries and get money back from the retailers as a way of accessing their monies. However, as the cash shortages worsened, this became more and more problematic. Recently, a new phenomenon of black market money erupted where buyers who have cash would be asked by the banked who need cash to sell them their cash and an interest rate agreed between parties and the banked would buy groceries using soft money (cards and mobile money) and then get cash from the buyers that is slightly less than what they would have paid for the groceries. The hard cash is still needed by many to pay rentals, to buy the South African Rand and the American dollar for trade and for travel outside the country as well as for paying domestic workers who do not have access to mobile money.

2.3.1 The State of Banking Services Access in Zimbabwe

The present financial system in Zimbabwe is made up of various players who offer a wide range of financial products and services (Mangudya, 2016). The players include Banking Institutions, Micro Finance Institutions, Payments systems, Insurance, Pensions, Development Financial Institutions and Capital Markets. These institutions provide various services to different segments of the economy. In this study, the main focus was on the national payment systems and partly on banks and microfinance institutions informed by the delimitation of the study (mobile money and rural communities). Figure 2.1 shows the present state of banking institutions in Zimbabwe:

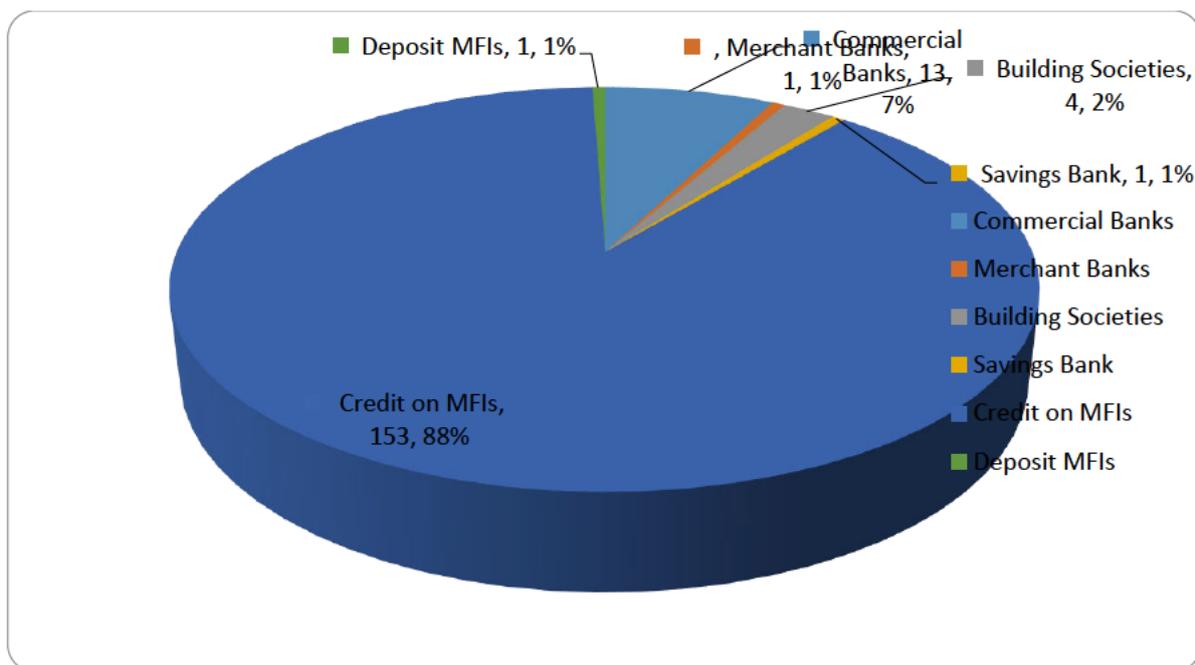


Figure 2.1: The banking sector

Source: Mangudya (2016)

From the Figure 2.1 presented above, the country has a total number of 4,496 branches and access points serving the Zimbabwean population as shown in Figure 2.2 below.

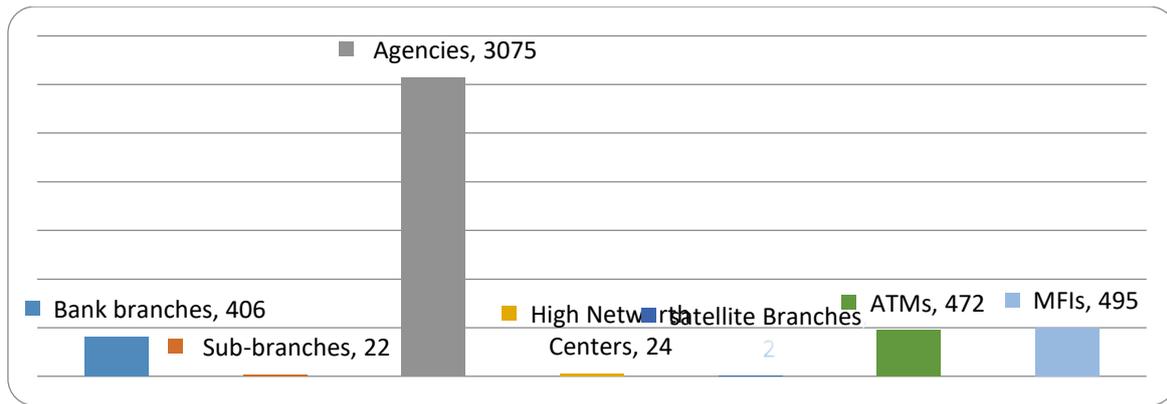


Figure 2.2: Branches and Access Points

Source: Mangudya (2016)

Figure 2.2 above shows that about 85% of these access points are located in the urban areas leaving the rural population largely underserved and therefore presenting a strong case for financial inclusion for the rural communities. Zimbabwe has a wide rural community, with each urban area surrounded by several rural districts. As indicated in the figure above, most of these rural districts do not have bank branches or sub-branches, let alone automated machines. Even those that have automated machines no longer have access to cash from these as they were all suspended at the height of cash shortages. This translates into huge under-serving of the rural populace by the mainstream banking system in Zimbabwe. Further, urbanisation of the rural areas of Zimbabwe seems not to be on top of the government’s priority list, both central government and local government. The disparity of facilities and standard of infrastructure between the remote rural areas and the affluent urban areas in Zimbabwe is still glaring.

What has worsened the rural communities’ lack of access to the banking system, which is still located in the urban areas, are the country’s poor road networks. Zimbabwe’s road networks have continued to deteriorate in the face of the declining economy and due to the effects of floods and other climate change effects from which the government seems to be struggling to recover and which continue every year (Mbara, Nyarirangwe and Mukwashi, 2010). The state of the roads has also been blamed on the state of the economy, which discourages private players from investing in road infrastructure because of low levels of production by the industry. The road network has been reported to have a huge negative influence on the economy (Zikhali, 2017, Pushak and Briceño-Garmendia, 2011). For example, in 2017 floods destroyed roads and swept away a significant portion of the country’s bridges and access ways, automatically shutting thousands of the rural populace off the urban areas. Most of these were not yet repaired at the beginning of 2018.

Further, according to ZimStat (2013), of the 70% people in Zimbabwe who live in the rural areas 7.1 million are small holder farmers. With effective financial inclusion, these masses would contribute meaningfully to the country's economic growth. However, the farm produce they would need to send to the largely urban market would, in certain instances, not make it due to the poor road network. The state of the roads has also affected the cost of transport in these routes as transporters also need more money than the urban would need for the same distance as they would need to buy spare parts more frequently than their urban counterparts due to the state of the roads in the rural areas. Even if the rural farmers made it to the market in the urban areas, the money would not help the cash circulation in the country as these smallholder farmers are largely unbanked and would take the cash back home and keep it under the pillows, the only way they knew how to safely keep their money. As a result, the benefits of the land reform, which already has had negative effects on the economy (Moyo and Yeros, 2011, Moyo, 2011) are not realized. However, with the introduction of mobile money solutions, it is assumed rural populations' inclusion in some kind of banking of the money they make will contribute to cash circulation and the economy in general.

The United Nations (2017) indicates that a total of 140 dams were destroyed by the floods in Zimbabwe in 2017. This does not only shut out of the urban area certain rural communities but also has a huge impact on the fiscas. The economy, which has already been ailing over the last two decades anyway, faces a setback due to the construction work that will go into repairing and replacing infrastructure destroyed by the floods. Due to other priorities for the government, such as ensuring food security for the nation, which has suffered from severe droughts and disease outbreaks (UNICEF, 2011, 2013), it will take some time before focus is solely on repairing the road networks, let alone rural ones.

2.3.2 Savings and Credit Cooperatives (SACCOs)

There is also another community-based society of savings and credit cooperatives (SACCOs). This is made up of bodies created by a group of people with a common interest, such groups as churches, workers' unions, and community groups who come together to save collectively, then make loans available to the group members. They are normally known as *maround* or *mukando* and they were necessitated by the lack of individual members to access funds from formal financial institutions and they are found in both urban and rural areas. The depreciating banking services in the formal banking system and the depreciation of savings while in the bank also led to the formation of community based saving initiatives. They are characterized by huge returns and easy access to individual loans and hard cash. Members access this cash base for business, school fees, sustenance and several other day to day necessities of community members. Members pull together money into a resource base that constantly and continuously services the individuals who take turns to receive the money. The savings system has become a way of living for small scale traders who take the money and put it into business, realizing

huge returns. This is seen as a better option even for some banked populations as it comes without the high interest rates characterizing the loan system of the banks.

Econet, which has a subscriber base that runs into millions, has its eyes set on the huge number of people that have formed savings groups in both urban and rural areas. The formalization of community services has introduced a new wave in financial services sustainability in especially the rural areas. This communal approach to small-scale financing and savings is very common across Africa, which would explain why in countries like Kenya, Uganda and Tanzania similar services were also launched (Munyegera and Matsumoto, 2016). Such financing systems are becoming popular due to the low costs they come with. Kenya has also seen similar efforts to digitalize and formalize savings groups, with a start-up group called Chama softly gaining recognition for its efforts in this area of mobile money savings and credit (Weil, Mbiti and Mweya, 2014).

2.3.3 Payment Systems

The national payment systems underpin the proper functioning of the financial system, providing the means by which funds are transferred in the economy (Mangudya, 2016). The digital payment system, leveraging on Information and Communication Technologies (ICTs) and players therein, has provided access to financial services by the previously unbanked communities, which are largely rural. This has led the financial institutions to move away from ‘brick and mortar’ facilities to ‘click and mouse’ and mobile payment systems. Of interest in this study is the mobile payment system, which has the potential to bring down the barriers of financial inclusion.

Zimbabwe has a well-diversified payment infrastructure consisting of large and small value retail payment systems (Mangudya, 2016). Table 2.1 shows the structure of the national payment system in Zimbabwe. Within an array of these national payment systems, the mobile payment system has been identified and chosen for the purpose of this study to assess its impact on the financial inclusion of the rural people. Compared to the other payment systems in place, the mobile payment system is quite a recent development that carries with it a lot of potential in terms of financial inclusion and access to services by the previously marginalised communities in Zimbabwe.

Table 2.1: National Payment System

Payment System	Total	Participant	Category
Real-time Gross Settlement (<i>RTGS</i>)	1	18	Large Value
CSD (<i>Government & Private Equities</i>)	2	18	Large Value
Electronic Funds Transfer (<i>Payserv Zimswitch</i>)	2	16	Large Value
Mobile Payment (<i>Eco cash, Telecash, One Wallet and Nett cash</i>)	3	11	Small Value

Cheque Clearing House	1	14	Small Value
Internet (<i>Intrabank</i>)	16	15	Small Value
Local Card (<i>ZimSwitch</i>)			Small Value
International Card (<i>Visa, Mastercard, and China Union Pay</i>)			Small Value

Source: Mangudya (2016)

2.4 Telecommunication System in Zimbabwe

According to Vedantham (1990), Zimbabwe in 1980 inherited a dilapidated telephone system from the colonial Rhodesian government that suffered from international sanctions as a result of human rights abuses and racial discrimination. It is estimated that African countries were about tenfold behind in telecommunications development in comparison to the developed nations (Vedantham, 1990). By 1982, Vedantham (1990) asserts, the USA's population telephone ratio was around 90% while in Africa as whole it was estimated to be around 5%, that is, for every 100 individuals living in Africa only 5 owned a telephone line. The situation continued in that direction due to the fact that telecommunication development was not prioritised as compared to electrification. However, the ever increasing dependence of international trade on telecommunications shifted the focus as the need to modernise telecommunication capabilities became more apparent. The structure of telecommunications in Zimbabwe was no different from other African countries as observed by Vedantham (1990).

The network infrastructure was characterised by a high network distribution in the big cities like Harare and Bulawayo, which accounted to a combined seventy-five percent of the total national telecommunications coverage. The rest of the country shared the five percent. Moreover, the low density suburbs had higher proportion as these residents were characterised by wealthy households as compared to high density suburbs comprising of households with low incomes. Telephones were, therefore, for the affluent rich and not the poor communities. By 1989-megabyte digital links were installed in Harare and Bulawayo (Vedantham, 1990). There was a great improvement in rural installation driven by a domestically designed and manufactured landline technology that allowed up to 24 households to share a single line. There was an increased demand to install telephones lines in rural households from their relatives staying in the cities to enhance communication. This was also heightened by the increase in rural to urban migration in the late 1980s and early 1990s. There were a plethora of challenges relating to Zimbabwe telecommunications. Chief among the challenges was that it was very difficult to use modems as they were outlawed, no electronic mails were allowed as a security measure (Vedantham, 1990). The laws were an impediment on the development of telecommunications in the country for a long time, putting the country behind other countries by a few years. Facsimile technologies needed to be registered and assessed by the Post and Telecommunications Company (PTC). This was further

exacerbated by lack of foreign currency to buy new equipment while the telecommunications infrastructure generally needed a major overhaul (Vedantham, 1990).

Goodstein and Velamuri (2009) noted that Post and Telecommunications Company (PTC), a state owned monopoly until 1993 when this monopoly was challenged by Econet Wireless, had failed to provide telephone access to the majority of the Zimbabwean population. The Zimbabwean telecommunications sector was characterised by a very high ratio of about 1:4 telephone lines. By 1993 there was a paltry 145 000 fixed telephone lines characterised by very poor voice transmission quality and another 95000 people were on the waiting list (Goodstein and Velamuri, 2009).

The state monopoly was then challenged by Econet founder Strive Masiyiwa in 1993 who saw mobile telephone as the solution to Zimbabwe's telecommunications challenge after he had worked for the state owned monopoly since 1984. However, an attempt to establish alternative communication systems was met with serious resistance from the Zimbabwean government (Goodstein and Velamuri, 2009). The period between 1993 and 1998 saw a fierce legal challenge by Econet founder against the state's hold of monopoly to telecommunications. Eventually, the end result of the legal battle saw the birth of three major mobile telecommunications companies that today operate in Zimbabwe, namely Netone, Econet and Telecel. Netone, a state owned network operator, was the first to be established in 1996 while Econet and Telecel are privately owned companies (Mpondi, 2018). The Zimbabwean government had continued with the monopolistic structure of the telecommunications industry until the enactment of the Postal and Telecommunications Act (Mpondi, 2018). Consequently, the Act established the Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ) with a broad mandate of levelling the playing field in the post and telecommunications industry (Mpondi, 2018). The introduction of the mobile network operators led to the birth of telecommunications liberalisation in Zimbabwe, solving not only the communication needs of Zimbabwe but also inclusion issues in many aspects of the country's development.

2.4.1 Mobile Payment

Mobile payment is the provision of financial services through the mobile phone device (Donovan, 2012). An individual is mobile payment enabled simply due to having a mobile phone device. The high mobile phone penetration of over hundred percent has led to partnerships between banks and mobile network operators to offer different financial services to a wider community. By the end of 2015, mobile money in Zimbabwe had a combined subscriber base of over 6 million users and more than thirty thousand mobile payment agents across the country (Mangudya, 2016). The number of subscribers to

Mobile Money worldwide far surpasses the number of people using the formal banking system of having bank accounts (Tobbin, 2012). Most of those who do have the bank accounts still subscribe to mobile money services. This is because mobile money services come with the convenience of doing some transactions from the comfort of your home, office or wherever one is.

The mobile payment system has facilitated the growth of remittance services internationally and domestically, particularly in the rural areas where it was difficult to send or receive money using the traditional methods. In terms of mobile phone penetration, Africa is one of the fastest growing regions in the world; only second largest after Asia (Ondiege, 2015). Besides accessibility, this growth has been linked to low transaction costs that come with mobile money (Bank, 2009, Hernan and Rosa, 2010). The low costs are a result of several factors and are heightened by the fact that transport can be taken out of the equation in mobile banking. The low costs have continued to attract more and more subscribers to the facility. Besides the low costs associated with the mobile money service, the other determinant that has attracted a lot of subscribers to the facility is the ease of doing business associated with mobile money, such as doing transactions from the comfort of whatever geographical location one could be, real time transfer of funds and security of funds among others. So, while for the rural areas and previously financially excluded communities it is a matter of financial inclusion, for the urban areas and the already banked communities it is convenience and ease of doing business. For instance, in the case of Zimbabwe one can continue to monitor their account and send from or receive money in their phone while travelling internationally due to the roaming facility, which is a convenience the traditional banking system significantly lacks. This has also drawn many people, including the already banked populations, towards registering and using mobile money services.

The penetration of mobile phone network into the remotest areas has made the previously marginalized communities to gain access to the formal financial services (Morawczynski, 2009) that were previously a preserve of the urban populace, semi-urban areas and a few affluent people from the rural communities. Andrianaivo and Kpodar (2012) note that there was greater impact of mobile phone telecommunication service in areas where landlines were not installed, areas that had been severely excluded from both telecommunication services and financial services. In Zimbabwe, the coverage of landlines is very poor in the rural communities and the culture of having landlines outside of the business space is almost non-existent. In many communities where the landline facility had been availed the lines have been neglected and in some cases vandalised, especially after the introduction of mobile phones. It can be asserted, therefore, that there is no other technology that has witnessed such diffusion and growth rates as the mobile phone technology and the attendant benefits have been evident in mobile money services.

In Zimbabwe, the diffusion of mobile phone technology is very overwhelming. The ownership of mobile phones, at least by one household member in Zimbabwe’s rural areas, stood at 84% by the end of 2014 (ZIMSTATS, 2014). The Post and Telecommunications Regulation Authority (Potraz, 2014) reported a 91% mobile phone penetration rate with all networks having a total 11.8 million subscribers nationwide, accounting for more than 80% of the total population of Zimbabwe. While there are some rural areas where network coverage is still poor and mobile money is used more in urban areas than in rural areas (Chinakidzwa, Mbengo and Nyatsambo, 2015), mobile phone penetration in rural Zimbabwe keeps growing, bridging the gap between the banked and the previously unbanked marginalised communities. Until two years ago, mobile money was more appreciated in the rural communities than in urban communities. However, over and above being used for banking, mobile money has provided the necessary link between the urban and rural communities in terms of transactions, and between the country and the ever growing diaspora.

The Zimbabwe national payment system has been experiencing progressive growth from the year 2010 to 2014, especially the mobile payment system that has grown with the growth of mobile phone technology and that has gained momentum with the depreciating hard cash situation in the country. Therefore, the Governor of the Reserve Bank of Zimbabwe’s 2016 report points to an accelerated growth of the mobile payment facility in comparison to other payment access points per 100 000 adults as shown in Table 2.2:

Table 2.2: Payment System Access points per 100 000 Adults

Year	ATMS	POS	Mobile Money Agents
2010	5.39	27.67	0.27
2011	4.56	46.90	21.06
2012	4.87	55.25	40.82
2013	5.53	88.58	88.56
2014	6.48	149.78	292.19

Source: Mangudya (2016)

The growth of the mobile payment system is due to a number of factors like the migration trends in Zimbabwe, where most of the people in the rural areas have since migrated to the urban areas and to the diaspora owing to almost two decades of economic meltdown in the country. The trend is informal economic activities are more and are effective in urban areas where there are many people in one place. Hundreds of thousands of Zimbabwean immigrants have landed in neighbouring South Africa, Namibia and Botswana. Several others have found home in the United States of America, the United Kingdom, Canada and Australia among other stronger economies in the West. The other factors include the growth

of network coverage and the increasing adoption rates of mobile money, which too presented an opportunity for an effective payment system in an economy that is struggling. Therefore, mobile money offers the urban majority the safest and very convenient way of remitting funds to their family members and relatives in the rural areas. To the rural communities it offers real time transaction options for a community that heavily depends on remittances from the urban community and the diaspora. Lately, the liquidity crunch is another factor that has compelled individuals to depend on the mobile payment option than the use of hard cash, which has become very hard to access anyway due to severe cash shortages that have hit the Southern African nation for the past few years.

Starting 2016, Zimbabwe has experienced and continues to face severe cash shortages. These have only increased with time and indications of them ending have not started showing. Hard cash circulation has dropped to worrying levels. This has made it almost impossible for even the banked population to have cash in their hands, forcing the population to depend on soft money, which is largely mobile money. In the process mobile money has gained currency in both the urban and rural populations. Even the banked population has had to link their bank accounts to the mobile facilities available in the country (Eco-cash, Tele-cash and One wallet) so that they can transact through mobile money. This has obviously boosted the uptake and growth of mobile money in Zimbabwe. The growing Diaspora has also boosted the growth of mobile money in Zimbabwe as the Diaspora community has lost faith in the banking system and would rather use such mobile money platforms as Eco-cash, Global Remit and Mukuru.com among others to remit funds to Zimbabwe from South Africa, the UK, America and from all over the world.

2.5 Mobile Money

According to Ernest and Young, the definition of ‘mobile money’ varies across industry as it covers a wide range of applications. In general terms mobile money refers to any service that allows electronic monetary transactions to be executed over a mobile phone (Chibango, 2014). In developing countries, such as Zimbabwe and most of its neighbours, mobile money is a financial link between the banked urban and the unbanked rural communities and avoids transport costs involved in moving cash between the metropole and the village (Wray, 2008). In the past remitting money to the rural areas from the urban areas involved paying bus drivers to take the money or sending someone to hand deliver the money at its intended destinations. The alternative was registered mail, which was also very expensive. Mobile money has gained traction as a cheap way of transacting (Honohan and Beck, 2007), especially compared to the traditional financial institutions and traditional ways of sending money. For instance, digital vouchers were found to be more expensive as a way of transacting than mobile money (Aker, 2012, Research, 2017, Bailey, 2017). In the SADC region, Zimbabwe is among the countries that have high penetration of mobile money while Madagascar, Mozambique, Malawi and the Democratic Republic of Congo are some of those countries that are ranked lowest (Fanta, Mutsonziwa, Goosen,

Emanuel and Kettles, 2016). The penetration and widespread use of mobile phones, which is linked to indications of development (Lee, Levendis and Gutierrez, 2012), are central to the growth of mobile money uptake (Andrianaivo and Kpodar, 2012, Andersen, Hyytinen and Snellman, 2000). The mobile wallet that comes with mobile money has also provided a sense of security as the theft of a mobile phone does not always translate into the perpetrator getting access to one's money due to passwords, pins and other security measures that mobile phones come with.

Mobile money is simply the provision of financial services to people using a mobile phone (Donovan, 2012, Gencer, 2011, Jenkins, 2008). Anyasi and Otubu (2009) define mobile money services as encompassing a broad array of financial services which may be accessed by customers via the mobile phone device. All one needs to be financially included in the era of mobile money is a mobile device and access to a mobile money agent. When registered and one begins transacting, mobile money is characterized by the following features: balance inquiries, depositing and withdrawal of cash (cash-in and cash –out) respectively; transfer of fund; savings; access to lines of credit; off-shore remittances; payments of bill; and purchase of airtime (Kasseeah and Tandrayen-Ragoobur, 2012, Donner and Tellez, 2008, Jenkins, 2008). In the assessment of unorthodox banking services, Kumbhar (2011) identified the fulfilment of services and the availability of systems as the indicators that explain the range of service that the operator may avail and to what extent they are being used. The inclusiveness of the financial system can be evaluated on the basis of the following indicators: risk minimization, speed of service, ease of use, innovativeness, cost effectiveness, responsiveness, customer education and credit counselling (Kumbhar, 2011). The distance walked to access the service is also a significant determinant in assessing the effectiveness and inclusiveness of the service.

Donner and Tellez (2008) note that there were no one size fits all type of mobile money and the supporting structures tend to be country specific. Mobile money offers the potential of financial inclusion for millions of people living in emerging markets that have access to the mobile phone, yet remain excluded from the financial mainstream (Ismail and Masinge, 2012). The previously unbanked and marginalized communities have experienced life changing access to financial services through mobile money. These hitherto marginalized populations present potential markets for the banking sector and telecommunications service providers while offering opportunities for the rural population to access previously unavailable financial services (Bandyopadhyay, 2010), services previously regarded a preserve for the urban and the rural elite. Exclusion from financial services is a major challenge for the poor as they are left behind in many developmental processes of their nation states (Zhu, 2014). They do not participate in the economic activities driving the economies of their countries. Nation states, significantly, have begun processes to ensure financial inclusion of the previously unbanked communities (Amidzic, Massara and Mialou, 2014). Banks, however, have been found to be slow in responding to the needs of the unbanked communities (Mavhiki, Nyamwanza and Shumba, 2015), even

if it is their responsibility to come up with products and services for low-income clients (Alexandre and Almazán, 2012).

In a mobile money system run by a solo mobile network operator, deposits do not attract interest as provided in the banking regulation. Therefore, it means that all the money dispensed and circulating corresponds to the actual funds in the system as it cannot be used for lending or savings purposes by mobile money providers. However, through partnerships with banks, mobile money operators are now able to provide a full range of financial services like lending, savings and insurance services (Alampay, 2010). This is especially relevant for a country like Zimbabwe where even the banked population finds it difficult to access hard cash from the traditional financial systems, expressing the need for mobile money for transaction purposes. In terms of deposited funds not earning interest, in countries like Zimbabwe at the moment, even the money deposited in the bank does not earn interest. Instead, the money in one's account depreciates with time as the banks charge very high service charges and transaction charges. Further, savings options in the Zimbabwean traditional banking system are very limited.

2.5.1 Basics of Mobile Money

Mobile Money is a form of technological innovation and on its own it cannot bring about any development (Chibango, 2014) but must be employed in a way that benefits users. According to Gencer (2011), the term mobile money can be used synonymously with mobile financial services. It is a broad term that embraces mobile payments, mobile finance and mobile banking as shown in Figure 2.3:

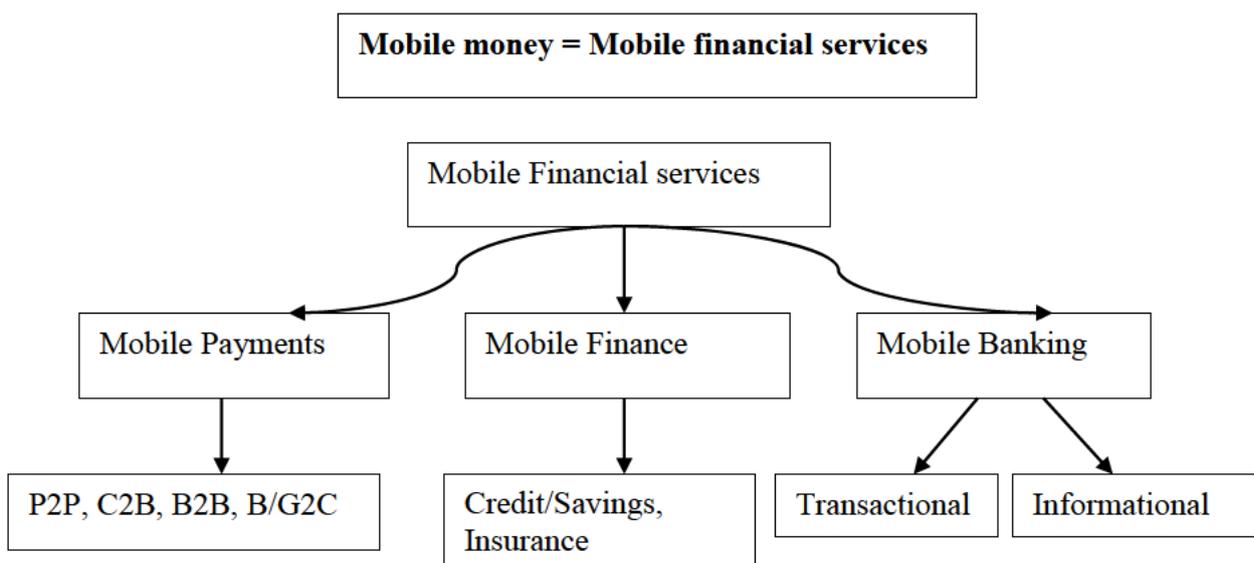


Figure 2.3: Mobile Financial Services.

Source: Gencer (2011)

Mobile payments relate to all electronic money transfers among individual users, businesses and government institutions that are conducted via a mobile phone device. Mobile finance refers to credit, saving and insurance services, mainly disbursement and repayment of money to users while insurance relates to premiums and claims. The last branch of mobile financial services is mobile banking, which relates to transaction activities like mobile bill payment, deposits and withdrawals from the mobile wallet and informational services such as alerts on any account activity, account balances and history on account activities (Donovan, 2012, Gencer, 2011, Porteous, 2006). For mobile financial services to take place, there is need for different players/partners to come together to form an ecosystem as shown on table 2.4 below. Each of these partners plays an important role for the success and growth of the mobile money system.

2.5.2 Mobile Money Ecosystem

The mobile money ecosystem relates to a network of organizations and individuals that must be in place for mobile money services to take off. This assertion is based on the three rules of retail location and, in the context of mobile money, termed the three rules of partnership, that is, it relies heavily on thriving partnership (Jenkins, 2008). The way mobile money is designed determines its success, that is, all the participants must cooperate to increase efficiency. Gencer (2011) identifies a wide range of different players in a mobile money ecosystem and these include mobile network operator, banks, agents, regulators, micro financial institutions, retailers, employers and users. Table 2.3 below shows partners in the mobile money ecosystem.

Table 2.3: Partners in the mobile money ecosystem

Mobile Network Operator (MNO)	It is the thread that knits all these relationships together (banks, agents, retailers, utilities, employers and regulators). The MNO provides the leadership in the development of mobile money ecosystem and it reaches all income segments. It is the backbone infrastructure for mobile money system.
Banks	The role of banks is to offer banking via the mobile. The banks hold float accounts in customers' names and ensure compliance with financial sector regulations.
Agents	The agents and retail outlets where customers can sign up for service, purchase phones and accessories give MNOs a geographical reach across income segments and they form the backbone of the mobile money ecosystem. These are the face of mobile money services.
Retailers	They accept mobile money payments, build trust in mobile money through leading by example.
Utilities	Offer mobile money payment options.

Employers	These offer direct deposits of wages into mobile money accounts.
Regulators	Provide an enabling environment for both mobile money and telecommunication services. They also protect the stability of the financial system. Government regulators demonstrate leadership to encourage and protect behaviour change. Regulation provides the environment that enables an ecosystem to occur by creating space for experimentation.

Source: Jenkins (2008)

2.5.3 Models of Mobile Money

Two types of models of mobile money have been implemented in sub-Saharan Africa, namely the additive and transformative models (Etim, 2014). The models are briefly elaborated below:

Additive model- It refers to a service that incorporates the mobile phone as another distribution channel for banks to serve their existing customers (Flores-Roux and Mariscal, 2010). Flores-Roux and Mariscal (2010) further note that high bank charges on remittances sent through the formal system drive remittance senders away to informal agencies. In this model, bank account holders use their mobile phones to access their bank accounts for services such as checking balances, funds transfers (Etim, 2008). Additive is the case in South African where mobile money is not as financially viable as is the case in most of Sub-Saharan Africa (Fin24tech, 2016). This is because the cost of banking in South Africa is very low compared to other Sub-Saharan countries.

Transformative model- This model allows the unbanked to access financial products without existing bank accounts through their mobile phones based on MNOs services (Etim, 2014). In the transformative model, mobile network operators take the leading role. The transformative model has taken root in most developing countries and promises to unlock financial services for the 80% unbanked population in the sub-Saharan African region (Etim, 2014). Flores-Roux and Mariscal (2010) note that low cost and independence from the bank, makes the model ideal to address the needs of the previously financially excluded communities . Almost all the implementation processes in Africa were based on the transformative model led by mobile network operators.

2.5.4 Mobile Money Process

In Zimbabwe, the most common mobile money products are being offered by mobile money operators (MNOs) in partnerships with banking institutions (Bara, 2013). The Reserve Bank of Zimbabwe does the ‘licensing’ and the supervision of mobile money since mobile money was regarded as a financial product / service. The service falls under the National Payment System Division which oversees all

national payment systems and is governed by the National Payment Systems Act (Bara, 2013). However, the mobile network operators are supervised and regulated the Post and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ). With the regards to mobile money, mobile network operators are not financial institutions therefore they are not allowed to offer financial products on their own in accordance with the financial sector regulation (Bara, 2013). They, however, can only provide such services through partnerships with banking institutions as provided for by the financial services regulation.

In Zimbabwe, the central bank uses a bank-based model on mobile money products and this implies an indirect relationship between the central bank and mobile network operators. The relationship creates a regulatory challenge for the central bank as it does not have direct authority to supervise mobile network operators. Therefore, the central bank will then rely on the network regulating authority the Post and Telecommunications Authority in Zimbabwe (POTRAZ). According to Bara (2013), the Post and Telecommunications Authority in Zimbabwe allows network operators to offer value-added services where mobile money is regarded as one good example of a value-added service. In terms of regulatory provisions in the telecommunications sector and the financial sector regulations, the provision of mobile money service consequently calls for a partnership between the mobile network operators and banking institution which offer the service. The Reserve Bank of Zimbabwe then ensures that mobile money will not create credit or offer products besides the regulated services (Bara, 2013). Therefore, given the above scenario, one wonders how mobile network operators (MNOs) then come to provide mobile money services to the public. According to Bara (2013), there are steps that must be followed in order for network operators to provide the service to the public and they are illustrated in the flowchart diagram presented in Figure 2.4:

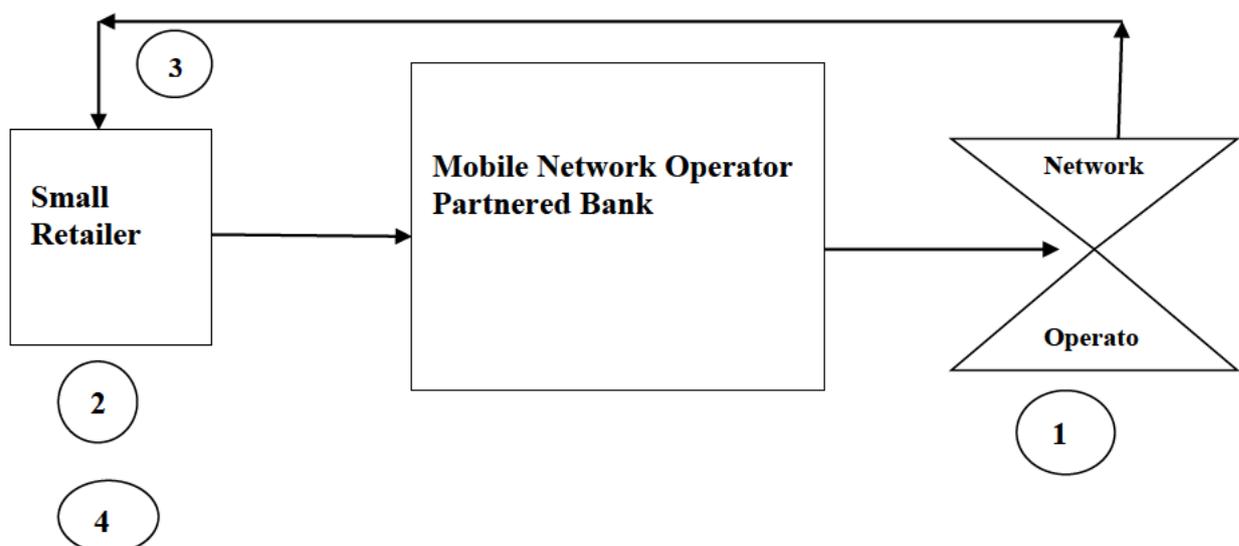


Figure 2.4: MNO Mobile Money Flowchart

Source: Adapted from Bara (2013)

The above steps are further elaborated as follows:

Step 1: The bank notifies the mobile network operator to create electronic money (e-money).

Step 2: An mobile network operator retailer deposits the funds into a pooled account of the MNO partnered bank.

Step 3: The mobile network operator assigns the e-money to the merchant's mobile money account.

Step 4: A customer brings cash to a mobile money retailer, the retailer takes the cash and then transfers e-money to the mobile money account of the customer (in this case which is the customer mobile phone number). It is how the customer will get compensated for the cash deposited with the retailer. This process is what is called *cash-in*. For the customer the reverse process is also possible when the customer intends to withdraw the deposited funds (*cash-out*).

It must be emphasized that the mobile money system on its own does not create money but the cash in the pooled bank account exactly matches the sum of all the e-money in the system. The value of the digital money is equivalent to the value of the cash assigned to it. As for the bank led mobile money service, it is much easier to regulate it as the primary offering institution is regulated under the Banking Act. However, the banking institutions are mandated to apply to the central bank in order to offer such as service (Bara, 2013).

2.6 Mobile Money Developments

More than a billion people in emerging and developing markets have cell phones but no bank account. Many low-income people store and transfer money using informal networks, but these have high transaction costs and are prone to theft, fraud and other risks . Mobile money is beginning to fill this gap by offering financial services over mobile phones, from simple person-to-person, business-to-business transfers to more complex banking services. Only a handful of these deployments have reached a sustainable scale; a notable example is the success story of M-Pesa in Kenya, launched in March 2007 by Safaricom. According to Suri, Jack and Stoker (2012), M-PESA users are always at an advantage whenever there are challenges.

There has been increased focus on mobile phone technology as a contributor to social, economic, political and environmental transformation, because of its universal accessibility (Kelly and Minges, 2012). Recently, the world has witnessed the emergence of myriad of mobile phone technology-based innovations, which are advancing the world's economic and social development. Some of these innovations include mobile learning, mobile commerce, mobile health, mobile government, mobile

agriculture, and mobile money. Some of the mobile innovations, such as mobile money were pioneered from Africa as highlighted above (Kelly and Minges, 2012).

2.6.1 Mobile Money Developments in Africa

One device that has transformed the way people and businesses interact has been the mobile cellular phone. The phone, which was primarily a voice and short message service device, has evolved spectacularly over the years, increasing convenience while reducing communication costs. The camera phone was just the first of the improved functions that came to the mobile phone device. Much transformation has been in the Sub-Saharan Africa where the technology has allowed millions of Africans to leap-frog the landline technology en-route to 21st Century connectivity (Jack, Suri and Townsend, 2010). Only 20% of households in Sub-Saharan Africa are estimated to have access to formal financial services and have bank accounts (Ondiege, 2015). Therefore, the majority of African population is unbanked and most of these unbanked live in remote rural areas that are difficult to access due to the physical barriers such as bad road networks and unavailability of roads. Banks find it too risky to invest in such areas because the poor and scattered inhabitants will not be able to meet the high cost of the financial services offered (Kendall, Mylenko and Ponce, 2010). For this reason, formal financial institutions have long failed to address the problem of financial exclusion in Africa. It is understandably so as Africa has the highest levels of financial exclusion in the world.

With the introduction of mobile money services, millions of the previously unbanked poor now have an opportunity to access formal financial services by the mere fact of owning a phone and registering with a mobile money operator. A recent survey on mobile money adoption across the globe by GSMA showed that 81.8 million people were registered for mobile money services by 2012. Of these, 30 million were active subscribers. The survey also established that Sub-Saharan Africa had the majority of mobile money subscribers as it had 56.9 million people registered for mobile money services (GSMA, 2012), which is 69.9% of the total population of people registered for mobile money services. This stems from the necessity caused by the fact that in Sub-Saharan Africa an estimated 60% of the population does not have access to traditional financial systems.

According to the International Finance Corporation (2011), mobile money transfer have expanded to 16% of the total population in the Sub Saharan Africa. The Kenyan based SafariCom pioneered the introduction of the innovative payment service with their highly successful M-Pesa (Ariguzo and White, 2011). M-Pesa is a mobile-phone based money transfer and micro-financing service, launched in 2007 by Vodafone, the largest mobile network operators in Kenya and Tanzania. It has since expanded to Afghanistan, South Africa, India and in 2014 to Eastern Europe. M-Pesa has spread quickly, and by

2010 had become the most successful mobile phone based financial service in the developing world. By 2012, a stock of about 17 million M-Pesa accounts had been registered in Kenya. By then it allowed users to deposit, withdraw, and transfer money easily with a mobile device.

The success of M-PESA has been attributed to Kenya's high rural to urban migration rates (Mbiti and Weil, 2011). This has necessitated the need for remittances between the urban areas and the rural ones, calling for effective and convenient ways of sending and receiving money between the two ends. The long distances between the metropole and some rural areas in Kenya were also making it dangerous to send money through buses and money gram and Western Union were expensive alternatives (Mbiti and Weil, 2011).

Recent developments in mobile money have also made it possible for users to access their bank accounts using their mobile phones without having to physically visit their bank branches, a pulling factor more and more of the banked population cannot afford to resist any more in Zimbabwe. This was made possible by the partnership between MNOs and banks, effectively roping in the traditional banking system into mobile money services. This is expected to raise financial inclusion especially at the lower end of the social spectrum, which has suffered financial exclusion for a very long time, while reducing the cost of access and use of basic financial services. With the rapid urbanization in African countries over the past years, the number of people migrating to towns has been steadily increasing. However, in some developing countries like South Africa, urbanization has not necessarily merely meant movement of people from the rural to urban areas but has also meant the development of a state to a point where many rural areas have been urbanized. Those who migrate to cities often render financial support to their rural households in the form of remittances. The efficiency of this remittance system heavily relies on the quality of physical infrastructure as most of these transactions involve physical transfers of cash by the receiver, sender, and agents like bus and taxi drivers among other informal channels. The massive geographical dispersion between senders and receivers implies high transaction costs in terms of transport fares and travel time involved in sending and receiving money among household members especially across geographically distant and remote locations using the physically involving methods like bus drivers or going to deliver the money in person.

The mobile money service has been so successful to an extent that it has been expanded to include limited merchant payments, peer-to-peer transfers, savings, loan disbursements and payments. Consequently, we have success stories of M-Pesa, which has expanded into Uganda, Tanzania, Mozambique, Lesotho, and Egypt (Knoema, 2012), while in Zambia Airtel launched their mobile money offering called Airtel Money and MTN launched MTN Mobile Money services in early 2011 as well. All these are examples of successful experimentation with mobile money in Africa. The Financial Access Report 2014 in Knoema (2014) show a steady growth of mobile money in selected African

countries that have implemented the mobile money system. The number of active mobile money accounts from 2011 to 2014, by country, is as shown in table 2.4 below. Table 2.4 presents eight selected African countries, without necessarily sticking to a particular region.

Table 2.4: Number of Active Mobile Money Accounts

Country	2011	2012	2013	2014
Tanzania	21184708	26871176	31830282	41380791
Kenya	19191000	21060000	25326333	25249200
Zambia	426907	1404822	2497720	4649662
Botswana	192536	384249	635567	909056
South Africa			2740075	4337653
Lesotho			448740	742922
Mozambique			2599459	3245741
Malawi		185758	730000	

Source: Knoema (2014)

2.6.2 Mobile Money Developments in Zimbabwe

With the informal businesses claiming a very significant stake of monetary transactions, the mobile money services have risen to provide the most efficient channel for such business interests. Mobile money also owes some success to its participation in varied aspects of financial service delivery. At the same time, mobile money took a very solid step into money remittances, something that is now turning into a no-brainer for traditional remittance providers such as Western Union and Money Gram. There have been significant developments in the mobile money sector in Zimbabwe since 2011. At least eight products were operating in the market by 2012, most of which were launched in late 2011 (FinMark Trust, 2012). Zimbabwe has three major Mobile Network Operators (MNO's), namely Econet Wireless, Telecel and NetOne, all of which have launched mobile money products in one way or the other. They offer a number of mobile financial services and these included, bill payments, insurance, savings, transfers and payroll services among others. Overall, a range of service providers have rolled out mobile money facilities as shown on Table 2.5

Table 2.5: Mobile Money Deployments in Zimbabwe

Institution	Mobile Product
FBC	Mobile Moola
Tetrad	eMali
Kingdom Bank	Cellcard (Now defunct)
Interfin Bank	Cybercash
CABS	Textacash

NetOne	One Wallet (Now called One Money)
Telecel	TeleCash
Econet Wireless	EcoCash

Source: Kufandirimbwa et al. (2013)

In 2014, a total of \$1.4 billion worth of deposits were made through the three network operators' mobile money services. This figure is an 80.8% increase from 2013 million, which is very impressive by any standards used for measuring financial services deposits. Mobile money transfer subscriptions went up by 7.3% in the fourth quarter of 2014, along with the value of those same transactions which increased by 10.6% to a quarterly total of \$445.7million. The total number of mobile money agents swelled from 9,169 in 2013 to 23,379; something that makes sense considering that Tele-Cash was introduced in the same period (Reserve Bank of Zimbabwe, 2014).

Despite the huge success that mobile money has been enjoying, some of its iconic services don't seem to get noticed. An example of these is the Eco-Cash Save facility. Considering challenges with financial inclusion, this was a great concept that was intended to provide access to formal savings by the unbanked. In a move to capture the informal savings and credit cooperatives (SACCOs), Econet further launched another called Eco-Cash Savings Club. This was meant to support savings groups that are nationally known as *maround* or *mukando*. The mobile money product allows anyone registered on Eco-Cash to create a group wallet where fellow participants or members of the savings club contribute funds just as they would in an "offline" arrangement or traditional SACCOs. Each member of the club can check the group's account activity at any time on his or her phone and freely move funds between the group wallet, individual wallet, and bank account (TechZim, 2015). Therefore, section 2.5 focuses on financial inclusion and how mobile money has accelerated an inclusive financial system.

2.7 Financial Inclusion

It has been noted that even "well-developed" financial systems have not succeeded to be 'all-inclusive' and certain segments of the population remain outside of the formal financial services (Sarma and Pais, 2011). An inclusive financial system has many benefits to an economy as it facilitates efficient allocation of productive resources and can greatly improve the individual's management of financial resources. In most developing countries financial services are characterised by financial exclusion; for example, there is over reliance on informal sources of credit, which accounted for 30% while formal credit accounts account for only 13 (FinMark Trust, 2014). Therefore, an inclusive financial system reduces the growth of informal sources of finance as these tend to thrive in financially exclusive economies and they are often very exploitative (Sarma, 2008, Sarma and Pais, 2011). An inclusive financial system enhances welfare by availing secure and safe saving practices for the marginalised communities and facilitates a whole range of financial services (Sarma, 2008).

The importance of an inclusive financial system has been widely underscored, making it a policy agenda by many developing countries. As a result, it has drawn attention from many players including among other financial regulators, governments, telecommunications and development agents. They are the key drivers of the initiative to building an inclusive financial system (Menta, n.d.). It is imperative at this juncture to examine various definitions of financial inclusion or exclusion as propounded by both practitioners and academics. However, it would appear that practitioners immensely contributed to the definition. Financial exclusion is defined in literature as the inability by a group of individuals to access formal financial services. It is estimated that about two billion people worldwide are financially excluded, while 70 % of people living in sub-Saharan Africa is unable to access formal financial services (Ran, n.d.). The term financial exclusion did not, however, originate from the business and finance field but from the field of geography, where the worry among geographers was with the closure of some bank branches and effectively excluding certain communities (European Commission, 2008, Leyshon and Thrift, 1995, Kempson and Whyley, 1999). Several other scholars have defined financial exclusion. For example, Anderloni and Carluccio (2006) and (Kempson, 2006) have looked at financial exclusion in relation to several issues, including having a bank account and choosing not to use them (marginally banked) and having potential and ability to access banking services but choose not to. So, at the end of the day there are three categories; the unbanked, marginally banked and the fully banked (European Commission, 2008). Often, exclusion is because people are beyond the banking system's target reach (Kempson, Whyley, Caskey and Collard, 2000). It therefore relates to closure, or lack of bank branches in certain pockets of the community (Marshall, 2014).

The World Bank (1995) lists four key access determinants that decide whether or not one is financially excluded, and these are Transaction banking, Savings, Credit and Insurance. Further, exclusion from transaction banking is synonymous with social exclusion as lack of it means lack of all the others, compromises access to markets and can lead to stigmatisation (World Bank, 1995). According to the World Bank (2012), financial exclusion is highest among the poor people, especially among the rural people who account for seventy percent of extreme poverty. The Zimbabwean 2012 census report indicates that of the 13.06 million total population of the country, 67% resided in rural areas while 33% resided in urban areas. It is the rural population that is mostly excluded from the formal financial services, therefore the introduction of mobile money services was intended to reduce the size of this financially excluded population (Reserve Bank of Zimbabwe, 2015).

The Reserve Bank of Zimbabwe (2015) report notes that financial inclusion is heavily skewed in favour of the urban population, that is, financial exclusion is higher in rural areas than in urban areas due to limited accessibility to banks and microfinance institutions and minimum formal salaried employment opportunities. Inaccessibility is further compounded by the distance to access points, high cost of

accessing financial service, poor rural infrastructure and poor returns among other limitations (FinMark Trust, 2014). Consequently, without formal financial services the rural households are exposed to risky and expensive tools of finance to meet their daily needs (IFAD, 2011). The process becomes cyclic; communities with poor infrastructure and poor road networks suffer financial exclusion and communities that are financially excluded are also excluded from development as they do not have access to the necessary credit facilities to do income generating activities. Financial exclusion and poverty, therefore, go hand in hand (Asian Development Bank Institute, 2017). Unless they have access to financial services and are assisted, poor people's household budget will remain expensive. As aptly submitted by (Shetty and Pinto, 2015), "financial exclusion is one of the most hindering factors to achieve overall economic growth". They conclude, therefore, that financial inclusion is a pre-requisite for meaningful, inclusive and overall economic growth. If, due to the economic conditions, loss of trust in the banking sector or any other negative determinants for that matter, citizens choose not to be part of the financial services of the country, it is still part of financial exclusion (Carbo, Gardener and Molyneux, 2007). Loss of trust in the mainstream financial system of the country is particularly the case in Zimbabwe (Shamba, 2015).

The European Commission (2008) also established that financial exclusion was higher in groups such as rural dwellers, women, unmarried people, adult's post-retirement and school drop-outs who left school earlier on in life. These are, apparently, some of the most economically vulnerable groups in developing countries, and financial exclusion further compounds the problems they face. Contrary to the European Commission (2008) findings, in Zimbabwe and South Africa, for example, adults' post-retirement were among the financially included groups as they are part of the salaried population. Access to traditional financial services in developing countries is mostly associated with salary income. In Zimbabwe for example, for one to open a bank account they have to produce proof of employment, in the form of a contract or testimony from employer, and proof of residence, in the form of deeds or municipal bills, all of which are necessarily urban concepts. This results in high levels of financial exclusion.

Sarma (2008) defines financial inclusion as a process that ensures ease of access, availability and usage of formal financial services for all the members of an economy. The UNDESA (2013) defines financial inclusion as the universal access for individuals and small to medium enterprises (SMEs) at reasonable cost to a wide range of financial services, provided by diverse responsible and sustainable institutions. These institutions include the traditional banking systems and alternative financial services providers that meet the regulatory requirements and that are deemed not taking advantage of the people. Therefore, financial inclusion is defined as the delivery of financial services at an affordable cost to the vast sections of the disadvantaged and low-income groups in a given society (Kodan, Garg and Kaidan, 2011). Sarma (2008) noted that the term financial inclusion has been used synonymously with the term

banking inclusion. This is derived from the mere fact that banks were regarded as the gateway to the most forms of financial inclusion. The Reserve Bank of Zimbabwe defines financial inclusion as the effective use of a wide range of quality, affordable and accessible financial services provided in a fair and transparent manner through regulated formal entities by all Zimbabweans (Reserve Bank of Zimbabwe, 2015).

Traditionally, financial inclusion has been judged by the levels of access to mainstream financial services providers (European Commission, 2008). However, technological and other developments have necessitated the eruption of several, and often better, alternative financial services providers. This is where mobile money, largely necessitated by developments in the information and communication technology industry, comes in. Therefore, successful financial inclusion efforts have been those that emphasise partnerships between central government and private players (Johnson, 2000, Kelly, 2001b, Cowell and Martin, 2003). They target the cluster of the population ideally at the bottom of the social pyramid, to make them part of the key financial system of the country (Lal and Sachdev, 2015).

An analysis of the above definitions identifies the key pillars of financial inclusion as accessibility, availability and usage of financial services (Sarma and Pais, 2011). In most developing countries the commonly cited challenges to achieving an all-inclusive financial system has been access; the majority of users of the financial system do not have access to the services due to the stringent requirements to open a bank account. A further investigation from the financial service providers reveal that these institutions are driven by the profit-making objective hence they regard the marginalised people as costly to serve, (Sarma, 2008; Thulani et al., 2014).

Sarma (2008) and Sarma and Pais (2011) identified three basic dimensions of an inclusive financial system and these are banking penetration (BP), availability of banking services (BS) and usage of banking services (US). So, when determining whether a financial system is inclusive or not these three dimensions are very important. Banking penetration refers to the number of people having a bank account or the size of the 'banked' population and this determines accessibility of a service offering (Sarma, 2008). Availability of banking services is indicated by the banking outlets or ATMs per 1000 people, this can also be determined by the number of bank branches, offices and the banking personnel per 1000 people (Sarma, 2010). On the usage of banking services, it is not enough to merely have a bank account for an inclusive financial system. The services must be fully utilised. This dimension can be measured by the two basic services, that is, deposits and credit (Sarma, 2008; Sarma, 2011). Using a two-dimension index of financial inclusion developed by Sarma (2008) and sample of 100 countries Zimbabwe was found to have a very low financial inclusion with a 0.087 index, hence an exclusive financial system.

2.7.1 Forms of Exclusion

Sarma (2011) identified five literature-based forms of exclusion: 1) Access exclusion where segments of the population are excluded due to remoteness from the financial system. This has been found to be the case with most rural based communities in Zimbabwe (FinMark Trust, 2014; Reserve Bank of Zimbabwe, 2015). The Reserve Bank of Zimbabwe (2018), however, claims to have started addressing penetration issues. 2) Price exclusion, which is necessitated by unaffordable prices of financial products, and which could be bank charges or the cost of maintaining a bank account (Reserve Bank of Zimbabwe, 2015). 3) Condition exclusion relates to the conditions that are inappropriate for some people for example lack of funds and disposable income (Reserve Bank of Zimbabwe, 2015). 4) Marketing exclusion occurs due to targeted marketing and sales of financial products, most banking institutions target high income earners and hence all of the products and marketing efforts are targeted to this segment of the population (Sarma, 2008). Finally, there is self-exclusion that takes place when individuals exclude themselves from a formal financial service due to psychological barriers such as mistrust and fear of debt (Reserve Bank of Zimbabwe, 2008). The concept of self-exclusion has been discussed further by (Bayot, Disneur and Radermacher, 2006) who reported that some did not use banks and bank accounts for fear of seizure of income by creditors, and (Nieri, 2006), who discusses the problem in relation to migrants.

Financial inclusion is underscored for various reasons as it connects people and businesses to the formal economy, markets, to better social welfare mechanisms and above all it fosters economic productivity. It leads to social and economic inclusion of communities. Therefore, access to financial services helps people invest in income generating activities and work their way out poverty (UNDESA, 2013). The financial services referred to in this study are the following savings, payments, credits remittances and other services that help the disadvantaged to improve their economic well-being.

2.8 Poverty

Forster (1998) say it is important to define poverty according to the poor's perspective, where it is defined as the lack of necessary assets or resources for well-being. The list includes things like food, land, housing, and many other assets that support livelihood. Put differently poverty refers to the lack of economic resources that will result in the physical deprivation and vulnerability. Botchway (2013) states that poverty was very difficult to define, therefore he notes that the definition will vary from one location to another over a period of time. The definition is understood to have taken many forms, some definitions have taken the income/consumption approach by giving it different manifestations. Botchway (2013) and Norton, Melamed and Shepherd (2012) note these the manifestations comprises of the definition given by Forster (1998) above, but goes on to include hunger and malnutrition, lack of

participation, in political, social and political lives of the victims, discrimination and exclusion, and living in unsafe or unsecure environments exposing these individuals to great risk.

In as much as arguments have been presented on how to consider poverty, it appears as if the best way to view poverty is to assess it on the basis of social standards and threshold prevailing at any given society. Botchway (2013) adopts Narayan et al.'s definition of poverty. The definition is conceptualised as:

“a condition of being deprived of well-being; being vulnerable to events outside one’s control, being isolated and living below the acceptable socio-economic condition or prescription of society, psychologically and politically indisposed”
(Narayan et al., 2003).

On analysing the definition above, Botchway (2013) concludes that the concept poverty imply that people are poor if they show low living standards and have low incomes. Poverty is the absence of well being. The World Bank’s view of poverty is broad, as it goes beyond just income or consumption to encompass low levels of education and health (Clark, d'Ambrosio and Ghislandi, 2013, Norton et al., 2012) Based on the foregoing analysis, Botchway (2013) provides the different types of poverty as transitory poverty; income poverty; chronic poverty; human poverty; community poverty; relative poverty; absolute poverty and food poverty. Table 2.6 provides a summary of the types of poverty.

Table 2.6: Types of poverty

Poverty Type	Definition
Income poverty	The lack of money and the inability to access income generating employment.
Human poverty	Refers to the deprivation in some aspects of human development. This type of poverty is multi-dimensional to include the distribution of programs and backlog of deprivation
Food poverty	It is considered as the inability of individuals to get a decent meal in a day. The kind of poverty is prevalent in rural communities.
Case poverty	It is the type of poverty that occurs when an individual is excluded from the general well being of the society.

Community poverty	This type of poverty exists when the entire community is poor. This poverty is associated with the lack of infrastructure and service provision.
Absolute poverty	Refers to the type of poverty where incomes are very low such that minimum standard of living are difficult or cannot be achieved.
Relative poverty	Refers to falling behind others in the community by way comparison and be likened to case poverty.

Source: Botchway (2013)

When comparing absolute poverty versus relative poverty Botchway (2013) views absolute poverty as inclined to desperate situations while relative poverty refers to a comparison of levels of poverty.

2.8.1 Poverty and Well-being

Norton et al., (2012) note the growing interest in understanding the relationship between poverty and well-being. It has been acknowledged that poverty is multidimensional as such the use of income and consumption to assess poverty does not give a whole picture as there are other dimensions that must be considered. Rojas (2015) acknowledges that the close relationship between poverty and well-being. He views poverty as a situation where people have low well-being and more often used as the alternative term like lack of well-being or 'ill being'. Given the relationship that exists between poverty and well-being, the term poverty therefore is dependent on the understanding of well-being. In other words the term well-being will lead to different perceptions of poverty and consequently it will affect the intervention mechanisms that can be adopted in tackling poverty (Rojas, 2015).

The understanding of poverty as a situation where people are experiencing low-levels of well-being implies poverty being a concept that calls for immediate action so as to mitigate its impact on well-being. Rojas (2015) argues that in the last decade or so the focus has been on how to measure poverty rather than on focusing on conceptual issues. Consequently, poverty has been viewed on the basis of measurement instead of its actual conceptualisation. He further adds on that attention must be drawn to the concept poverty and its association with the people's struggle with well-being dispossession. Further he argues that if the understanding of the concept poverty is associated with well-being it may result in the development of intervention measures that are detached from well-being deprivation. The argument is supported by a number of studies that have created a detachment between poverty and well-being. In principle, Rojas (2015) notes that poverty is characterised by a situation around people and in their well-

being set up, therefore researchers should have studied the situation of low well-being and the made recommendations to increase well-being.

A number of approaches have used to address poverty and well-being. These approaches range from conceptualising poverty to analysing the situation where people experience low levels of well-being; addressing the measurement issues associated with measuring poverty from common practice instead of measuring it in terms of its understanding. The other aspect discussed was the advancement of subjective well-being approach to understanding people's well-being, the benefits and limitations.

Rojas (2015) identifies three traditional approaches that have been used in understanding well-being: the presumption tradition; imputation tradition and the subjective well-being approach.

*The presumption tradition-*The tradition focuses on well-being as people experience it instead of asking people directly about their experiences. Proponents of this approach are sceptical about using people's reports, they prefer objective variables. They also give reasons associated with information about their own well-being leading to reluctance for not using the well-being reports. They rely on indicators on the objective variables designed by organisations to capture and explain people's well-being.

Imputation Tradition- This approach is founded on what philosophers consider as good life. It is based on the third person who is considered to be informed, thoughtful and knowledgeable in providing a way of judging the evidence of goodness in other people's lives. The evaluation of well-being will be based on the criteria set out by the said thoughtful and wise individual. The proponents of the imputation approach advance their views or ideas to convince the audience instead of using people's experience of well-being to validate their evaluation.

Subjective well-being approach- This approach views well-being as the experiences of well-being that people have about / of being well. Well-being is understood as occurring in people not in objects though objects and factors may be understood in creating well-being but they are not well-being themselves. Therefore, it is in this sense that well-being is subjective as these experiences cannot be dissociated from the person undergoing it. The approach acknowledges that humans are able to experience well-being. Conditions such as sensorial, affective, evaluative, and flow state experiences may happen at different magnitudes and periods. The most important feature of the subjective well-being approach is that every person has the ability to assess and give report on their well-being and hence it provides the best way of judging people's well-being by asking them directly.

2.8 Mobile Money and Financial Inclusion

Technology is rapidly and increasingly changing the face of the financial services industry and is becoming a key business enabler (Kumar and Gupta, 2009). It has helped banks to achieve significant

success in streamlining, standardisation and expansion of service portfolio. The mobile phone is one such example of technology that has taken the world into another phase in managing communication in the banking and payment systems (Kumar and Gupta, 2009). Communication has, thus, opened, new ways of financial services and financial management for the previously unbanked communities, especially in Sub-Saharan Africa. By its very nature, communication, in all its forms, opens new possibilities for especially the marginalised communities. Kumar and Gupta (2009) further assert that the use of mobile phone device for payment and banking services is best suited for serving the financially excluded sections of the population especially the rural communities. Both developed and developing countries can use mobile phone devices to find new modes and means to contain poverty and include their citizens in the financial systems. Mobile money is one such technology-based service that can be used to access finance by the poor and vulnerable groups as a tool for poverty reduction and social cohesion (Rani, n.d.). This can be achieved through low-transaction costs as a result of use of technology and a reduction in information requirements related to bank account.

Furthermore, it is argued that mobile money can improve access to savings due to its ability to lower transaction costs, by removing geographical barriers that ordinarily affect access to financial services, especially in the rural areas (Sangare, 2015). Mobile money has the ability to store information in a form in which it is easy to identify users, eliminating the need for physical identification documents. Above all, the storage facility allows for sharing of digital information, which is required for the credit scoring calculation, for example M-Shamwari in Kenya (Sangare, 2015, Cook and McKay, 2015).

These improvements in access to mobile financial services have been driven through increased private sector participation in the financial and telecommunications sector. Hence, mobile money is at the crossroads of mobile communication and financial services (Alexandre and Eisenhart, 2013). They further assert that mobile money serves to reduce dependence on cash and accelerates the development of accounts which are the backbone of financial inclusion and financial integrity. The European Investment Bank (2017) notes a steady growth of bank account holders in Sub-Saharan Africa from twenty four percent to thirty four percent by the end of 2014. On the countries that were reported on, it can be noted that the east African block was leading with Kenya a pioneer of mobile money showing the highest number of people with mobile money accounts followed by Tanzania and Uganda. Zimbabwe recorded almost 80% of people with mobile money accounts (European Investment Bank, 2017). There are other views that present mobile money as a discord between integrity and inclusion. In the Zimbabwean context, mobile money plays a major role in reducing dependency on cash, therefore reducing the demand for hard cash and easing out the liquidity challenges currently being experienced. It offers an opportunity for consumers to use electronic money as an option other than using cash (Alexandre and Eisenhart, 2013).

Mobile money also produced a very strong asset for both financial inclusion and financial integrity, that is, data as an asset generated by mobile money transactions. This data is key to the fight against money laundering and terrorism. However, use of mobile money raises other questions in relation to the amount of data generated and the capacity to the value chain to handle that data. Also put across is the issue of small value transactions that generate lots of data and magnifies the volumes of financial movements that can be monitored (Alexandre and Eisenhart, 2013).

The few studies that have been carried out globally, on mobile banking services, targeted its effects on previously under privileged communities in yet to be developed countries. The studies reveal that the uptake and use of mobile financial services has enhanced financial inclusion and consequently reduced levels of poverty among the rural households (Must and Ludewig, 2010). Some of these studies reveal that mobile money has proved to be a scalable method to provide financial services in developing countries, with data from several African countries, including the work of Must and Ludewig (2010) validating this argument. Several reasons have contributed to this state including easier and more affordable ways to send remittances, increasing the reach and affordability of micro-loans, decreasing costs of savings among other services that are required by SMEs. Hence, mobile money penetration has; therefore, had its own contribution especially in relation to financial inclusiveness, however, in Zimbabwe there are no studies that have empirically verified these assertions.

2.8.1 Financial Inclusion and Poverty Reduction

In sub-Saharan Africa and other developing countries the major challenge has been the elimination of informal financial services, where the majority of the people in the bottom of the pyramid get their financial services from (Casadas, 2015). Mobile money service providers are formal institutions and thus are formal channels of fund storage, help users to move funds into the formal economy from the informal sector.

While Tita and Meshach (2017) identify three basic issues that relate to financial inclusion as access, usage and quality of service, it is yet to be established whether mobile money has mobile money has actually delivered on these three pointers (Casadas, 2015). In Kenya, mobile money was initially providing services such as airtime top-up, bill payment, and remittance services and later on it added other services to include savings and credit facilities. The services were emanating from user needs and thus there were user-driven innovations and resulted in a new business ecosystem with the main objective achieving an inclusive financial system. Once financial inclusion was achieved, it will have an effect of affording users easier access to financial services and consequently reduced poverty or improved welfare (Mohammed, Mensah and Gyeke-Dako, 2017). In the case of the relationship between financial inclusion and poor individuals, the major goal is for a financial system to reduce poverty through the provision access and usage of the system. Therefore, if the poor have access to

cheap means of saving, they can accumulate money for investment and thus work their way out of poverty. The Kenyan case of M-Pesa is one such example of a success story of financial inclusion where the mobile money service allowed the financial system to reach the underserved rural population (Jack and Suri, 2011). Casadas (2015) notes that the major characteristics of mobile money that distinguish it from the banking institutions is the reduced transaction value and the ability to handle small value transactions. These are the characteristics that make mobile money suitable for the poor segments of the society.

Several studies have attempted to establish a link between financial intermediation and economic growth, however the use of mobile money innovation as a key booster has received limited attention (Casadas, 2015). It is further suggested that financial inclusion was an important issue when considering poverty alleviation efforts and thus mobile money plays an important role through remittances, funds transfers and this has the direct income redistributive effect on poverty within communities (Casadas, 2015). Kikulwe (2014) further adds that remittances from relatives and friends were one example where household income is positively improved with direct effect on poverty.

However, Tita and Meshach (2017) argue that direct financial access to low income earners is not the most effective way through which access reduces poverty. They note that indirect effect in the form of labour market has more bearing on poverty reduction than direct access to finance. They view direct effect as in direct access to financial services like having access to bank account, loan, insurance and payment systems. The indirect effect to financial markets relates to the labour market and productivity factors where if higher productivity is achieved and more individuals have access to resources then access can be spread to financial services resulting in increased competition, reduced costs and improved access to loans by individuals. Consequently, the effects of will be seen on new business start-ups and improved productivity by the poor entrepreneurs. Jalilian and Kirkpatrick (2002) asserts that, based on literature both theoretical and empirical, a developed and well performing financial system is an imperative requirement for economic growth. Suri et al. (2012) concurred and underscored the importance of well performing monetary and financial services to achieve economic growth. There is implication of indirect relationship between savings and well-fare, where savings affect well-fare through re-allocation of resources in productive areas. They noted that most of the empirical studies on financial development and economic growth were based on cross-country econometric analysis. They further argue that market behaviour tends to show that credit allocation was granted to those with collateral assets than those without assets. Therefore, financial institution intermediation favours the already banked individuals, this will in turn increase the gap between those with access formal financial services and those without access.

In an attempt to explain the relationship between financial inclusion and poverty reduction, Jalilian and Kirkpatrick (2002) provided a model and tested it empirically to show the link between financial

development, growth, inequality and poverty reduction. Figure 2.5 demonstrates the relationship between the variables.

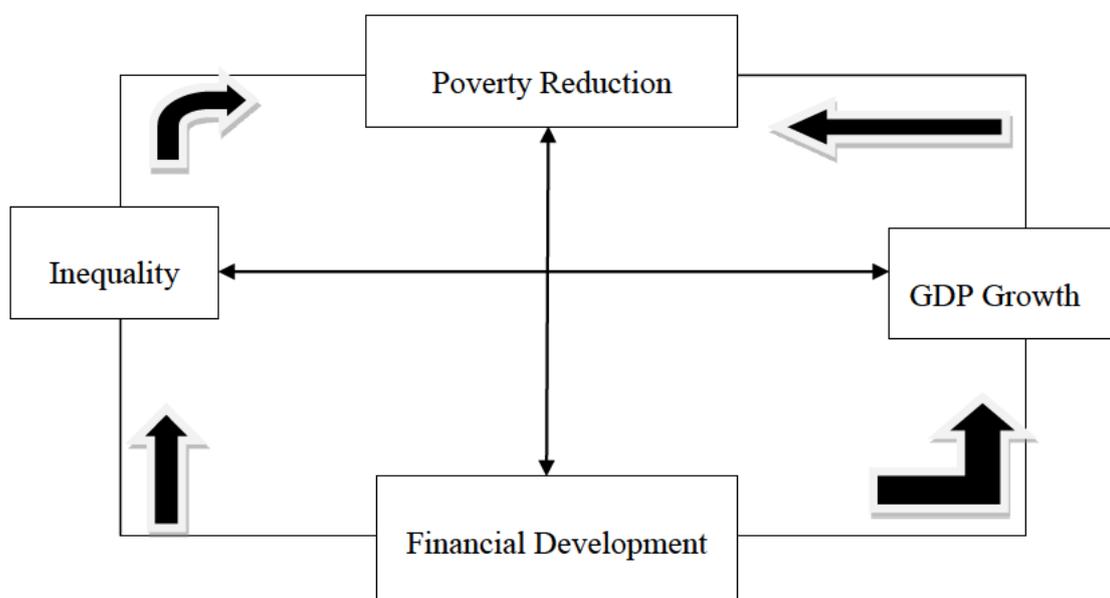


Figure 2.5: Link between financial development, growth, inequality and poverty reduction

Source: Jalilian and Kirkpatrick (2002)

The above figure shows the two ways in which financial development impacts on poverty reduction where it is assumed that financial development has an indirect impact on inequality through growth. This implies that an improvement on financial development will result in improved GDP growth consequently with a positive income prospects for the poor.

Rewilak (2017) categorises financial development into four groups that give the main features of a financial system. The categories are as follows (i) the size of the financial system which relates to its depth, (ii) accessibility of financial services which includes the ability of individuals and firms to use the existing financial system, (iii) the efficiency of the financial system determined by the performance of financial intermediaries in supporting business transactions at minimal costs and the fourth feature entails the robustness of the financial system to absorb negative shocks.

On the same vein Jeanneney and Kpodar (2011) narrowly defined financial development as increased activities of financial institutions especially banks that leads to access of financial services. They adopted this definition in view of the role played by financial markets in low income countries where many do not have access to financial services. They argued that financial development has an indirect effect on poverty reduction through increased economic growth. They opined that direct effects can be achieved through the facilitation of transactions and allowing the poor to access savings products and potential credit facilities. Therefore, access to financial services has a potential effect on income

through investing in projects and other related profitable activities. They then add financial instability as a variable in financial development model which they say it undermines poverty reduction efforts as this will deny the poor access to financial services and result in macro-economic instability through negative growth and inflationary environment. Figure 2.6 shows the model they developed to demonstrate the ways through which financial development will affect the well-being of the poor.

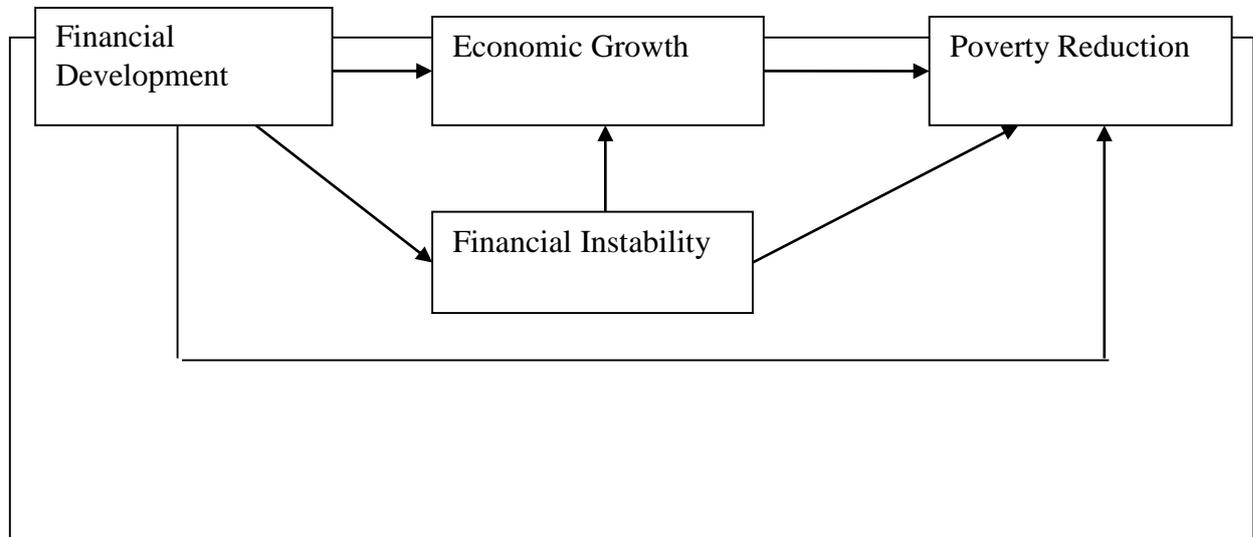


Figure 2.6: Interaction among financial development, financial instability economic growth

Source: Jeanneney and Kpador (2011)

The model also factors in the possible consequences of financial instability in regions where it is tied to financial development. As shown above the negative effects of financial instability to growth and poverty reduction are noted.

Honohan and Beck (2007) opined that a working financial system should take a ‘distributed architecture’, where large financial institutions must subcontract their activities to rural agencies that can provide financial services to rural communities. Their views find implementation in the use of mobile financial services facilitated by the ubiquitous mobile network coverage to the remotest rural villages where it was unthinkable to establish a bank branch.

2.9 Empirical Evidence

Casadas (2015) investigated the impact of financial innovation on poverty reduction. The context of the study was in Sub-Saharan Africa where mobile money is one financial innovation that has seen wide adoption by users. With the adoption of this mobile financial service innovation, it had been hoped that it will eliminate major barriers of financial access by the poor and the less advantaged communities and consequently solving the financial inclusion problem. Casadas (2015) mainly examined the extent to which access to financial services contributes to poverty reduction. The main observation was that mobile money has contributed immensely in moving people from using informal to formal methods of access. Moreover, positive effects were noted in Casadas’ investigation like poverty reduction. While

noting that previous studies have mainly focused on certain communities and in most cases used qualitative approaches, his investigation provided a quantitative approach that covered a wider population (a cross country study).

Mohammed et al. (2017) investigated the impact of financial inclusion on poverty reduction in sub-Saharan African countries using the treatment effect model and propensity score matching techniques. Their panel data was drawn from drawn from thirty-five countries. Their results indicated positive effects on net wealth for those who were financially included compared to those who were excluded.

Tita and Meshach (2017) investigated the effect of financial inclusion on welfare in sub-Saharan Africa. Their findings indicated that formal account usage for business, payments and savings had positive link with income inequality and this was a reflection of a low inclusion score in the region, implying that financial exclusion remain a major challenge. The results inferred that owning a bank account did not necessarily translate to credit/loan access by account holders. Further implying that majority of the account holders were first time users and banks were reluctant to extend credit to such individuals.

Keho (2017) investigated the relationships between the variables financial development, poverty reduction. The research data used spurned from 1970 to 2013 and focused on nine selected African countries. Despite the fact that the effect of financial development on economic growth has been widely reported, Keho (2017) determined to investigate the effect of financial development on the poor. The existing empirical evidence is characterised by mixed and controversial findings as observed by Keho (2017). He further argued that besides its extensive investigation, in sub-Saharan African countries few studies had been conducted to empirically establish the relationship finance and poverty reduction. Keho (2017) study findings revealed that economic growth through credit access can lead to poverty reduction. What came out clearly in this study was the need to improve access to financial services in order to realise poverty reduction. Therefore, it can be noted that any efforts on developing an inclusive financial system must draw the attention of researchers to further investigate its impact as far as welfare is concerned.

Beck, Demirgüç-Kunt and Honohan (2009) investigated how financial access leads to growth equity and poverty reduction. Their paper discussed the role of state in enhancing the financial inclusion for households and firms. The major thrust of the research paper was on measurement and impact, that is, how to measure access and impact on households and firms. On access and use of financial services, they divided the population into users and non-users of financial services. They further determined that exclusion can be grouped into voluntary and involuntary exclusion. They related voluntary exclusion to individuals with access but who do not feel the need to use the financial service. Involuntary exclusion also refereed to individuals who did not directly use the financial service due to cultural, religious reasons (Beck, Demirguc-Kunt and Honohan, 2009). The other category was that of

involuntary exclusion of non-users of the financial services were individuals do not have sufficient income, some are discriminated on the basis of either the nature of their employment contract, whether they are permanent or part-time workers. The other method used to discriminate these individuals was on the pricing and product features of the financial services. They further noted that the identified forms of exclusion were very common in developing countries. In Africa they observed that large populations were actually excluded on the basis of these problems while in Europe more than 90% of households have bank accounts hence the extent of exclusion is low. Among the policy challenges relating to measuring access to financial services was that regulators do not collect data on individuals with bank accounts. Furthermore, even the individuals with bank accounts some may have multiple accounts with different financial institutions. Hence if data on account holders were to be used the number of existing accounts is distorted by multiple account ownership (Beck et al., 2009).

On impact Beck et al., (2009) note that based on empirical evidence, financial development leads to growth and it also favours the poor as it increases the income growth of those in the lower group of the income pyramid. Consequently, this in turn reduces the number of people below the poverty bracket as noted in countries such as Chile and Peru. However, they also observed that the same observation did not hold for a country like USA, as they noted that reduction on poverty was not directly linked to the access to financial services but was associated with the participation of poor individuals in the labour market with a net effect of reducing the income gap between the skilled and unskilled labour.

Beck et al. (2009) further noted the reasons for exclusion of the poor from accessing financial services as to do with social and physical barriers. On the social barriers, the poor may lack a social network that can provide sound advice on services available to them. Moreover, lack of education also can affect their ability to comprehend the processes of getting access to finance. Beck et al., 2009 maintain that there are promising stories of microfinance to the poor reducing poverty, however, they noted that the overall impact has remained unclear and call for more intense investigations on the relationship between financial access and poverty reduction. They concluded that income is an important measure of welfare and consumption is also another welfare indicator.

Chibba (2008) made a good observation based on a literature survey on new-breathing taking (path-breaking) solutions on poverty reduction in developing countries. First, he notes that poverty reduction is at the heart of millennium development goals (MDGs) in developing countries. However, there seem to be no consensus in the ways of tackling poverty. Chibba (2008) made literature-based observations on approaches that have been adopted, where in some instances a mix of aid, sound macroeconomic policy, advice, and evidence based policy were noted as possible answers to how best economist can tackle poverty. Further, he notes a wide array of the divergent views on theories, policies and practical way to deal with the problem of poverty. As a result of this lack of convergence on how to tackle poverty, it has created a breeding ground for new innovative theories to be developed. With reference

to how South Africa has tried to tackle the financial inclusion problem, the use of technology in particular telecommunications and its positive impact on financial inclusion. The ability to use technology-based tools for mobile banking and electronic banking for payment of services, doing funds transfers and airtime top up on mobile phones. The mobile telecommunication industry is providing innovative solutions that lead to the creation of jobs, opening up of new markets and consequently reducing poverty (Chibba, 2008).

Chinakidzwa et al. (2015) investigated the mobile money usage in rural areas of Mudzi in Zimbabwe. The study sought to identify the most used mobile money service and the main factors considered when deciding on mobile money service usage by rural households. Their findings indicated that Ecocash was the most and widely used mobile money and it offered convenience as it reduced the need for users to open bank accounts. Bank accounts were associated with costs for both opening and operating costs and the need to travel long distances in order to access banking services. Mobile money allowed rural households to receive money from relatives, children who worked in urban cities. Their study mainly focused on the driving factors of mobile money service uptake and usage by the rural households, while the study is exploring the major effects of mobile money service usage on the well-being of rural communities.

Bara (2013) investigated policy and regulatory issues affecting the mobile money implementation in Zimbabwe. He noted that the introduction of mobile phone and its creative application in the financial services called the financial regulators to re-examine their regulations on financial services provision. The adoption of mobile money has presented the financial services regulation with a plethora of challenges mainly the issues deal with lack of clarity on how to address the overlaps and conflicts of regulators. Zimbabwe has been using the National Payment Systems Act and simple policy guidelines to regulate mobile financial services (Bara, 2013). It must be acknowledged that mobile financial services is a product of two distinct industries, that is, it is at the intersection of the telecommunication industry as well as the banking industry. Therefore, there is no regulation that has been developed to specifically regulate this innovation. Given that mobile money is a hybrid product, overlaps and conflicts are bound to arise and therefore they need to be addressed through the necessary laws. Bara (2013) used an interview approach to identify the regulatory from the mobile network provider perspective. The challenges identified in the research related to the time it took for the central bank to issue licences and the other concern related to transaction limits as providers noted negative impact of such controls on the development and advancement of mobile money. However, the regulation was motivated by the need to monitor and curb money laundering activities. There is an ongoing controversy as banks are advocating that mobile money service must be solely offered by banking institutions with mobile network operators providing the platform to deliver the mobile financial services. Bara (2013) further noted that, in relation to financial inclusion the existing regulation was inadequate as it failed to address the financial inclusion problem, yet financial inclusion was the major driver of mobile financial

services. There was also another challenge of policy gap on enforcing financial inclusion as the reason for mobile money provision. Above all the mobile money products were still limited to domestic transfers as there were no products for international funds transfer and payments.

Rewilak (2017) investigated the extent to which the four features of financial development (size, accessibility efficiency and robustness of the financial system) influence poverty reduction. The study revealed that financial deepening and physical access were positively impacting on poverty reduction. It had the effect of bringing down the number of people living in poverty situations. The study also indicated that mobile money actually lowers the dependence to the informal service by the poor. Similarly, Rewilak (2017) maintained that lack of financial infrastructure had the negative effect of increasing financial exclusion which creates barriers to the benefits associated with access financial services. He concluded that the poverty reduction effect of financial deepening can be increased by corresponding increases in inclusiveness and accessibility of the financial services a milestone that is being achieved by the use of mobile financial services.

Africa Growth Institute (2017) conducted a literature survey on the mobile money and poverty reduction. It asserted that for the developing world, financial inclusion has the potential of reducing poverty especially in south of Saharan Africa. The World Bank noted that an inclusive financial system allows the poor to save and borrow to invest in entrepreneurial activities and allows them to deal with vulnerabilities. Given the lack of infrastructure, Africa Growth Institute notes a positive contribution of the mobile phone with the regard to providing contact with banking services for the poor. The mobile phone has facilitated access to financial services in a relatively low cost, affordable and reliable manner. Therefore, mobiles have dealt with the problems associated with distance to the nearest financial service and transaction cost that inhibited the delivery of banking services to the rural people in particular. The examined empirical studies further revealed that mobile money usage had impacted positively on savings potential of users, implying that those who used mobile money were likely to save than non-users.

2.10 Summary

The chapter discussed the history of financial services growth in Zimbabwe, the development of mobile money and its current status. It also reviewed financial development, telecommunications development and status of financial inclusion in the country and how the introduction of mobile financial service can resolve the problem. The chapter ended by reviewing empirical evidence from previous studies conducted on financial development and mobile money developments. The following chapter reviews the principal theories that lay the foundation for the development of a conceptual model later in the study.

CHAPTER THREE

THEORIES OF MOBILE MONEY

3.1 Introduction

The second chapter of the literature review exposes the various frameworks or models and theories of mobile money that have been developed and put to use previously. This chapter takes the following structure: Section 3.1 discusses the Conceptual Model; Section 3.2 presents the open federated brick and click bank model, 3.3 discusses the livelihood model, section 3.4 presents the Townsend model of financial deepening and growth, section 3.5 discusses theory of Change while section 3.6 discusses the impact of mobile money and lays the ground for the study's hypotheses.

3.2 The Conceptual Model

Hassan and Semkwiji (2011) modified the Communication for Development model to consequently come up with the conceptual framework that is employed to determine the effects of mobile phones in people's livelihoods. The framework conceptualizes the usage of this technology and changes in people's livelihoods, by establishing a relationship between adoption and usage of cellular phones by individuals in their day-to-day activities and its effects on their well-being. The model posits that the usage of cellular phones by rural people in communication increases their ability to access relevant information relating to socio-economic issues which in turn affects their productive skills in a rewarding way, hence an improved livelihood of the rural people. The model is shown on Figure 3.1:

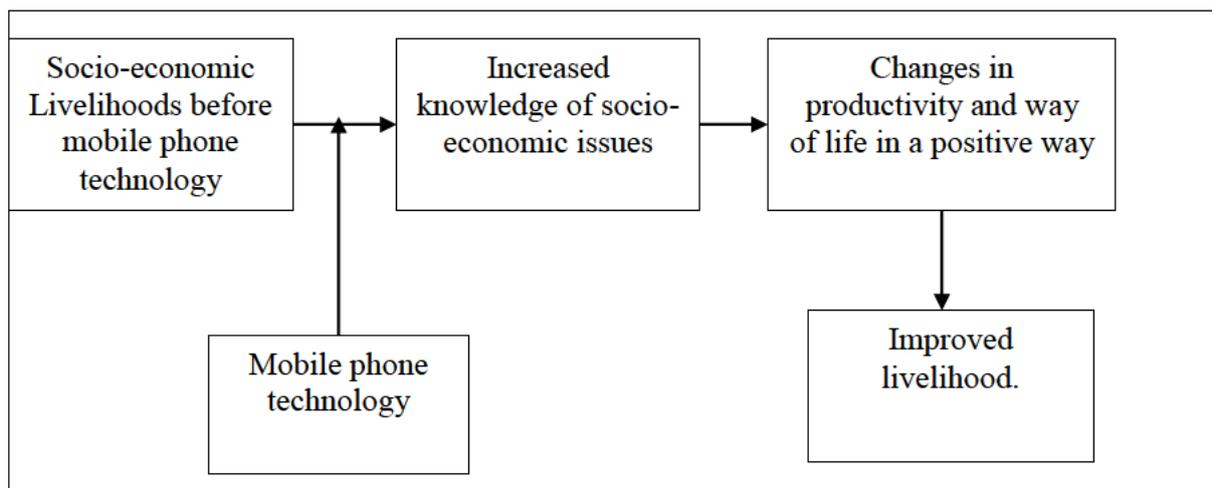


Figure 3.1: Conceptual Framework/Model

Source: Hassan and Semkwiji (2011)

3.2.1 The Open Federated Bick and Click Mobile Banking Model

Hinson (2011) opined that cellular phones can be the tools unlock the delivery of formal banking services to the disadvantaged members of the society. The model links financial institutions such as bank with mobile network operators. The linkages will create a platform where banking services can be delivered though a cellular phone based on the partnership. The model promises a huge possibility of speedily achieving massive inclusion of users and service providers alike resulting in exponential growth the mobile money service. According to Hinson (2011), the components of the model include such aspects as: investment unit; cultural set up; the microfinance; and business planning advice. The model is shown on Figure 3.2:

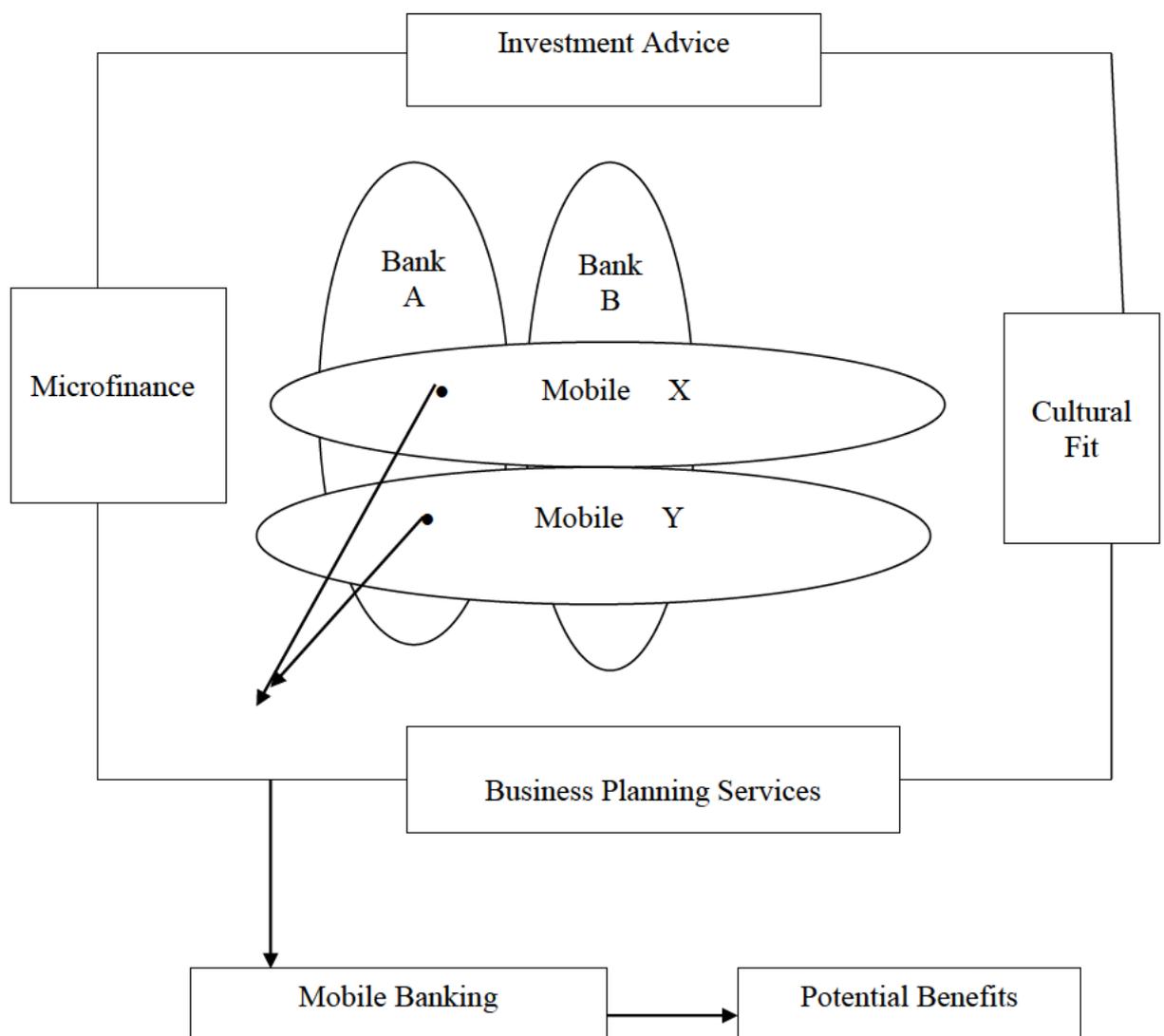


Figure 3.2: The Open Federated Bick and Click Mobile Banking Model

Source: Hinson (2011)

Hinson's model further suggests the major ways that can be exploited to provide financial services to the disadvantaged communities through cellular phone-based technology. The model suggests that owing to the poor's limited exposure to the business practices and procedures in managing their business ventures profitably, financial service institutions can form partnerships with mobile network operators to avail advice on business management and available investment options through the mobile phone.

3.2.2 Livelihood Model

The livelihood model, as propounded by (Soussan, 2000) which outlines the factors that influence the income strategies of the rural poor, also steered this study. It takes into cognisance the major factors influencing livelihoods of people and the relationship among the variables. The model seeks to evaluate the intricacies and problems with the regards to hardships experienced by the poor. The rural communities lie at the heart of interconnected relationships that influence their livelihoods. These influences comprise of natural resources, technologies, their skills, knowledge and capacity, their health, access to education, sources of credit or networks of social support. According to Ellis (2000), natural capital covers land, water and biological resources that men use to eke out a living, social capital such as networks, subscribing to a particular group, relationships and ability to reach societal institutions, human capital or the skills, knowledge, ability to labour and good health, physical capital such as transport, shelter, roads and energy. The technological environment is one of the paramount influences that affect the livelihood strategies of any community. Technology must be congruous with natural, human and financial resources and must connect with the social norms and cultural parameters of users. It is argued that sustainable livelihoods technology should be suitable and relevant which creates great chances of improving community productivity and opening new livelihood opportunities for the people thereby empowering them. Duncombe (2006) modified the livelihoods framework to provide a livelihoods approach for evaluating the application of communication technologies on poverty reduction. The modified model is presented on Figure 3.3.

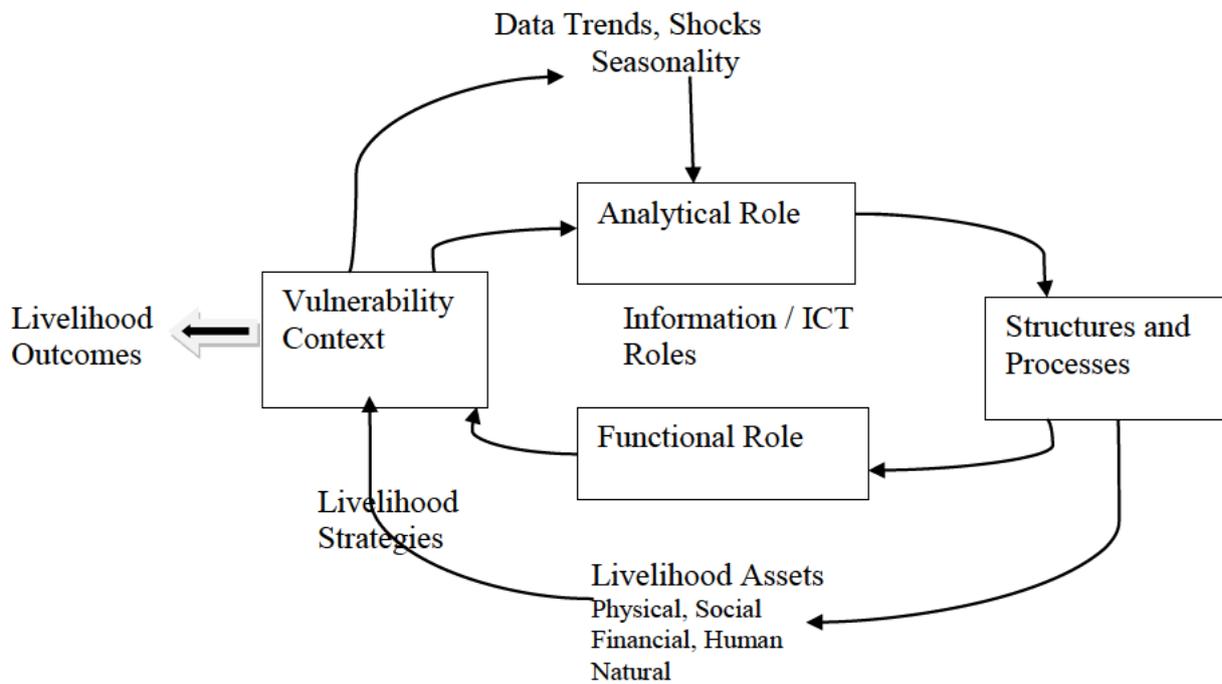


Figure 3.3: Model for understanding information ICTs within the Livelihoods Framework

Source: Duncombe (2007)

Duncombe (2007) employed the above framework on livelihoods in evaluating the relationship between ICTs and poverty reduction after identifying a gap in existing literature and noted the need to assess the relationship. Duncombe (2007) observed that previously the livelihood framework was initially developed to unravel the drivers of poverty through social relations in the context of the poor as a way to empirically determine the conditions of the poor. Further, he noted that the livelihood framework was actually a flexible and evolving approach that was adaptable to variety of ideas and concepts of poverty. The model assigns ICTs an analytical role, that is, on how ICTs are employed in applied research in determining vulnerability, identifying and measuring livelihood resources and in investigating structures and processes to come up with livelihood outcomes. The model also assigns information and ICTs a functional role, that is, on how they can be applied in the context of livelihood strategies to create the positive outcomes for the poor. In the model the arrows indicate the recursive, participative and communicative process that includes research and action.

3.2.3 The Townsend Model of financial deepening and growth

The study also harnessed financial deepening and growth concepts from Townsend and Wallace (1982) with adjustments of the same model by Jack et al. (2010). Its primary focus is on changes in information and communication technologies and its linkages on one end. On the other hand it links it with the relationships and connectedness of financial services agents and economic activities over a period of

time. To put it in perspective, as payments are done online transacting parties that are geographically separated it creates and increases specialisation of labour. This will consequently increase consumption level of goods and services as a result of a shift towards the use of electronic money for payments. The model also shows a link between economic growth and financial deepening. This has a bearing on how mobile money can assist, in the Zimbabwean circumstances, to improve economic well-being in general and the livelihood of rural communities.

This model assumes that there exist each household of type i and can only produce good i , and each household has a utility function over its own consumption of good i and a good it cannot produce $i + 1$, as well as leisure. When households are in a state of economic self-sufficiency (autarky), without physical or electronic contact, there is zero trade, so each household consumes all its production of good i only. In this situation, there is no need for a means of payment. In contrast, with some travel household i can trade with other households. In case there is lack of double coincidence of wants, decentralized trade would give rise to autarky if it were not for valued fiat money.

Townsend and Wallace (1982) improved the model by accommodating Walrasian, centralized exchange regime with electronic debits and credits. Where household i travel to market $(i, i + 1)$ to buy good $i + 1$ from household $i + 1$, it is as if that member was using a credit card (or phone) linked electronically to a central account, which will not be paid until the end of the period. The second member of household i who travels to market $(i, i - 1)$ and sells good i is paid with a credit card from household $i - 1$.

At the lapse of the period, these electronic debits and credits are cleared and accounts must balance. In fact, in the equilibrium of this electronic accounting system, fiat money features with no apparent role and its price is zero. The prices of goods themselves are in some (arbitrary) unit of account. Related, though households remain separated in space, it is as if they are transacting with one another in a centralized market that ignores the spatial segmentation as far as prices and values are concerned.

In summary, moving from autarky to the decentralized money regime and then to the centralized Walrasian regime, the model predicts that labour supply increases, output of the produced commodity rises, consumption of the non-produced good rises, consumption of the produced good drops, trade volume increases, and welfare increases. This is how financial deepening is linked to mobile money in this model. Section 3.5 presents the theory of change to link the impact of an intervention to the intended outcomes. This theory was the basis of the theoretical framework by Alampay, Moshi, Ghosh, Peralta and Harshanti (2017).

3.3 Theory of Change

It is important to note that various definitions exist on the theory of change, different people work with the theory of change flexibly in accordance to their varying needs. Valters (2015) asserts the theory of change as a continuous process of reflection and consideration to examine change and how it occurs. Vogel (2012) defines theory of change as a description of a series of events expected to culminate in or yield desired results. He further identifies a minimum number of basic elements that make up theory of change as: *i. Context for the initiative*- it is the current state of the problem the project is seeking to influence; *ii. The long-term change* that the initiative seeks to prove and identifies the intended beneficiaries of the initiative; *iii. assumptions* about how these changes may come to fruition; and *iv. A diagram and the narrative synopsis* that captures the outcome of the initiatives. It is employed to offer explanations and justification and how things are intended to work, to chart new possibilities through critical thinking, discussion, and challenging prevalent narratives.

Taplin, Clark, Collins and Colby (2013) are not oblivious of the fact that the theory of change provides a working model against which to put to test hypotheses and assumptions about the suitable strategy to facilitate an intended outcome. A graphical representation of the outcomes can be made through pathways showing a connected causal chain of impacts. According to Vogel (2012), the theory of change thinking can be a means first to illuminate impact pathways in operational contexts and secondly to link activities to changes at different levels; community, sub-national, national and international. In the context of mobile money and its effects, Alampay et al. (2017) explained the impact of mobile money services in low income regions by applying the theory of change on existing empirical studies and developed a theoretical framework which is deliberated below.

3.3.1 Theoretical Framework: The Impact of Mobile Financial Services on Low and Low-Middle Income Countries.

Alampay *et al.* (2017) relied upon and put to use the theory of change to craft a theoretical framework that attempts to clarify the impact of mobile phone-based financial services in low income countries. The framework has been formulated and advanced relying on the existing literature on mobile financial services, notwithstanding that the framework has not been empirically tested. Consequently, this study has adjusted the theoretical framework and the Hassan and Semkwiji (2011) model and proposes to empirically apply it to the rural communities in Zimbabwe through a structural model. Figure 3.4 presents the theoretical framework:

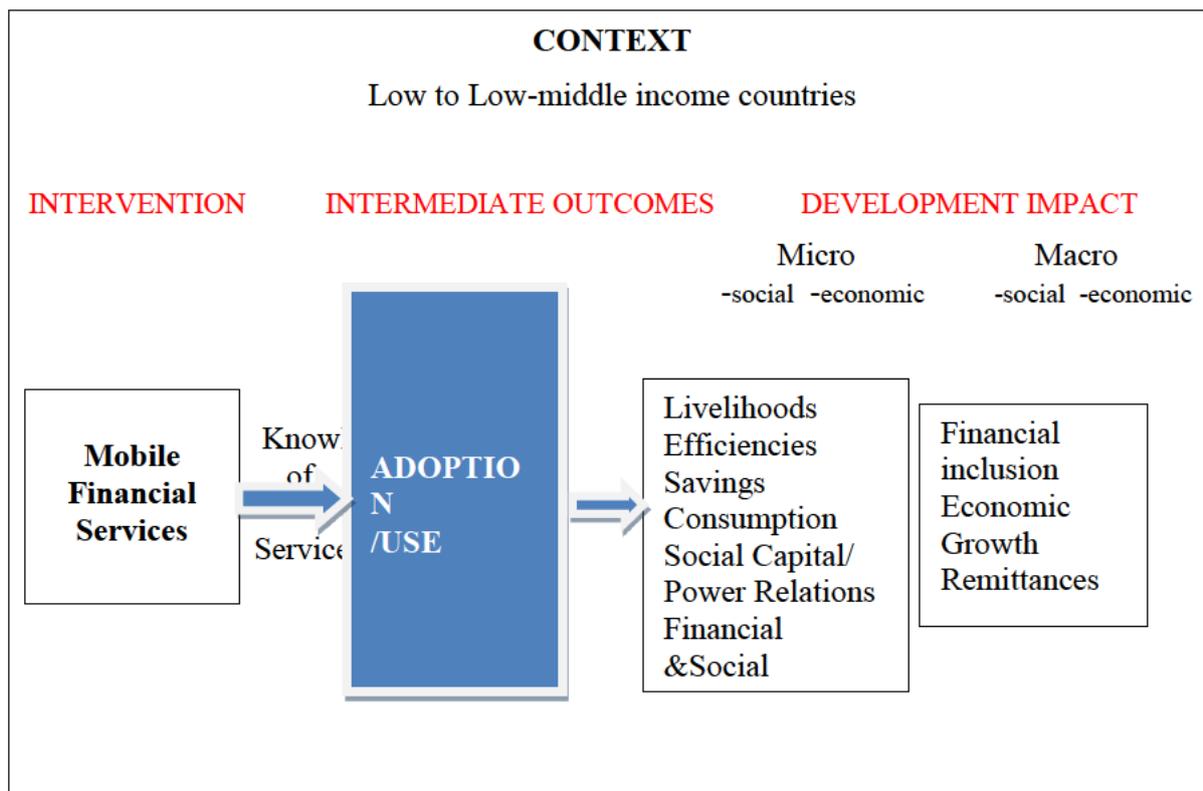


Figure 3.4: Theoretical Framework

Source: Alampay et al. (2017)

In this theoretical framework Alampay et al. (2017) espouse that mobile financial service intervention on the financial services needs of the low and low-middle income countries has significant setbacks to a country’s development, that is, the use of mobile money can result in immediate outcomes to low-income groups. They anticipated that long-term impacts can be observed at micro-and macro-levels, where micro level impact can be observed on livelihood efficiencies, savings, and changes in consumption while macro level impacts include: economic development; remittances (both domestic and international); and financial inclusion. The present study differs from the work of Alampay et al. (2017) in scope and focus. It focuses on the micro-level, that is, rural communities (Zimbabwean) in a different economic, social and cultural environments while Alampay et al. (2017) focus on both micro and macro level at country level. Consequently, it might not reflect the real impacts on the rural people as they will use aggregate data. The next section weighs the impact of mobile money by exploring the variables and reviewing the empirical evidence in relation to the study variable.

3.4 Impact of Mobile Money

Duncombe and Boateng (2009) revealed that the paucity of researches that have been done so far to assess the effects of phone-based financial services. This is premised on the fact that a significant number of mobile money services developments were still unripe and only beginning to take shape to

warrant rigorous empirical research. Kumbhar (2011) identified several pointers which are applicable in evaluating unorthodox financial products as ways of establishing the inclusion of unbanked populations. Kumbhar's (2011) indicators ranged from qualitative through quantitative to mobile money effects. The effects in general encompassed: the extent of indebtedness; change in savings culture; change in the level of income; transformation economic well-being of the users of the mobile money service; and a change in banking practices in general. The scrutiny of previous research on the effects of mobile financial services revealed a positive correlation among: savings; communication; positive changes on income; reduction on costs; improved productivity; and improvements on remittances (Dermish et al., 2012, Demombynes and Thegeya, 2012, Jack and Suri, 2011, Mbiti and Weil, 2011b, Morawaczynski, 2011).

3.4.1 Communication

Communication entails the exchange of ideas, information, knowledge and opinions while interacting with another person (Randall, 2015). The place of communication in socio-economic and cultural development at national and international levels has been recently put into scope over the past two decades (Kaul, 2011). Developmental practitioners have viewed communication as a key tool for relaying new ideas, information and knowledge to foster socio-economic change in developing countries (FAO, 1994) and thus it lies at the core of development. It has been made compatible for different developmental and other purposes by different stakeholders from different fields for their purposes. According to Kaul (2011), the communication process, if amply and effectively used, can create room for millions of people in developing countries to improve themselves by means of individual efforts, from the web of disease, poverty and ignorance to one of economic, social and moral well-being. This owes to the fact that the sharing of knowledge about all developmental processes in a community is indebted to communication

Mobile money is the service provided by mobile network operators and the services are used mostly by those who own cell phones. Being in possession of a phone entails widened avenues to such as easy and affordable communication services, and access to information on just about everything (Ryder, 2014). The dawn of mobile technology and ICTs has made great strides towards the accessibility and affordability of information and communication worldwide, particularly in the third world (Aker and Mbiti, 2010, Aker, 2010). This could be why Diga (2008) asserts that the recent inception of mobile phone telephony in rural Uganda wrought great change to its citizens. A wave of recent studies has come to the realization that cell phone use in communication increases economic activity coupled with facilitating social development by increasing access to and facilitating information dissemination, improved productivity and facilitation of social networking (Jain, Hong and Pankanti, 2008).

Mobile phones create access to the otherwise inaccessible sectors covered by landline technology especially in developing countries where the fixed landline services are confined to major towns and cities. The landline connection and rental prices were generally out of reach for the generality of population (Jain et al., 2008). Hitherto, mobile services create chances of employment, allowing people to make telephone calls whenever an opportunity arises instead of relying on word of mouth messages from friends.

The use of mobile phones entails handling communication activities rendering an important tool for promoting agricultural and livelihoods of the rural people, consequently promoting social and economic development (Hudson, 2013). Mobile communication also promotes social networking, thereby enhancing social capital which is one of the five capital assets of the livelihood sustainable framework. Means of achieving this encompasses enabled contact with family members, friends and social groups without need to meet face to face (Jain et al., 2008). The double benefit is reduction in transport cost and promotion of social cohesion for developmental cause as noted by Goodman (2005). Bhavnani et al. (2008) identified three types of social capital facilitated by the use of mobile phones. They allow the creation of close linkages among the members of the family, friends and the wider community members. They also promote links with economic agents like tradesman government officials and business people at large. Moreover, mobile phones foster effective and efficient communication among small groups, by providing room to keep in touch in crises and ensure availability of aid at the earliest possible time (Jain et al., 2008). Mobile communication facilitates the spreading of different kinds of information ranging from educational, health, and agricultural information.

Mobile phones are also linked to the creation of opportunities in the agricultural sector and the promotion of rural development as advanced by Baumüller (2012). Mobile phones remain the leading tools among many for dissemination and collecting information on agriculture technologies, yields and prices in developing countries (Aker, 2010). Furthermore Dolan (2009) makes a distinction on the various function of mobile phones. In the agricultural sector it can be used to mediate on agricultural extension services where farmers can receive expert farming advice via the mobile phone. Advice can range from handling planting, to information relating best farming practices. Farmers can also receive information on changing weather patterns that can have adverse effects on their crops or animals via the mobile phone. Therefore, the use mobile phones can eliminate the need for physical contact with agricultural extension officials or reduce the need for physical contacts where it is not necessary.

Dolan (2009) noted the use of mobile phones in accessing the markets where farmers can market their produce through the phone by sending information to buyers about their produce. This information can be shared in the form of videos or text messages consequently inducing sales. Customers can make orders through the mobile phone and then conclude transactions when money transfers are done through

the mobile money service. A service that has actually transformed the payment process for rural farmers and this has direct livelihood effect. According to Mittal and Mehar (2012), farmers revealed that initially mobile phones were used for social communication but had eventually extended their use to communicate business related issues with traders and other farmers on relevant information such as input availability or market prices.

To buttress the benefits identified made by Dolan (2009), Mittal and Mehar (2012) adds another benefit of using mobile phones for agricultural activities as enhanced access to information related to seed variety. This can be advice from seed producers to their clients. Their survey indicated that about 34, 63% of farmers realized an increase in yields due to the availability and cost effectiveness of referred information. (Masuki, Kamugisha, Mowo, Tanui, Tukahirwa, Mogoi and Adera, 2010) show that most of the farmers use phones to contact suppliers, technocrats and traders to confirm on different issues pertaining to farming and market. Animal husbandry farmers and veterinarians have found perpetual communication with the help of mobile phones (Martin, 2010). In a study Martin (2010) confirmed that livestock farmers were attributing the improved livestock production and quality to the adoption of cellular phones in communicating and consulting the veterinary and agriculture experts without physically travelling to their offices.

The use of mobile phone in scanning for a lucrative market had potentially ensured the real tradable quantities of agricultural produce and mobilized farmers to bulk their produce and sell as a group thus built social capital among farmers within the village (Masuki et al., 2010). Studies by De Silva and Ratnadiwakara (2008), Ashraf, Giné and Karlan (2006) assert that cell phones can be great drivers of international trade in the agricultural sector. Therefore, the current study hypothesizes that:

H₁: *Usage of mobile money has positive effect communication and productivity of rural livelihoods.*

3.4.2 Remittances

Flow of remittances from the internal and international migrants and well-being of the recipients has been facilitated by mobile money. Remittances are funds and goods sent by internal and international migrants to their families and communities (Garip, 2011). According Global Migration Group (2014) remittances generally represent a portion of migrants' private earnings or income sent to support family in origin communities. Remittances can be sent by individuals and/or a group of people that is collective remittances (López, Escala-Rabadan and Hinojosa-Ojeda, 2001). Home Town Associations (HTAs) are groups of migrants from particular communities who come together to pool resources in order to help the development of their home communities (Orozco and Lindley, 2007).

Globally, according to World Bank (2011), data remittances flows reached US\$ 483 billion in 2011 and were expected to rise to US\$ 593 billion by 2014. In developing countries, they were US\$ 359 billion in 2011, an increase of 8 per cent over 2010, and were expected to reach US\$441 in 2014. Generally, remittances increasingly contribute the bulk of foreign currency and development finance (Orozco and Lindley, 2007, López et al., 2001). Lack of proper travel documentation by many Zimbabwean emigrants, as a result of dreadful economic situation which has forced them to cross borders, meant that a significant flow of remittances come in through informal channels (Zhou, Pindiriri and Tambama, 2013). Hence, Orozco and Lindley (2007) estimated that remittances that came into Zimbabwe through informal and formal channel were about US\$1, 3 billion.

Ongoing debates on the impact of the remittances persist, on one hand the pessimistic scholars argue that remittances disrupt agricultural production in the communities that had lost economic active group due to labour migration (Ncube and Gómez, 2011). While on the other hand, the other group maintains that remittances improve the welfare of the recipients through improved consumption, income and financing of rural livelihoods such as agriculture (crop production and poultry). The pessimistic scholars view remittances simple as a mere compensation of the loss labour in the expense of domestic production. Since remittances result from labour migration, they base their arguments on the basis of loss labour from the sending communities or households and thus affecting agriculture production. They argue that if the sending communities or households are poorest, then the loss of the economically active group due to migration increases their poverty. In contrast, the pessimistic scholars on remittances, view migration as part of an overall family strategy to raise income, obtain funds for investment and insure against risk (Maphosa, 2007). The pessimists further posit that remittances loosen production and investment constrains, setting in motion a development dynamic in poor rural environments. The basis of their argument is that the loss of population to migration raises the average incomes of those left behind and remittances may raise income to further investment in rural households.

Most studies on remittances have shown that monetary remittances are largely used for consumption and less for investment. Orozco and Lindley (2007) state that in Zimbabwe about 58% of the remittances money is used to support family, 4% to build homes, 3% to invest in business and 2% to support friends. Most remittances are directed towards consumption in Zimbabwe because of the dire political crises that have characterised the nation since the new millennium. As such remittances sustained the consumption levels of the people especially in rural communities. Ghosh (2006) notes that increased household consumption in the form of expenditure on health, education and family welfare contributes to human welfare and capital development at the community level. Ncube and Gómez (2011) posit that in many developing countries facing low rate of domestic saving and high government expenditure, remittances and other external financial source play a critical part in local development and poverty alleviation strategies. Durand, Kandel, Parrado and Massey (1996) noted that remittances were

instrumental in the development of a village in Philippines in terms of improving agriculture productivity by providing both source of capital for cash crop production and a means to acquire land. Maphosa (2007) further notes that remittances sent back to the family find use in building or improving houses, buying land livestock and durable consumer goods such as household furniture.

The ushering in of the inclusive government in Zimbabwe witnessed a new breed of monetary dispensation with the use of a multicurrency system promoting direct flows of monetary remittances as observed by Ncube and Gómez (2011). They found that on average, households receive ZAR 500 a month to cater for their needs. The funds were sent through banks, cross boarder transporters and mobile money. The domestic remittances are being sent through mobile money services to the recipients in rural areas, as a result of the wide coverage of mobile phone technology both in urban and rural areas (Jacob, 2014). Internal remittances are the remittances that flow within the borders of the country. Common in developing countries is the trend that economically active age groups migrate from rural to urban areas in search of jobs and livelihood and remit part of their income back to their families and communities. The flow of internal remittances has been made efficient (Jacob, 2014) due to the introduction of mobile money (Safaricom) in Kenya, (MTN Mobile wallet) in Ghana, ECO CASH, One Wallet, Tele cash, *etc.*) in Zimbabwe. Therefore, the study hypothesizes that:

H₂: *Usage of mobile money has a positive effect on remittances and leads to improved wellbeing of the rural people.*

3.4.3 Productivity

Productivity is commonly defined as a ratio between the volume of output and the volume of inputs. The efficiencies of production inputs, such as labour and capital, are being used in an economy to produce a given level of output and it is this that productivity measures. Productivity is considered a key source of economic growth and competitiveness and as such it informs about the economical performances of the economies (Krughman, 1994). According to Gordon, Zhao and Gretton (2015), productivity to some people come from working harder and longer (unpaid) hours, to others it is a return from investing more in capital (such as infrastructure and education). Gordon et al. (2015), further alludes that productivity grows when output grows faster than input, which makes the existing inputs more productively efficient. Productivity does not reflect how much we value the outputs; it measures how efficiently we use our resources to produce them. Putting aside the problem of ensuring production of what we want to consume, productivity growth is a good way of improving living standards.

Agricultural production and other rural livelihoods are the standard measurements of productivity in rural areas in developing countries. Literature on rural productivity focuses more on agriculture, fishery and small-scale mining as key drivers of the rural economy. Mobile money has increased agriculture

productivity through enhanced ability to send and receive payment, reduced risk in transferring funds for farmers (Sife et al., 2010). In establishing the impact of mobile money transfer service in small holder agriculture productivity, Kirui, Okello, Nyikal and Njiraini (2013) found that mobile money improved rural livelihoods productivity, particularly on small holder agriculture.

As noted above, mobile money facilitates the sending and receiving of remittances and cash as wages, the use of these remittances and cash augments agricultural productivity” (Ncube and Gómez, 2011). It has been revealed in studies by Ncube and Gómez (2011) and Maphosa (2007) that households in rural areas use remittances to purchase agricultural equipment’s and other productive assets and also to finance other rural economic activities to improve their productivity, hence reducing poverty. Productivity is also enhanced in mobile money users through communication and dissemination of information that matters to farmers over farming issues through use of mobile phones. Sife et al. (2010) noted that the adoption and use of cellular in agricultural activities resulted in the reduction of costs associated with conducting business as well as increased production. More over mobile phones assisted rural famers, traders, and entrepreneurs to access better markets, consequently yielding better prices for their products and services. Jacob (2014) found that women users of mobile money had more access to agriculture inputs and machinery as a result of mobile money, as they can purchase or get farm inputs more easily via mobile. This was easy as they could order right from the farm and pay pending delivery, these then necessitated continuity of work flow (Jacob, 2014).

According to Kirui et al. (2013), mobile money has a rewarding effect on agriculture productivity by virtue of increasing the level of household agriculture commercialisation, household agriculture income and household input use. This scenario opens vast opportunities in rural poverty reduction and increases agricultural production and food security in rural communities. Nagarajan and Haas (2011) indicated that mobile money (M-PESA) transfers help enhance food security by facilitating time sensitive money transfers, spreading risks across geographical regions, making users credit worthy, and by improving domestic production and consumption of services. Consequently, mobile money improves food production, access and consumption of diversified foods among the households that receive money through mobile money. Jacob (2014) also states that mobile money transactions are important to women farmers who use mobile phones and most of them carry their agriculture business with mobile phones as a tool to get business deals as well as a bank to receive, send and keep money. According to Sife et al. (2010) cellular phones have positively impacted on the well-being of by reducing the levels of poverty among its adopters and users. Another effect noted was on enhanced livelihood through the creation and expansion of social networks (social capital). Consequently, the net effect of social networks is the ability of rural people to speedily confront emergencies as they arise and also to handle and recover from shocks. Increased productivity in rural households and or communities through the

use of mobile money entails somewhat improved economic well-being in rural communities. The study therefore hypothesizes that:

H₃: Usage of mobile money has positive impact on the productivity of the rural people.

3.4.4 Savings

Mobile money technology has high chances for betterment of savings mechanisms of rural people in especially where appropriate banking systems are inaccessible and unaffordable for the majority in developing countries. That part of the income that is not spent on current expenditure becomes the savings and is usually reserved for unforeseen circumstances or emergencies because the person does not know what will happen in the future (Demombynes and Thegeya, 2012, Mbiti and Weil, 2011). Barnett and Block (2007) defined savings as to “prepare for the future that is to arrange for the future consumption that is expected to be greater than otherwise would have been the case, though the specifics of the future consumption are not necessarily predetermined. Economists define savings as income minus consumption; that is a person decides to forego consumption (Samuelson and Nordhaus, 1985) and spare some income for future use or invest in houses, real estate, bonds shares and other financial instruments (Piana, 2003). Basically, all these definitions agree that savings is simply the setting aside of some income for future use, for consumption and or investment. Mobile money can serve as a safe and more appropriate mechanism for saving in rural areas.

Enhanced savings for sustainable rural or household’s investments can be milestones towards rural poverty alleviation. Harrod –Domar in their model of economic growth postulate that investment is equal to savings. They state that the higher the savings rates the higher the investments. This concept can equal apply at community and household level, in the same way the higher the households’ savings the more opportunities for households’ investments, hence the rural livelihoods are promoted and standards of living improved. Savings mobilization is critical for individual and societal welfare (Morawczynski and Pickens, 2009). According to (Ky, Rugemintwari and Sauviat, 2016), at individual level, savings help individuals to smoothen consumption and to raise funds for their businesses. Thus, savings give a base for future investments and financing of livelihoods in rural people.

The limited access of poor people to formal financial institutions in many developing countries leads to individuals, households or group of people to come together informally to build up a savings network (Ky et al., 2016). The informal methods of rural saving comprise of the following mechanisms: saving through buying livestock as a way of storing value; using home facilities to store money for example ‘under the mattress’ is one such approach; and giving money to a neighbour or a trusted friend for safe keeping. The other approach that is organized and more appealing is the group saving scheme called internal savings and lending schemes (ISALs), or rotating savings and credit associations (ROSCO)

(Ryder, 2014, Morawczynski and Pickens, 2009, Ky et al., 2016). These informal mechanisms of saving are risky, inappropriate and incomplete, because they are subject to theft and other mischief that might arise. Such insecure mechanisms of saving stem from the fact that low income population and rural folk have limited or no access to formal structures, they are deprived of access to formal savings facilities especially banks (Ryder, 2014).

Evidence suggests that the marginalized save within their means in those stringent and hard conditions (Karlan, Ratan and Zinman, 2014). Banerjee and Duflo (2007) carried out a household survey in Kenya and found that the poor do have some surplus they use for non-essential expenditure. It is these non – essential expenditures that should be harnessed by a safe, affordable, accessible and appropriate mechanism of saving so as to leverage household investment and eventually reducing the levels of poverty among the rural households. Beck et al. (2009) noted that in general poor and rural people also need proper ways of saving, payment systems and insurance cover. The use of mobile money can be a panacea to lack of safe, accessible and affordable mechanism in rural areas and promote household financial savings. This growth in financial innovation in using mobile phones as a digital wallet allows individuals do basic money transfer services through cash-in and cash-out functions (Ky et al., 2016).

Mobile phones offer a special opportunity for integrating savings, payment and budgeting tools without limits for the client (Mas and Mayer, 2011). According to Morawczynski and Pickens (2009), there is evidence that although M-Pesa was designed as a money transfer service, it is also used for savings. A study funded by FSD-Kenya states that over 3000 households in Kenya revealed that users were storing money in M-Pesa. Storing money in the mobile phone presents people with an insured (secured) method. Mobile money service preserves money from thieves and unplanned expenditures due to service fees charged on withdrawal transactions as a result it encourages mobile money users to withdraw their money only when an important need emerge (Ky et al., 2016). In the mobile money system depositing (cash in) is free to registered clients while withdrawal cash out is taxed a certain percentage. It is that cash out tax that discourages the users to unnecessarily withdraw their money.

Two types of mobile financial servings have been identified by Demombynes and Thegeya (2012) namely: *Basic mobile savings*- It refers to the mobile money facility that allows the user to store funds that are interest free. *Bank integrated mobile savings*- is defined as a mobile financial service that is linked to a bank account and might pay interest and creates chances for the user to access loans and insurance. The bank integrated mobile savings can further be divided into two categories according to the agreed relationship between the bank and mobile operator. These are partially integrated and fully integrated mobile savings. In a partially integrated mobile savings, the customer is required to first open a bank account at a physical bank, allowing the users to access bank services through the phone. While a fully unified mobile savings scheme the customer is not required to open a bank account. The customer register for services through the mobile money service provider in order to access the financial services.

It is a result of a joint venture between the bank and the service provider. The elementary cellular savings scheme and the fully unified mobile savings scheme are the typical mobile money savings that suits the needs of the rural poor because it does not require them to visit the bank to open an account first (Demombynes and Thegeya, 2012). Ky et al. (2016) noted that savings form part of key financial services that can help the poor people to manage vulnerabilities and build asset base.

Many studies revealed that the growth of mobile banking services has allowed the financially excluded to keep their small amounts in their safe and secure digital wallet. Morawczynski (2009) indicated that M-Pesa complimented household savings mechanism. In the same study it is noted that the mobile money service has afforded users the ability to store their money separately, that is, personal savings and business savings. However, Demombynes and Thegeya (2012) found that M-Pesa's usage increases savings as a simple storage device for the safe keeping of excess funds. Such stored funds would thereby be shielded from the perils of theft unwelcome accessibility to the funds by relatives. Despite being just a secure place to store funds mobile money as highlighted in Morawczynski (2009), allows for the accumulation of the savings for financing of the small income generating projects such as poultry. Ky et al. (2016) postulate that if the poor individuals had good savings tool such as mobile money reliably available, safe and accessible, they would be able to "manage well their money and overcome unpredictable and predictable shocks. Therefore, mobile money savings present a potential pathway to poverty reduction in rural areas and thus study hereby hypothesizing that:

H₄: *Usage of mobile money has a positive impact on saving behaviour of rural households.*

3.4.5 Economic Well-being

No universal definition of economic well-being is in place but the concept is frequently perceived as representing the stock of assets/wealth used to generate well-being (Durand and Smith, 2013). According to Canberra Group (2011), households' economic well-being can be expressed in terms of its access to goods and services. To that effect, if a household can consume more, it becomes a sign of its economic wellbeing (Durand and Smith, 2013). Stiglitz, Sen and Fitoussi (2009) emphasized a shift from the traditional system that focuses on economic production the Gross Domestic Product (GDP) to measuring people's wellbeing. Stiglitz et al. (2009) alluded that although various dimensions to well-being exist, the starting point should be the measurement of material well-being or living standards. The GDP mainly measures market production and it has been often treated as if it were measure of economic well-being (Stiglitz et al., 2009). They validate the line of thought by pointing out that conflating economic well-being and GDP can lead to misleading indications about how well-off people are and consequently wrong policy directions. Pender, Marré and Reeder (2011) stated that policy formulation can be seriously affected when income or consumption are used as indicators of well-being without also considering wealth. Wolff and Zacharias (2009) added wealth to represent another

dimension of well-being besides income and consumption. Cementing the idea of accommodating the three dimensions in measuring economic well-being (Short, 2014) emphasized that a one dimensional focus of economic well-being is likely to present an incomplete picture of the economic well-being of individuals and households.

Material living standards are better followed through measures of household income and consumption (Stiglitz et al., 2009). Wolff and Zacharias (2009) opine that a convenient measure of income from wealth is a part of the wider agenda for the betterment of household economic well-being. The argument by Wolff and Zacharias (2009) brings in the idea that wealth and income are interconnected and can be used interchangeably hence validating that income and wealth are almost interchangeable as measures of household well-being (Wolff and Zacharias, 2009). That is to say, popular belief has it that families with high income more often than not are wealthy while families with low incomes are regarded as poor or less wealthy. This reflects a generally positive relationship between wealth and income (Radner and Vaughan, 1987). Pender et al. (2011) reveal another interrelationship between the variables income and wealth, where income can be used to enhance household's wealth, for example if income is less than consumption it implies that a household may need to draw the net difference from its reserved stock of wealth. According to Pender et al. (2011) net savings in general, is represented as the difference between consumption and income where, if the difference is positive then wealth is likely to increase over time and on the other hand it is depleted if the difference is negative (Pender et al., 2011). Wolff, Zacharias and Caner (2004) concur with Stiglitz et al. (2009) that when measuring household well being it is necessary to factor other components besides wealth and money, to include other measures that incorporate the value of production as well (Wolff et al., 2004).

The United Nations (2011) had also identified consumption as an indicator of household well-being. Savings in general can be represented as that available portion of consumption that a household decides to set aside instead of consuming it (United Nations, 2011). The United Nations (2011) further explains that savings is another way of accumulating household wealth by buying a stock of assets that can be employed to generate income on a future date.

To fully understand the extent of a household well-being, it is important to evaluate various aspects of the household's economic status. This entails assessing changes in the household's wealth and consumption (Durand and Smith, 2013). While other studies focused on one determinant of economic well-being, this current study measures household well-being through consumption and wealth as used in the OECD Framework (Durand and Smith, 2013). The scope of the research is that through use of mobile money in rural communities' livelihoods are promoted and improved which ultimately enhance economic well-being among the communities. The flow of cash as remittances, wages and salaries and income from livelihoods through mobile money is affecting the user welfare either way. In this case

economic wellbeing is measured by material living standards (wealth) so as to capture the household economic well-being.

3.4.5.1 Income

Income as a component of economic well-being is used in the research to understand the economic well-being of the target population. The Durand (2015) factors income as one of the measures of household' economic being. Durand and Smith (2013) further defines income as being represented by the total receipts received of over a year with the goal of enhancing the target individual's consumption. Income sources are many include wages, salaries, property rentals, pensions and social transfers.

Narsey (2006) noted that there is another type of income which is based on self-employment or projects while income received from employment include all receipts generated as a result of an individual being actively engaged on economic activities based on employment contractual obligations. Income alone is not enough to measure the economic well-being it is therefore complimented with other indicators of economic well-being such as consumption and wealth. As noted by Stiglitz et al. (2009) that income flows are an important as a measure of well-being however consumption carries more weight when measuring the household's wellbeing. Morawczynski and Pickens (2009) observed that mobile money remittance transfers had increased the disposable incomes of the rural based household as indicated in the findings of an ethnographic research carried out in Kibera, Kenya in 2007. The phenomenon has triggered a higher level of savings by the household. In Zimbabwe the frequency of use of mobile money service has boosted the rural economic activities through transfers received from members residing in towns and cities to their relatives residing in under developed rural areas. The value of mobile money transfers is estimated to be over \$100 million a month. In this study income is therefore captured or treated as same as the remittances. The proposed model then dropped the use of income as a study variable.

3.4.5.2 Consumption

The primary component of economic well-being is consumption of goods and services and hence a basic indicator of well-being together with wealth and income (Durand and Smith, 2013). Consumption is much favoured when measuring wellbeing as compared to income especially for researches that are conducted in developing country setup (Natali and Moratti, 2012). Citro and Michael (1995) maintain that households determine well-being from actual consumption of goods and services and not derived from mere aggregate receipts of income. Therefore, they view well-being as being accurately represented and measured through consumption. In addition, Deaton and Zaidi (2002) state that consumption better reflects long-term income as it is not closely tied to short-term fluctuations in income and is smoother and less variable than income. Income is more likely to be affected by seasonal

patterns, resulting either in an underestimation or overestimation of real income (Natali and Moratti, 2012). Consumption is more stable especially in agricultural societies as it is smoothed over the seasons, therefore better reflecting (or approximating) the real living standard (Natali and Moratti, 2012).

According to the United Nations (2011), consumption can be defined as the 'using up' of services and non-durable consumer goods that have a single use or an otherwise limited life (i.e. less than one year). It is believed that use of mobile money has positively impacted the well-being of the users in rural communities as it has facilitated efficiency in rural livelihoods. Munyegera and Matsumoto (2016), in a research titled "Mobile money, Remittances and Household Welfare, found that there was a positive correlation between mobile moneys use and improved household per capita consumption. Munyegera and Matsumoto (2016) revealed a notable increase on household consumption for mobile money adopters. Thus, mobile money affects positively the household consumption which also reflects the improved economic wellbeing of the adopters of the service.

As noted by Smith (1937), consumption is the sole end and purpose of all production and the welfare of the producer ought to be attended to, only so far as it may be necessary for promoting that of the consumer. Consumption starts from expenditures but replaces the outlays for durable goods with the flow value of services from these goods (this adjustment is feasible for housing and cars in our data), minus expenditures on investment items (medical care, education) minus cash gifts to other families and charities.

In measuring well-being many studies have preferred consumption to income. Income is almost exclusively used to measure economic deprivation in the United States (Meyer and Sullivan, 2003, Short, 2014). Unlike the U.S., in developing countries consumption is the standard measure of well-being (Meyer and Sullivan, 2003). The World Bank (2000) noted that consumption is conventionally viewed as the preferred welfare indicator, for the tangible reasons of reliability and because consumption is thought to better capture long run welfare levels than current income. Economic theory suggests that current consumption more directly measures the material well-being of the family than current income. Consumption expenditure is probably the most common and preferred welfare indicator; however, its measurement is a challenging and time-consuming task (Deaton, 1998). Although the measurement of consumption is challenging and time consuming it is considered more suitable to analyse multi-dimensional poverty (Filmer and Pritchett, 1999, Filmer and Pritchett, 2001) and finally it is less data intensive and therefore easier to calculate (Azzarri, Carletto, Davis and Zezza, 2006). Meyer and Sullivan (2003), in comparing income and consumption in measuring welfare, also discover that consumption fares way better as a pointer to low material well-being. Consumption is more likely to capture a family's long-term prospects than is income.

Deaton and Zaidi (2002) confirm that even though consumption is a daunting task, good practice techniques and guidelines exist which may be considered when trying to construct an accurate measure of consumption. In order to obtain a good measure of welfare, consumption should be comprehensive (Deaton and Grosh, 2000); the questionnaire should cover all components of consumption and all types of consumption. Food consumption, non-food items such as healthcare, education and other non-food expenditures, and consumer durables are some of the aspects of consumption (Natali and Moratti, 2012).

Food consumption encompasses food consumed inside the household from a variety of sources (food purchases, self-produced food, food received as gifts, remittances and payments in kind) and food consumed outside the household (restaurants etc). Non-food items refer to education (such as tuition fees, textbooks, etc.), health (medical care and health expenses) and a wide range of other non-food expenses (such as domestic fuel and power, tobacco products, clothing and footwear, transport, recreation etc (Deaton and Zaidi, 2002).

Consumer durables are another important group of items to consider and they may include the house, vehicles, and washing machines among other items. Income and consumption are crucial for assessing living standards, but in the end, they can only be gauged in conjunction with information on wealth.

3.4.5.3 Wealth

The economic resources that households use to support their consumption are income and wealth. Unfortunately, most studies on economic wellbeing have focused on income only. Firstly, income data are easier to collect, because there is some correlation between household income and wealth, and secondly because for most households income is the main economic resource used to support consumption” (Durand and Smith, 2013). Rutstein and Johnson (2004) have found wealth having more weight as a measure of economic well-being compared to income and consumption. More recently, wealth as measured by Wealth Index has been found to be a better alternative when measuring economic well-being than consumption and income (Rutstein and Johnson, 2004). Filmer and Pritchett (2001) further noted that when measuring long term effects on well-being wealth was stable than consumption and income. Multi-dimensional poverty can therefore be measured more accurately and efficiently using wealth.

Khan and Calver (2014) are of the view that as for the overall economy, the level of income gives an incomplete perception of the household wealth available to enhance their consumption needs. What is happening to their wealth is also important in assessing whether current consumption is sustainable or whether, per contra, higher levels of wealth mean more consumption could be sustained and well-being

thus improved, with no change in income. Pender et al. (2011) noted that the contribution of wealth to income, however observed that it had more leverage as it incorporates something new to fall on and it offers better chances of enhancing well-being. This was found to be plausible especially when considering those types of assets that are easy to convert to cash like financial assets but they noted that it was also true for non-marketable types of assets as well.

The term “wealth” is defined as the economic resources that include assets held by a household as well as their liabilities (Durand and Smith, 2013). Pender et al. (2011) defined wealth as a collection of total assets less liabilities that enhance household welfare. Taken together Durand and Smith (2013) view the wealth of households in an economy to indicate total assets owned and liabilities incurred at a given time. According to Durand and Smith (2013), the definition of wealth, or net worth, for micro statistics on household wealth is the value of all the assets owned by a household less the value of all its liabilities at a particular point in time. This study uses Durand and Smith (2013) which suits well in wealth assessment in rural areas, since it is difficult to include liabilities in developing countries’ rural households. The most common forms of assets for people in developing areas are land, farming equipment, livestock and other related items (Shanks et al, 2010). It is still not easy in developing countries to measure assets/wealth because of limited knowledge of the values assets by owners when they are asked about in household survey (Shanks et al., 2010). In the World Bank’s survey that measured welfare, it included the list of durable household assets, home ownership, land and livestock. In rural Bangladesh Gunnsteinsson, Labrique, West Jr, Christian, Mehra, Shamim, Rashid, Katz and Klemm (2010) measured the economic status/ well-being using wealth and they categorize wealth into four components which are houses/home, land, productive assets other than land (e.g. farming equipment), and durable assets. Wealth may serve the function of supporting present consumption at that particular point in time or reserved consumption for future use. Wealth usually also generates current income, in the form of either services provided to the household, as is the case for owner-occupied dwellings and consumer durables, or a return on the capital invested in financial assets, property for rent, unincorporated enterprises and the like.

As for the overall economy, there are a number of different dimensions of wealth. In this study wealth was viewed as defined by Durand and Smith (2013) where the research concentrated on both financial assets and non-financial assets and how these were influenced by mobile money in rural communities. Wealth provides a relative measure of welfare implying that a household’s wealth can be measured relative to other households in the sample however it fails to provide a quantified level of poverty or well-being (Filmer and Pritchett, 2001).

An asset is, according to Durand and Smith (2013), a store of value representing a benefit or series of benefits accruing to the economic owner by holding or using the entity over a period of time. Depending

on the situation, assets may be financial or otherwise. What characterizes micro is the showing of financial and non-financial assets separately. Non-financial asset is defined as either a produced asset or a non-produced asset that is not a financial claim. The definition of non-financial assets comprised of produced assets and non-produced in which the research concentrated on produced assets in which mobile money has an effect on. Produced assets refer to outputs from production processes and cover: new and existing fixed assets, including consumer durables, inventories and valuables. Fixed assets are assets that are used repeatedly or continuously in production processes for more than one year (e.g. dwellings, other buildings and structures, machinery and equipment, cultivated biological resources, and intellectual property products). Financial asset refers to a financial claim, which is the payment or series of payments due to the creditor by the debtor under the terms of a liability. The standard components of financial assets cover: currency and deposits: bonds and other debt securities equity in own unincorporated enterprises pension funds: these components are explained in detail in the Guidelines for Micro Statistics on Household Wealth (Durand and Smith, 2013).

In this study the variable well-being is being measure in terms of consumption and wealth. These are the main indicator of well-being and they do reflect the standard of living of the targeted population. Income was removed as a measure since it can be viewed as part of wealth and to avoid measuring it twice as firstly it was factored as part of remittances for the rural people and secondly incorporating it as wealth.

H₅: *Usage of mobile money has a lead to improved wellbeing of rural people.*

3.5 Empirical Evidence

Suri, Jack and Stoker (2007) examined the effects of mobile money on household activities. They reported that domestic remittance was an important source of income for most households as indicated by a significant number of households receiving transfers and this had a smoothing effect on risks and shocks of the rural people. They further discovered that users of mobile money (M-Pesa) had additional changes in consumption of food and non-food items as a result of these transfers. They noted that M-Pesa users had more room to reallocate their expenditures which had positive influence on their welfare.

Duncombe (2007) applied the model for understanding information and ICTs within the livelihoods framework in Botswana to gain ICT application for microenterprises. The study was underpinned on previous researches that had estimated a significant number of households in Botswana at the time to be operating business activities on their residential properties. The study found out that over 90 000 microenterprises and these were evenly divided among the urban centres, urban villages and rural villages. In all these communities, there was one common constraint that characterized them, that is,

the lack of access to financial capital. This was attributable the information gap where individuals did not have access to information and this in turn created a barrier to access financial institutions. In general, microenterprise owners lacked the ability to search and access relevant information. The solution to this challenge was found to be in the use of ICTs through improved communication and transparency. The social capital hinged on the social networks, that is, customers were accessible through facilitated localized networks. This prevented these microenterprises from accessing customers or information in wider geographical set up. Duncombe's research identified the use of ICTs as major solution in particular the mobile phone can be used to forge relationships and linkages with formal sources of information. Through the mobile phone these enterprises can search and reach out to a wider market.

Aker and Mbiti (2010) examined the role of mobile phones in economic development. They acknowledged new frontiers of communication ushered in by the use of cellular networks. Actually, they found out that mobile phones have widened the communication network of individuals beyond geographical and national boundaries. They see mobile phones creating the link between individuals in towns and rural villages, individuals within the same village or locality connected together. Their findings indicated dramatic effects in rural Africa as it created a connection not just among individuals but the web that link individuals with markets and services. Access to information about markets and services is greatly enhanced through the mobile phone network. The further found that the network effects of this modern telecommunication infrastructure were so huge in the African set up were previously it was very difficult to exchange information. Communication costs were reduced and consequently producing tangible economic benefits of mobile phone usage. The chain of the effects includes enhanced agricultural efficiency, efficient labour market resulting in consumer well-being. Therefore, there are positive tangible economic outcomes of mobile phone technology use in rural sub-Saharan Africa.

Diga (2008) carried out a case study to determine the buying behaviour of rural households who owned a mobile phone in rural Katote village of Uganda. Of interest was the establishment of whether strategies such as substitution had effect on the welfare of community members. Given the meagre incomes of rural households, they forego some important items and services in their daily lives so as to meet communication costs. The findings from the case study revealed that had long term economic impacts. The rural households realized the potential of the mobile phone to unlock opportunities related to incomes and jobs in the long-run. Rural households see hope in terms of using the mobile phone for productive work and this belief in improved future has forced both the rich and the poor to invest in the mobile phone technology. Diga (2008) further noted that in Africa as well as other developing countries, citizens were investing in mobile phone ahead of their housing, sanitation, water, and health needs. This was driven by the potential of this form of development in enhancing access to jobs and markets. The

mobile phone is seen to be more useful when households are faced with vulnerabilities and unpredictable shocks that drive poverty. This was found true when the mobile phone was used to respond to shocks in a timely fashion, also in reduced travel costs in the event of an emergence, and improved access to information. The study also found some negative effects of mobile phone contrary to the hype on its benefits that has been talked about. These negative effects had to do with critical things such as food so as to maintain the mobile phone. Also the use of mobile phone had a negative effect on well-being due to the use of mobile phone to make unprofitable phone calls. Another challenge related to inequalities or gender imbalance on the usage of the phone in the household, that is, unequal partner control of the mobile phone. The household head maintains the phone usage and hence has control over the phone denying access to other members of the household.

Another study was conducted in Tanzania by Sife et al., (2010) where it was found out that mobile phones contributed to poverty reduction and that they enhanced rural livelihoods. Their findings revealed that they were some notable improvements such as cost reduction associated with doing business and enhanced agricultural productivity of farmers and traders alike. Traders and farmers were now able to access market information about products and prices. Efficiency in communication was also reported especially with regards to information related to business activities. The study concluded that mobile phones contributed immensely to poverty reduction through fast and easy methods communication. Consequently, communication leads to increased access to livelihood assets, better livelihood strategies and better ways of dealing with rural vulnerabilities.

Mbiti and Weil (2011) evaluated the use of M-Pesa in Kenya as well as its economic impacts. Some interesting findings emerged from their study. The main findings indicated that the mobile money service was widely adopted and used by customers in Kenya. In relation to savings their findings showed that mobile money service (M-Pesa) reduced the propensity of users on saving through unorthodox methods like ROSCAs. Customers tended appreciate using the formal methods of banking. The investigators noted that M-Pesa increased the probability of being banked as a consequence of using the service. The service also changed the pattern of remittances users increased the frequency of transferring funds due to the use of M-Pesa. There was also reported increase on the amounts remitted. The findings also indicated that the rate of adoption of the service had partially substituted the formal banking services as a large number of the previously excluded individuals found themselves with access to more affordable, financial service. As alluded in the above discussion, the amount of money saved on M-Pesa were very small amounts. The explanation given could have been that the service did not pay interest on money stored on M-Pesa, therefore users possibly preferred other savings schemes that earned interest on money saved. They suggested the introduction of savings that can earn interest on money held in the M-Pesa account.

Ky et al., (2016) investigated whether the use of mobile money service can help individuals accumulate savings to meet future emergencies. The study was carried out in Burkina Faso. Their findings surprising revealed that mobile money usage did not have any impact on overall savings but that people saved for health reasons/ emergencies. The results indicated that mobile money service increased the ability of the disadvantaged such as the less educated, females, rural individuals as well as individuals with irregular income to save for health emergencies. The explanation of such a behaviour was that it was encouraged by such factors as the perception about mobile money service as being a safe and secure storage place for funds and deposits.

Morawczynski (2009) conducted an ethnographic study in Kenya to assess the adoption, usage levels and outcomes of mobile money service. The service was of its own kind and it experienced phenomenal adoption and growth especially in the southern part of the country. Interestingly, the adoption and usage had a tale of contradictions as the service experienced rapid growth in the southern part of the country where there was overwhelming growth while in the northern part of the country the service was marked with rejection to the point that service providers closed as there were no takers. The major explanation given for this growth of the service was that M-Pesa was adopted due to the fact that it fitted well with the existing social practices of users. The service allowed users to do what they were already doing before the technology was introduced. Prior to the introduction of M-Pesa users were sending money back home to their families as well as practicing informal methods of savings. Hence the technology did not introduce something new from the users' perspective but it brought with it a vehicle that was much safer, cheaper and faster than any of the available existing methods and services. Morawczynski's (2009) study noted that there were some positive effects in the daily lives of the users of M-Pesa. The use of M-Pesa increased the incomes of rural households significantly as noted by the increase in the volume and frequency of remittances and enhanced savings.

3.6 Summary

The theoretical underpinnings of the study were discussed in this chapter by identifying and explaining the major theories supporting the proposition. Literature based impact variables were identified and assessed and hypothesis proposed on each study variable. The next chapter discusses the pathways that mediate between mobile money usage and well-being indicating the related hypotheses.

CHAPTER FOUR

MOBILE MONEY PATHWAYS TO WEALTH

4.1 Introduction

The chapter analyses the major relationships (pathways) that connect the hypothesized study variables. It should be noted that establishing the connection between mobile money usage and asset accumulation does not render itself easy (wealth). This is solidified by Adams Jr (1998) who emphasized the challenge of associating remittances with any changes in household behaviour. However, based on the literature reviewed, the relationship or the effects of mobile money usage on wealth are measured through mediating variables (pathways) that were identified and discussed in the preceding chapter. Therefore, the rest of the chapter is structured as follows: section 4.1 discusses how mobile money remittances directly impact on productivity, section 4.2 presents the effects of remittances on consumption, while section 4.3 discusses the effect of communication on productivity of rural people and section 4.4 predicts the impact of productivity and savings on wealth (welfare) of the rural people. Previous research studies relating to the effects of mobile financial service on the well-being of rural communities were presented as well. The chapter also proposes a structural model that is tested by research data in chapter 7.

4.2 The Relationship between Remittances and Consumption

Rural people have always relied on remittances as their main source of income and these remittances form that crucial part of a welfare system that transfers purchasing power from a relatively richer (relative) to a relatively poor member of the family (Gupta, Pattillo and Wagh, 2007). Remittances play a major role in poverty reduction, smoothed consumption and increased household spending. Jack and Suri (2014) on investigating impact of mobile money observed that remittances smoothen consumption by reducing pressure on sellable crops that would be harvested earlier to finance consumption needs. In the context of this study remittances have been treated as an income stream for the rural people. This is based on the assertion made by Adams Jr (1998) that remittances are comparable to any other cash income. At the foundation of this relationship is the Keynesian theory which states that a rise in income leads to increased consumption. As people become wealthier a wide range of goods and services come within their reach, an indication that income is a determinant of consumption (Beardshaw, Brewster, Cormack and Ross, 2001). The Keynesian theory does not just postulate a relationship between income and consumption, it also includes savings as part of the function, where savings is part of income that is not spent, they represent a proportion of disposable

income that is not spent at household level (Beardshaw *et al.*, 2001). The same conclusion follows that as income increases savings will increase also, an indication that income has a direct bearing on the level of savings by households. In most cases assets are bought when individuals save.

However, there are two theories which have modified the determinants of the Keynesian consumption function which indicated a linear relationship between income and consumption. The two theories are the Friedman's permanent income hypothesis and the Modigliani's life-cycle hypothesis. The permanent income hypothesis explains consumer behaviour by showing that people experience erratic and temporary changes in their incomes from year to year while the life cycle hypothesis takes consumption patterns of households as largely dependent on the wealth and incomes of individuals, i.e. it supposes that people save during their productive years to create wealth that will generate income after retirement. Inevitably, any increase in wealth will also be marked by an increase in consumption, (Mankiw and Taylor, 2014). The two hypotheses attempt to explain the observed variation of actual expenditure patterns from predicted pattern if expenditure was determined by disposable income, (Beardshaw *et al.*, 2001).

Adams Jr (1998) reiterates the challenge of measuring the impact of this income (remittance) on household behaviour, however he notes that the inflow of remittances to the rural areas may lead to expenditure in housing improvements and purchases in livestock. This view is reinforced by Zarate-Hoyos (2004) who further noted that expenditure can also be allocated to savings equipment and home improvements. Previous studies have found that livestock represent a key asset in the portfolio of rural people than any other form of asset though they also seem to be used to finance consumption or investment in human capital like health, education, and nutritional expenditures (Tenaw and Islam, 2009, Gupta *et al.*, 2007, Zarate-Hoyos, 2004, Adams Jr, 1998). In an attempt to explain how access to banking services generates multiple effects to the poverty stricken individuals, Tenaw and Islam (2009) adopted an IFPRI conceptual framework shown on Figure 4.1:

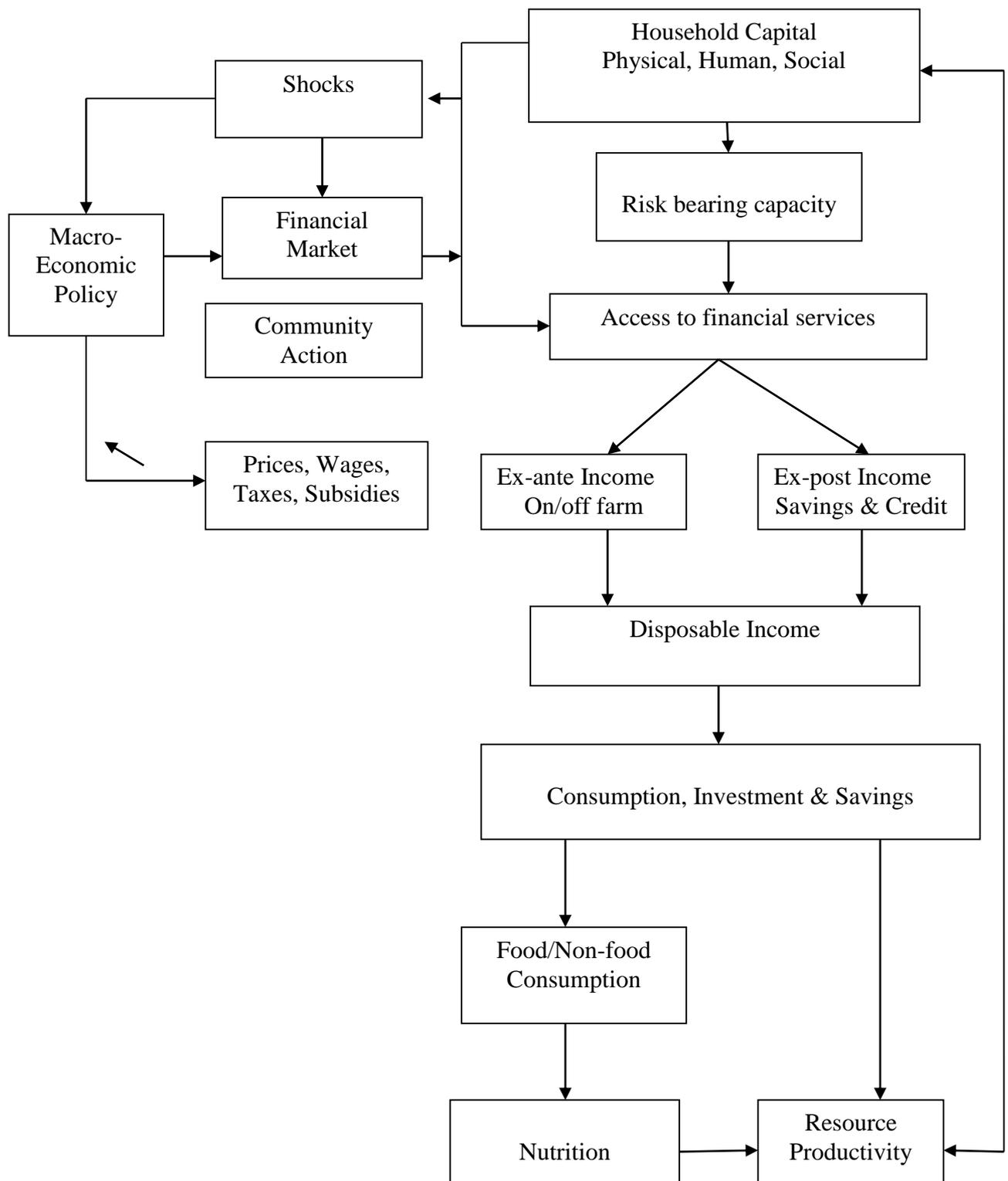


Figure 4.1: IFPRI Conceptual Framework

Source: Tenaw and Islam (2009) Adopted from Conference on social Protection and Poverty IFPRI

The conceptual framework explains the process through which financial services influence income generation, consumption and the accumulation of physical, human and social capital in future periods as shown by linked boxes (processes). Tenaw and Islam (2009), basing on the analysis of the above conceptual framework, observed that access to banking services had a positive impact on consumption. In a study conducted in Mexico, Zarate-Hoyos (2004) concluded that consumption patterns changed significantly to households receiving income in the form of remittances. While Tenaw and Islam (2009) observed the effects of remittances as smoothing on consumption as it decreases the variance of income and consumption and consequently raising the rural poor from poverty. Therefore, the study hypothesis that:

H₆: Mobile money remittances have a positive impact on consumption.

4.3 The relationship between remittances and productivity

Tenaw and Islam (2009) note that the financial service providers have neglected the needs of the rural poor and marginalized due to the high risks associated with the provision of banking services in rural communities. This is also coupled by the fact that a larger share of the rural populace (especially women) in the developing countries rely on informal financial services and almost exclusively on the informal financial markets (Tenaw and Islam, 2009). They further suggest that pulling the rural people of poverty rests on the improvement of the unorthodox financial services sector hence they noted the advent of mobile financial services as a welcome move towards addressing the identified gap. Access to finance was identified as a crucial issue in agricultural productivity in Bangladesh, while lack of financial access inhibited investment and impacted negatively on agricultural productivity (Tenaw and Islam, 2009).

Empirical evidence reveals various points of convergence between remittances and productivity as attested in the study by Adams Jr (1998). The study revealed that those farmers who participated in German bank program achieved higher agricultural productivity than their counterparts who did not participate. Productivity in the case of rural households was related to farm productivity as farming forms the major part of livelihood for rural people.

Similarly Pant (2008) is of the view that remittances have a significant bearing on the economy through various ways. Effects are noted in investment, growth, consumption, poverty reduction and income distribution. Governments therefore must establish structures and institutions that pool or mop up direct investments. In other words, there must be established mechanisms that allow rural people to have access to remittances as these will create positive impacts on the economy through stimulation of demand for goods and services. Tenaw and Islam (2009) underscored the importance of accessible and sustainable rural financial system as a panacea for agricultural productivity and rural livelihoods.

Among the financial services viewed as important for the rural people were secure credit, savings and reliable money transfer services for remittances.

The study by Sekabira and Qaim (2017) explains the relationship between remittances and productivity. Within the rural agriculture context, they developed a conceptual framework/ model that identified impact pathways/ relationships that explain how mobile money use impacted on the welfare of rural households as presented in Figure 4.2.

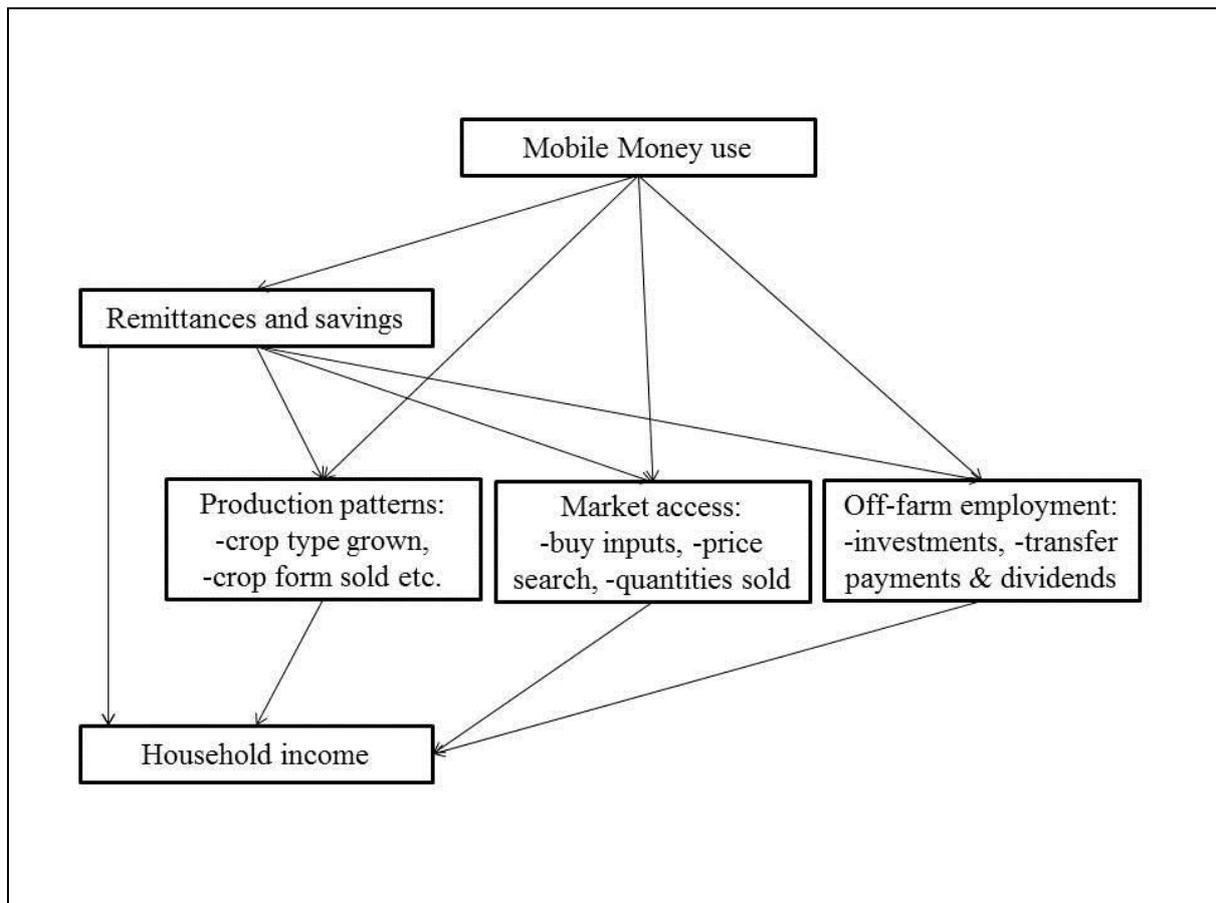


Figure 4.2: Mobile money use and welfare- Conceptual Framework.

Source: Sekabira and Qaim (2017)

In the figure 4.2 above, Sekabira and Qaim (2017) identified production patterns, market access and off the farm activities as important processes of their model. They viewed remittances playing an important role in rural agricultural productivity. Similarly Kikulwe, Fischer and Qaim (2014) reported that mobile money use enabled households to access financial resources in the form of remittances that helped to procure farm inputs. Consequently, the use of inputs increases productivity of farmers. On analysing the remittance expenditure, Zarate-Hoyos (2004) found that the expenditure per household on equipment and machinery was quite high for the remittance receiving household groups in rural

communities. This was a clear indication that remittances were being channelled in productivity enhancing activities. Hence the study hypothesizes that:

H₇: Mobile money remittances have a positive effect on productivity

4.4 The relationship between communication and productivity

Jacob (2014) defines information and communication (ICTs) as technologies that foster communication, processing and transmission of information by electronic means. Ibid identifies the mobile phone as such a tool that has emerged as an important medium of communication as well as a tool for development. It can be noted that this technology has accommodated farmer needs and bridged the gap in livelihood opportunities by providing information sharing coupled with improvements in productivity and quality in agriculture and manufacturing (Jacob, 2014). The main noted mobile phone enhanced services were the short message service (sms) communication, ordering of farm inputs, mobile (time sensitive) money transfers and mobile money payment for services related to agricultural activities (Jacob, 2014). In his study he reported the use of mobile phone by women paying for farm inputs and paying for farm equipment through mobile money system. Tenaw and Islam (2009) further bolsters the above point by indicating that lack of adequate communication technologies (ICTs) impact negatively on the productivity of the rural people as lack of communication significantly hinders productivity.

Mbabazize, Shukla and Kakwezi (2014) complimented the above assertions by indicating that ICTs were a catalyst for information and knowledge sharing that can lead to development opportunities and choices for rural households. They enlisted the benefits of communication in relation to productivity as widened markets, accelerated communication and enhanced access to services. Therefore the use of mobile phone communication has become absolutely requisite in markets, more so for rural agriculture (Vancel, 2012). Mobile phone impacts resonate across the agricultural value chain and livelihoods, markets, input suppliers and by agricultural extension workers (Vancel, 2012). Inevitably, the mobile phone has been of great help to users through mobile financial services (M-Pesa), in the case of Kenya, to receive and pay back loans, to effect transfer of funds, to access remitted funds nationally (Sekabira and Qaim, 2017). Mbabazize et al. (2014) investigated the impact of mobile phones on agriculture and rural livelihoods in Rwanda, their findings pointed out that mobile phone use had positive effect on farmers' access to information and for rural livelihoods financial efficiency was the reported impact. The study most importantly revealed that mobile phone use helped farmers in getting information they needed and accordingly maximizing farm productivity. Therefore, the study hypothesizes that:

H₈: Mobile phone use (communication) has a positive impact on productivity of rural households.

4.5 Empirical Review /Previous Studies

The purpose of this empirical review is to highlight previous studies that have been conducted on the topic and the major findings that have an influence on this study in terms of what has been covered and the nature of the findings. Consequently, the studies will later be discussed with the study findings.

Demombynes and Thegeya (2012) investigated and compared the use of two mobile money products for savings in Kenya; M-Kesho, a bank-integrated mobile savings mechanism launched in 2010, and M-Pesa, a simple mobile money savings system for repository of funds. Their findings revealed that M-Kesho usage remained exclusive to better-off Kenyans while the M-Pesa users showed high likelihood to save using M-Pesa more as a repository of funds than an interest earning savings vehicle. The findings further indicated high mobile money usage.

A case study approach was used by Renteria (2015) to assess the connection between mobile banking and household expenditure in rural Mexico. The results of the research showed that spending on communication and transportation costs can be lowered by mobile banking use. Additional evidence revealed major reductions in spending transformed into savings in bank accounts and consequently promotes financial and digital inclusion in rural communities.

Munyegera and Matsumoto (2016) investigated the relationship between mobile money, remittance and household welfare in rural Uganda. Their findings showed that adoption of mobile money service greatly increased household per capita consumption. Comparison between users and non-users revealed that mobile money users had higher remittances than non-users. Furthermore, mobile money reduced the monetary and opportunity costs that hindered workers from sending money to their villages. The findings demonstrated that there are welfare benefits of access to financial services and consequently reduced poverty through reduction in vulnerability.

Blumenstock, Callen, Ghani and Koepke (2015) carried a field experiment in Afghanistan to determine the extent to which mobile money adoption resulted in measurable changes in the lives of the adopters. They evaluated a mobile money payment program in which individuals from a large firm were transition into receiving regular salaries in mobile money instead of cash basis. The findings showed that there are significant cost savings on the part of the employer while for individual employees there was evidence that the mobile money accounts accumulated balances an indication of savings potential. On the other hand, there was no evidence supporting the impact of mobile money use on individuals' wealth/ well-being.

Kikulwe et al. (2014) analysed the impact of mobile money technology on smallholder farmers' welfare. Using survey data and regression models they revealed that mobile money use had positive impact on

household income through remittances received from relatives and friends. They concluded that mobile money can help overcome market access constraints that obstruct rural development and poverty reduction.

Sekabira and Qaim (2017) examined the impact pathways of mobile money on agricultural marketing and off-farm activities. Using regression models, they demonstrated that adoption and usage of mobile money positively contributed to higher household incomes and consumption levels. Moreover, mobile technology facilitated transaction with buyers outside the region of the household. Similarly, they note a contribution to rural development through these pathways.

Finally, Biscaye, Clark, Harris, Anderson, Gugerty and Anderson (2015) carried out a literature based investigation to show how rural and agricultural financing contribute to poverty reduction and improved livelihoods of rural households. They summarized prevailing studies on the impact of access to financial services on measures of production, income, wealth, consumption and food security for small holder farmers and other rural customers. Their evidence-based literature review suggested positive impacts on consumption, income, and production. They noted that the magnitude of the impact was debatable as they pointed out inconsistencies which affected the generalisability of the findings.

In this study key studies have been identified and summarized in the Table 4.1. The summarized previous studies were discussed above and the summary indicates the author(s), methodology used, sample size, country and the key variables investigated. The last columns indicate their outcomes on the measures. The selected variables are the major variables which are being explored in the present research.

Table 4.1: Summary of the key empirical studies

Citation	Methodology	Sample (N)	Country	Product	Productivity	Income/Wealth	Consumption	Remittance	Savings	Communication
Aker <i>et al.</i> ,(2014)	RCT	1152 Individuals	Niger	Mobile Transfer	M	+	+			
Jack and Suri (2014)	Econometric Analysis	2283 Households	Kenya	Mobile Money			NS			
Kikulwe <i>et al.</i> ,(2014)	Econometric Analysis	320 Household &640 Observation	Kenya	Mobile Money	+	+				
Kirui <i>et al.</i> ,(2012)	Quasi Exp.	379 Households	Kenya	Mobile Money	+	+				

Kirui <i>et al.</i> ,(2013)	Cross sectional	379 Households	Kenya	Mobile Money Transfer	+	+				
Demombynes and Thegeya (2012)	Cross sectional	6083 Individuals 2795 Observations	Kenya	Mobile Money Savings					+	
Renteria (2015)	RCT	945 Individuals	Mexico	Mobile Money					+	+
Sekabira and Quaim (2016)	Panel	480 Household &874 Observations	Uganda	Mobile Money		+				
Blumenstock <i>et al.</i> ,(2015)	RCT	341 individuals	Afghanistan	Mobile Money			NS		+	
Anderson <i>et al.</i> ,(2015)	Literature	424 Studies	Sub-Saharan Africa	Rural Finance	+	+	+	+		
Munyegera and Matsumoto (2015)	RCT		Uganda	Mobile Money		+	+	+	+	
Morawczynski (2009)	Qualitative	350 Interviews	Kenya	Mobile Money		+		+	+	

Source: Adapted from Anderson *et al.*, (2015:10).

Key: +, Positive impact: -, Negative; M, Mixed captures any combination of Positive, Negative, & Non-Significant; NS, Non-Significant result. A blank cell indicates that the study did not measure the outcomes. All significant results are significant at the 5% level or higher.

4.6 Structural Equation Modelling (SEM)

Weston and Gore Jr (2006) defined structural equation modelling as a group of statistical techniques that avail themselves to researchers to test multivariate models. In their opinion, structural equation modelling combines factor and path analysis. In comparison with other methods it can be equalled with quantitative methods like correlation, multiple regressions and analysis of variance (ANOVA) (Weston and Gore Jr, 2006). Multiple similarities of SEM to methods outlined prove that it is a linear model and works with specific assumptions. Common with other techniques is the fact that they don't imply causality but rather causality is determined by the soundness of the underlying theory and research design. In the same manner misusing SEM just like with the other highlighted statistical techniques may be common.

Albeit having similarities between SEM and other statistical techniques, areas of divergence do exist, the main that makes SEM more favourable being that, it is capable of estimating and testing the relationships among the constructs (Weston and Gore, 2006). Allowing investigators to determine construct validity of factors becomes a further difference while the other contrast of SEM with other statistical techniques is that interpreting the significance of SEM results requires researchers to evaluate multiple test statistics and a host of fit indices to determine whether the model accurately represents the relationships among the constructs and observed data.

SEM is thought of as a combination of factor analysis and path analysis, this therefore indicates two primary components: the structural model and the measurement model. These two components are further discussed/ explained in the following sections.

4.6.1 The Measurement Model

This establishes the link between observed variables and the constructs. The measurement model of SEM allows the evaluation of how well the observed variables combine to identify the hypothesized constructs. In order to test the measurement model, the confirmatory factor analysis was used. The hypothesized factors termed latent variables are defined by the measures chosen by the researcher. If the latent variables are properly defined the measures must be strongly correlated. A distinction between formative and reflective measurement model should be undertaken at this juncture to lay the ground for the measurement model for this study. Two types of measurement models used in SEM literature, that is, reflective indicators and formative indicators are enunciated by MacKenzie, Podsakoff and Jarvis (2005).

4.6.2 Reflective indicators versus Formative indicators

Behavioural and organizational literature contains the most common measurement models. The latent constructs are empirically defined within the bounds of shared variance among the observed items. The undeniable mark or feature is the direction of causality that flows from the latent constructs to the manifest variable.” The manifest variable must be highly correlated as they all reflect the same underlying construct. For Mackenzie et al., (2005) they must reflect high levels of internal consistency reliability. In the reflective model, the error is associated with the manifest variable rather than the latent variable as a whole.

The formative measurement model indicates how the manifest variables jointly influence the construct. They are less well known compared to reflective measurement models. In formative measurement

models, the measures give meaning to the latent construct. They do not have to be correlated as they tap different facets of the construct domain (Mackenzie, et al., 2005).

Edwards (2012) noted that the distinction between reflective and formative measures is observable when one compares their measurement models. Reflective measures are displayed as outcomes of latent variables while in formative measures the constructs show the magnitude of the effects of the construct. A comparison of reflective and formative measurement models by (Edwards, 2011) was based on certain features that will consequently help the researcher to decide on whether measures should be specified as reflective or formative. The comparison was based on the features such as dimensionality, internal consistency, causality, identification, measurement error and construct validity. The identified features were clearly articulated by Edwards (2011).

On dimensionality, Edwards (2011) emphasized that reflective measures were thought of as representing a single dimension as measures tend to describe the same construct. Further, he noted that these measures are conceptually interchangeable as they describe the same dimension. In other words, they show deliberate duplication of the same variable. On the other hand formative measures describe different facets of a construct. Each measure describes different aspects of the construct. In formative measures redundancy in measures is undesirable and should be avoided at all. He noted that by eliminating a formative measure one will be removing a certain aspect of the construct variable.

Edwards (2011) argued that on internal consistency, reflective measures must correlate positively as they tend to measure the same aspect of the construct. They are viewed as alternative indicators. In contrast, formative measures do not show internal consistency as they represent different aspects of the construct. There is no need for correlation in formative measures, if correlation exists then there must be a problem of multicollinearity in regression terms.

Another comparison feature used by Edwards (2011) between reflective and formative measures was in terms of measurement model identification. In reflective measurement models, the model is identified if it has a minimum of 3 and for items more than 3 the measurement model is said to be over identified. Where as in formative measurement models it is not identified, thus for it to be identified it needs to be added two or more reflective measures.

Measurement error is another feature that can be used to distinguish reflective measures from the formative measures. This is done by observing how the measurement models accommodate the error terms. For reflective measurement model, the error term is incorporated on each measure while in the formative measurement model the error term is added not on the measures but to the construct itself. However, the Edwards (2011) finds it difficult to understand the assumption why the formative measures are said

to have no error given the basic premise that these are mere scores gathered through such methods as observation, questionnaires and interviews. He argues that, generally, information generated by these methods has imperfections associated with the failure to correctly interpret, technical problems, coding errors and other problems associated with the measurement process. As such researchers must incorporate the measurement errors when analysing and interpreting such measures despite the type of measurement method used. Given the above noted observations, disregarding the error item results in biased estimates of the factor loadings. Consequently, the failure of formative measurement models to capture the measurement error, they fail to exploit one of the key benefits of structural equation modelling (Edwards, 2011).

Construct validity for formative measures varies markedly from reflective measures (Edwards, 2011). In reflective measures construct validity borders on the extent to which the measures reflect a construct. The assertion is in line with the generally accepted definition of construct validity where a measure is treated as an indicator of a construct (Nunnally, 1978, Edwards, 2011). Edwards (2011) asserts that empirically, the harmony between a construct and its indicators is shown by the magnitude of the factor loadings to the construct. In reflective measurement models the significance of these factor loadings is determined by the covariance of the measures. In formative measurement models construct validity has been addressed in different ways where in some instances it is seen as the strength of the relationship between the measures and the construct (Mackenzie et al, 2005). Where as in other cases it is assessed according to the percentage of variance in the construct associated with the residual value (Podsakoff, Shen and Podsakoff, 2006, MacKenzie et al., 2005).

However, Edwards (2011) notes a number of drawbacks in relation to the approaches used to assess construct validity. Among the significant drawbacks was that estimates of parameters used as proof for construct validity are hypersensitive to the outcomes used to identify the model. Mackenzie et al., (2005) noted that another drawback of formative measures related to the fact that formative measures are conceptually independent and therefore they are not expected to show some relationships with the outcomes of the formative constructs (Podsakoff et al, 2006).

Causality was another key feature used to differentiate reflective measures from formative measures. This is perhaps regarded as the most important distinction (Edwards, 2011). In reflective measurement models constructs are graphically shown as causing measures and the construct actually determine the measures to be used. Therefore, any modifications on the construct will likely have a resultant effect on the measures (Edwards, 2011).

On causality some researchers have shown that measures establish the construct in formative measurement a view propagated by Podsakoff *et al.*, (2006) and Mackenzie *et al.*, (2005) also characterize formative measures as causal. However, some researchers were silent on making such causality claims since they do not attach the causal meaning to the concept *cause*’ other than to just imply that the indicator determine the construct (Edwards, 2011). In reflective measurement models, measures are thus viewed as having the capacity to influence one another based on the theoretical framework that guided the research. On the other hand, the formative measurement the construct is described as an entity that does not exist on its own but as part of its measures as defined by Mackenzie *et al.*, (2005). The measures together explain the construct and therefore they are not viewed as latent constructs but as composite variables. Edwards (2011) notes problems arising from the treatment of constructs that are composed of measures as it does not make sense to treat such relationship between the said constructs and measures as causal as they are considered as one and the same.

Therefore, given the limitations of formative measurement extensively elaborated above, it lends one to the conclusion that formative measurement models are not to be used. Consequently, based on the arguments presented above, this study adopted the reflective measurement model. The formative measurement was demonstrated as a measurement model not viable as an alternative of reflective measurement model. Edwards (2011) encouraged management researchers to develop measures and models that capture multiple dimensions of complex concepts.

4.6.3 Structural Model

This model is characterised by a set of equations that specify the hypothesized relationships among the latent variables (Weston and Gore, 2006). The relationships among the latent variables can be covariance, direct effects or indirect effects, “co-variances are similar to correlations in that they are defined as non-directional relationships among independent latent variables.” They are normal not specified with double headed arrows in the model (Weston and Gore Jr, 2006).

Direct effects are relationships among the measured and latent variables similar to those used in ANOVA and multiple regressions. Their pictorial representations are single headed directional arrows in the structural model. An indirect effect is the relationship between the independent latent variable that is mediated by one or more latent variable(s). This mediation may be full or partial. A model by definition is a statistical statement expressed in equation form or through a diagram (Hoyle, 1995). Latent variables (unobserved) are diagrammatically represented by ellipses while rectangles represent measured variables (observed) also called manifest variables or just indicators.

4.6.4 Covariance Based SEM versus PLS-SEM

Two types of approaches to structural equation modelling have been identified and discussed by different authors. The two types are the Covariance Based (CB) approach and the Partial Least Squares (PLS) and are thus referred to as CB-SEM and PLS-SEM (Hair et al., 2012). The two approaches originated with Joreskog and Wold (1982). Much of the work was part of Joreskog's research and he was supervised by Wold. Hair, Sarstedt, Ringle and Mena (2012) observed that the use of CB-SEM was prevalent in many study disciplines while the use of PLS has received less attention from researchers. There are many reasons that have been given for the non-use of PLS –SEM. Some of the reasons included the need for researchers to make choices that if not properly made will lead to wrong results, interpretations and consequently lead to wrong conclusions (Hair et al, 2012). Many studies have made a distinction between CB-SEM and PLS-SEM. Hair, Sarstedt and Ringle (2011) note that CB-SEM aims at minimising the discrepancies between the estimated model parameters and the estimated covariance matrix while PLS-SEM aims at increasing or maximising the explained variance of the latent constructs. The other distinctions that will be discussed later in this section relate to fact that CB-SEM has limited applicability in formative measures and other specific given circumstances. On the other hand, PLS-SEM can handle both formative measures and reflective measures. The major reason why PLS-SEM is gaining application is that it is less affected by model misspecification in complex models a situation that has limited the applicability and usage of CB-SEM (Hair et al., 2012).

They further elaborate that the whole idea is not about CB-SEM versus PLS-SEM but these approaches must be seen as complimentary methods. The weaknesses of one approach are actually the strength of the other and vice versa (Hair et al., 2011). When viewing the two approaches there is no superiority of one method over the other but rather investigators must choose the approach that will serve their research objectives, data features or assumptions and model set up. PLS-SEM is preferred in situations where the sample size is small but it can still handle large sample sizes while CB-SEM is favoured when dealing larger sample sizes (Hair et al, 2011). PLS based SEM achieves higher statistical power when compared to CB-SEM as it relies heavily on OLS regression analysis.

When the model has formative measures, CB-SEM can only be applied when certain conditions are met while PLS-SEM can handle both formative and reflective measures. The ability to perform the two approaches without any challenges emanate from the fact that PLS SEM is less sensitive to model identification challenges. Hair et al., (2012) observed that complex situation constrains the usage of CB-SEM and this where PLS-SEM becomes more useful. There are several concerns that have been raised over the use of PLS-SEM. The major limitation of PLS-SEM is that it cannot factor in sample distribution assumptions (Hair et al., 2012) and this implies that researchers cannot rely on inferential statistics. This affects the generalisability of the findings and most importantly it affects the conclusions

of the study. Another limitation of PLS-SEM is the inability to measure the global fit for the overall model and hence its limitation for use when testing a theory and contrasting the competing model structures (Hair et al., 2012). Another concern related to the use of PLS-SEM has to do with the lack of optimal parameter estimates with regards to consistency and bias, that is, PLS-SEM bias (Joreskog and Wold, 1982).

Hair et al., (2012) evaluated a number of empirical studies that used PLS-SEM for their data analysis procedures. Their evaluation was based on six important issues and misapplications. These six were comprised of: the reporting approach; the inner model evaluation; the outer model evaluation; model characteristics; data characteristics and the objectives (reasons) for using PLS-SEM.

On the reasons for using PLS-SEM Hair et al., (2012) noted that many researchers indicated that they were justifying their use by way of explanations why they were choosing PLS-SEM over the CB-SEM approach. The most reason that came out from the evaluation of empirical studies had to do with data characteristics such as the ability of PLS SEM to perform an analysis even when data did not satisfy the normality assumptions. That is whereby data did not meet the normality assumptions. The issue of sample size was also cited as the reason for using PLS-SEM. Another data characteristic as reason of its use gleaned from the studies was related the type of measures such as formative measurement models. The review and evaluation revealed that most researchers gave as a reason the ability of PLS-SEM to easily handle formative measures, that is, PLS-SEM was more flexible than CB-SEM. Some studies justified the use of PLS-SEM on the basis of their research objectives, for example if the research objective required the explanation of dependent variables, which is closely associated with exploratory studies therefore it became a plausible reason for using PLS-SEM.

Exploratory studies are more consistent with theory development and where there is a weak theory but very rich data the use of PLS-SEM become justifiable. Lastly on the reasons for using PLS-SEM, it was on the basis of its ability to with stand complex models and the use of categorical constructs.

The use of data characteristics to justify the selection of PLS-SEM identified a number of factors that influenced its use. One such issue that came out from the previous researches research was sample size. Hair et al., (2012) noted that besides researchers having indicated that they chose PLS-SEM on the basis of its ability to handle analysis with small sample sizes, they found out that on the contrary their sample sizes where very large. The sample sizes ranged between 2000 and 16000 observations. These sample sizes were atypical of PLS-SEM, however some studies had sample sizes as small as 18. Hair et al., (2012) reiterates the rule of thumb on PLS-SEM, that is, the sample size must be ten times the number of paths in the model arguing that it gives a rough guideline on the minimum sample size. It was noted

that most of the researchers were conversant with the sample size requirements for PLS-SEM based analysis models.

Hair et al., (2012) note that a number of previous studies have identified the types of scaled variables that can be used with the PLS-SEM. The scales comprised of ratios; nominal data; ordinal data; as well as interval data. Most studies reported using categorical data though literature discourages the use of categorical scales due to the fact that the general procedures for applying linear equations does not support the application of categorical variables.

Using the model characteristics Hair et al., (2012) evaluated a number of previous studies to ascertain how they applied PLS-SEM. Their assessment showed that the mean score of latent variables in PLS-SEM were generally high ranging from six to eight variables compared to about at most 5 latent variables that can be used in CB-SEM. They identified the types of models that can be found in structural equation modelling. These models were balanced; focused; and unfocused models.

Focused models: these are the models regarded as those models with a few number of dependent latent constructs which are explained by many independent latent constructs. As a rule of thumb the number of independent constructs must double the number of dependent construct.

Unfocused models: - the type of model is defined as a model with many dependent latent constructs and mediating constructs with a few number independent latent variables. Again the number of dependent latent constructs is at least double the number independent constructs.

Balanced model: - this type of a model is found in the middle of the two previous models discussed above. This case implies that the number of dependent latent variables and that of independent latent construct is balanced. Hair et al., (2012) suggests that PLS-SEM favours focused and balanced models as these types of models enhance the predictive goal of PLS-SEM. On the other hand, focused models advance the goals of CB-SEM. On their evaluation of previous researches, Hair et al., (2012) concluded that there seem to lack of understanding and knowledge of the nexus between the type of the model and PLS-SEM's predictive nature.

Hair et al., (2012) further assessed the studies on the basis of the reliability validity of the individual indicators. These are referred to as the outer model evaluation indicators. The reliability of measures refers to the internal consistency of the indicators while validity of measures (convergent and Discriminant validities) assess how valid are the scales, that is, do the scales measure what they intend to measure? When assessing the outer model indicators, it is important for investigators to make a distinction between reflective and formative measurement models. With regards to the Cronbach's

alpha and composite reliability, these are meant to be used to assess reflective items and they are irrelevant for formative measures. Hair et al., further point out that convergent and discriminant validities were not relevant to empirically evaluate formative measures using these outer models.

Reflective outer models- for reflective measures the evaluation of the outer models comprises of establishing indicator reliability, internal consistency reliability, and convergent validity measure through the average variance extracted (AVE) and discriminant validity. These outer models are measured in through squared standardised factor loadings and the use of cross-loadings a criteria advanced by Fornell and Lacker (1981).

Formative outer model- hair et al., note that many researchers inappropriately use reflective outer models approaches for formative measures. They observe that this error is prevalent in many studies (using the reflective methods for formative measures). On outer model evaluation the authors reached to a disturbing observation where they noted that many studies did not report reliability and validity as a result this can lead to biased findings and conclusions.

While the outer model evaluation is intended to give proof of reliability and validity of the measures, an assessment of the outer model is also required. When evaluating the inner model of primary concern is the use of the coefficient of determination, the R square value (R^2). R square provides the amount of variance explained for every dependent latent construct. When assessing the inner model, the criteria used the following: the dependent variable's amount of variance explained; the effect size; the predictive relevance; overall global fit measures, path coefficient measures through the absolute values and the significance of path values (Hair et al., 2012).

The last aspect of model evaluation is reporting. In reporting SEM findings in empirical research, it is important to that researchers give readers enough information about their results so as to allow replicability of the results. The reporting does not follow the method being used, be it PLS-SEM or CB-SEM reporting must be adequate Hair et al., 2012). For PLS-SEM based studies have to report on population and sampling procedures, sample distribution. Studies must report on inner and outer model evaluation. This entails reporting for both the measurement model and the structural model as well. There should be adequate interpretation and discussion of the research findings. All the technicalities related to the analysis including the software parameter setting must be reported. This is important because different types of software have different settings. Hair et al concluded that there is evidence that researchers, reviewers and editors were not familiar with PLS-SEM despite its growing use in marketing and management researches. The situation is made worse by the lack of textbooks in PLS-SEM as there are no multivariate data analysis textbooks and the existing ones do not cover PLS-SEM.

4.6.5 Choosing between CB-SEM and PLS-SEM

The difference between CB-SEM and PLS-SEM is simple and straight forward (Hair et al., 2011) and these are elaborated in this section in detail. CB-SEM is an approach related to testing and confirming the theory while PLS-SEM is associated with studies that desire to predict and or to develop a theory. Hair et al., (2011) advanced that PLS-SEM is very much similar to multiple regression analysis. The method's main aim is the maximisation of the explained variance in endogenous variables. PLS-SEM is viewed as a more flexible approach that can handle varying sample sizes, it has few assumptions about data and its ability to manage a wide range of problems, and hence it is preferred over CB-SEM approach. Another important distinction between the two approaches is that PLS-SEM can handle an analysis with few items in the measurement model a situation that is deemed impossible when using CB-SEM. Therefore, the measurement model is another distinguishing feature between the CB-SEM and the PLS-SEM approach.

Another distinction is in the analysis as a whole, where CB-SEM provides weak results for the measurement model but however it has very important structural model relationships. The opposite is true for the PLS-SEM analysis. Some arguments have been put across on the differences based on the measurement and the structural models to the effect that if in PLS-SEM good measures are used and then in CB-SEM controls on specification biases are included then the same results can be achieved from both models.

A number of disadvantages of PLS-SEM have been identified as well. PLS-SEM is said to be emphasizing on optimising the measurement model parameters then later on estimates path coefficients of the structural model. The major weakness of using PLS-SEM relates to the inadequacy of the global fit indices (measures) when one wants to confirm and test theory. Another challenge of PLS-SEM is the lack of optimal estimation of bias and consistency.

The other feature that distinguishes the two approaches has to do with the statistical power. PLS-SEM can be used in situations where CB-SEM assumptions have been violated. Hair et al., (2011) note the assumptions to include the normality of the sample distribution, minimum sample size, the Heywood cases, model complexity and when the standard error is inflated. Table 4.2 summarises the guidelines or the rules of thumb on selecting the best SEM approach.

Table 4.2: Selection between CB-SEM and PLS-SEM

Criterion	Description
Research Objectives	<ul style="list-style-type: none"> -If the objective is to predict a major variable or identify the main effects choose PLS-SEM - If the objective is that of testing or confirming a theory or comparison of theory then you choose CB-SEM. -If the research is exploratory in nature you use PLS-SEM.
Measurement model specification	If formative measures are part of the model either of the two models, however if error terms are specified use CB-SEM.
Structural Model	<ul style="list-style-type: none"> -For complex models comprising of a number of variables and items PLS-SEM can be used over CB-SEM. -For non-recursive models use CB-SEM.
Data Characteristics and Algorithm	<ul style="list-style-type: none"> -if data meets all the CB-SEM assumptions like sample sizes and sample distribution use CB-SEM otherwise use PLS-SEM. -If sample size is very small use PLS-SEM. -If sample size is large then both approaches can be used. -if data are non-normal use PLS-SEM otherwise use CB-SEM. When data is normal CB-SEM provides more precise and accurate estimates. <p>However, the results of CB-SEM and PLS- SEM must be similar if not then there is need to check model specification for CB-SEM. this could mean that the model was mis-specified.</p>
Model Evaluation	<ul style="list-style-type: none"> -If the research requires the global fit criterion use CB-SEM. - if there is a requirement to check for the measurement model invariance use CB-SEM. <p>If there is the need to use scores of latent variables in later analysis then PLS-SEM will be the best approach.</p>

Source: Hair et al., (2011)

4.7 Proposed Structural Model

Building upon the preceding models and the factors that affect the livelihood strategies of rural poor and the possibility of providing financial services to the poor through mobile phones and the review of related literature, formulation of a structural model was undertaken. The model involves emission paths to four reflective constructs knowledge, remittances, productivity and savings all impacting on economic well-being as indicated in Figure 4.3.

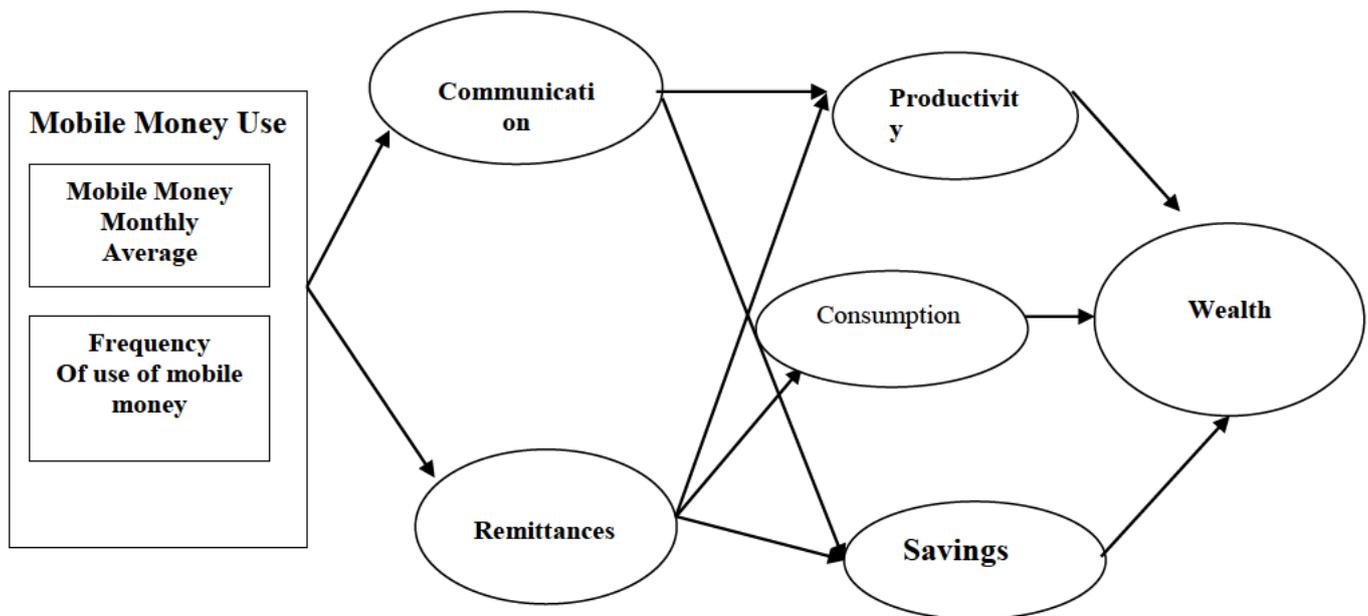


Figure 4.3: Proposed Structural Model

Source: Developed by Author

Figure 4.3 shows a proposed model that suggests that usage of mobile money leads to improved economic well-being of rural people through better communication, improved remittances and enhanced savings. Economic well-being that depends on mobile money usage while mediated by constructs, remittances, productivity, savings and consumption, is an endogenous variable.

4.8 Summary

The chapter reviewed the relationships mediating between mobile money usage and the well-being of rural people. A summative framework of empirical studies covered so far and the proposed model that is validated by empirical data was done. The next chapter therefore presents the methodology used to gather data for the study.

CHAPTER FIVE

RESEARCH METHODOLOGY

5.1 Introduction

The previous chapter reviewed related literature and exposed the study gap. This chapter explains the different kinds of research paradigms and identifies the research philosophy chosen for this study, research design, study population, sampling procedures, research instruments, data collection procedures, validity and reliability and data analysis procedure. Antwi and Hamza (2015) remarked that all research was based on philosophical assumptions about what entails a valid research and the appropriate methods for development of knowledge in the research being undertaken. The chosen methodology depends on the research paradigms used, as different research paradigms will therefore produce different kinds of knowledge about an industry or an organization, (Bryman, 1984). In addition, Danty (n.d.) noted that the chosen paradigm impacts on the methods of data collection and analysis, and the kind of knowledge produced. Therefore, the next section discusses the research paradigms.

5.2 Research Paradigms

Antwi and Hamza (2015) traced the origins of the term ‘paradigm’ from the Greek word ‘paradeigma’. They note that the term was first used to denote a conceptual framework shared by research scientists providing them with a model for investigating problems and finding solutions. Bryman and Bell (2015) defined a research as a set of beliefs that dictates what should be studied and how the research can be conducted. Creswell (2013) simply referred research paradigms as ‘worldviews’ to undertaking research. Moreover, Scotland (2012) explored the philosophical underpinnings of research and noted that a research paradigm consists of four components namely, ontology, epistemology, methodology and methods.

Crotty (1998) sees ontology as the study of ‘being’ while Scotland (2012) further says it constitute reality or the question ‘ what is’. He emphasizes the point that research need to take a position in terms of their perceptions of how things really are and how they work. While epistemology is concerned with the nature and forms of knowledge and the assumptions are concerned are concerned with how knowledge can be created, acquired communicated (Scotland, 2012). Lincoln, Lynham and Guba (2011) highlight that epistemology asks the questions like ‘what it means to know and the relationship between the knower and what can be known’. Methodology is a strategy which lies behind the choice

and use of particular methods, (Crotty, 1998). The last component of a research paradigm is ‘methods’ defined as the techniques and procedures used to collect and analyse data (Crotty, 1998). Creswell (2013) identified the commonly discussed research paradigms in literature as positivism, interpretivism, critical theory and pragmatism and these are briefly discussed in the following sections.

5.2.1 Positivism

This is the traditional view or form of research philosophy advanced by the 19th century authors like Comte, Mill, Durkheim, Locke, and Phillips and Burbles (Creswell, 2014) . It holds a deterministic philosophy where causes determine effects or outcomes i.e. the problems understudy reflect the need to identify and assess the causes that influence outcomes. It is a reductionist philosophy in that the intent is to reduce ideas into a small, discrete set that test variables that comprise hypothesis and research questions. In this paradigm, the researcher begins with a theory, collects data that either supports or refutes the theory and then makes necessary revisions and conducts additional tests (Creswell, 2014).

Creswell (2014) identified the key assumptions of positivism as that firstly the proof espoused in this research approach is not always perfect and is subject to human errors. Therefore, researchers are to indicate that they not proving a proposition/ assertion instead they must state that they fail to reject an earlier made proposition. Secondly, research is a process of making claims and then refining or abandoning some of them for other claims that are more strongly warranted . Thirdly, data, evidence and rational considerations shape knowledge. Fourthly, the research seeks to develop relevant true statements that can serve to explain the situation of concern or that describe the causal relationships of interest. Correlation and experimentation are used to reduce complex interactions. The fifth and last assumption of positivism is that being objective is a crucial aspect of competent investigation. Therefore, researchers must examine methods and conclusions for bias and standard of validity and reliability are important in quantitative research. Scotland (2012) noted that positivism uses methods that generate quantitative data and data analysis involves descriptive and inferential statistics. Inferential statistics allow results to be generalized to populations (Creswell, 2014).

5.2.2 Interpretivism

Antwi and Hamza (2015) observe that interpretivism is underpinned by observation and interpretation. They further explain that to observe is to collect information about events, while to interpret is to make meaning of that information by drawing inferences or by judging the match between the information and some abstract pattern. It is a worldview that tries to understand the world from subjective experiences of individuals (Creswell, 2013). It uses meaning oriented methodologies, such as interviewing, participant observation, that rely on a subjective relationship between the researcher and the subjects. The approach does not establish research constructs as exogenous and endogenous instead

it looks at the whole challenge of human beings' ability to understand circumstances as they emerge. The main focus of the approach is to elaborate on the subjective reasons and meanings that surround a social action (Antwi and Hamza, 2015). Mackenzie and Knipe (2006) argue that interpretivists tend to rely upon the 'participant's' view of the phenomenon being studied and "recognize the impact on the research of their own background and experiences as reality is socially constructed. It does not begin with a theory rather they generate/ develop a theory of patterns of meanings (Creswell, 2014).

5.2.3 Transformative Paradigm/ Critical Theory

The paradigm arose in the late 80s as the proponents felt that positivists and interpretivists researchers did not adequately address the issues of social injustice and marginalized (Creswell, 2014, Mackenzie and Knipe, 2006). Creswell (2014) observes that there is no uniform body of literature characterizing this worldview but it includes group of researchers that are critical theorist, Marxists, feminist, racial and ethnic minorities, persons with disabilities, indigenous and post-colonial peoples, and members of the lesbian, gay, bisexual, transsexual and queer communities. The research contains an action agenda, as they felt that positivists and interpretivists did not go far enough in advocating for action agenda to help marginalized peoples (Creswell, 2014). The key features of transformative paradigm are that, firstly it places central importance on the study of lives and experiences of diverse marginalized groups. Secondly it focuses at inequities based on gender, race, ethnicity, disability, sexual orientation and socio-economic class that result in asymmetric power relationships. The third and last feature of transformative paradigm is that it links political and social action to these inequities.

5.2.4 Pragmatic Paradigm

Creswell (2014) observed that this paradigm arises out of actions, situations and consequences rather than antecedent conditions. Instead of focusing on methods, researchers emphasize the research problem and use all approaches available to understand the problem. It does not anchor on any one system of philosophy and reality. Individual researchers have freedom of choice, that is, researchers are free to choose methods, techniques and procedures of research that best meet their needs and purposes. They note that truth is what works at the time.

5.2.5 Research Paradigm for this study

Saunders et al., (2014) acknowledges the ongoing debate among the research philosophers. The debate borders mainly on two research philosophies, that is, either positivist or interpretivist research paradigm. They further argue that pragmatist do not regard as important whether one philosophy is superior to the other or not, however the research question determines which approach to adopt. If the research questions are unambiguous, clear and do not suggest either a positivist or interpretivist, then pragmatism will be the best approach. This implies a combination of the two approaches. The approach entails using

the two methods, qualitative and quantitative approaches within a unitary study. This allows the researcher to view the adopted philosophy as a continuum rather than seeing two opposing sides. Takkashori and Toddle (1998) argued on the merits of pragmatism as more appealing due to the fact that it avoids researchers engaging in debating about issues constituting what is truth and reality. Rather they contend that a researcher must study what is of interest and value to him/ her. The use of different approaches deemed appropriate by the researcher will bring about positive results. Therefore, given the above arguments the study adopted a pragmatist paradigm and then used mixed methods approach in carrying out the study. The merits of the approach are explained in the following methods sections in this chapter.

5.3 Research Methods

For a very long time research methods have been dichotomized into two categories, that is, qualitative and quantitative research approaches (Newman and Benz, 1998). However, some researchers have gone beyond the polarized position hence the emergence of the mixed methods approach (Leech and Onwuegbuzie, 2009, Newman and Benz, 1998).

Qualitative research refers to methods that provide a description of events, situations, interactions and include such methods as ethnographic studies, case studies, field studies, document studies, interviews and personal experiences (Newman and Benz, 1998). The research designs in such studies emanate from traditions in anthropology and sociology. The research philosophy of qualitative studies tends to emphasize on the phenomenon being studied that is, describing the phenomenon for the people and their culture. The focus of such investigations is a single unit, a subject or case study over a long period of time. Qualitative research is applicable when observing and interpreting reality with the goal of developing a theory to explain individual experiences.

Quantitative research methods on the other hand fall under the empirical studies category or studies that use statistical techniques for measuring and analysing problems (Newman and Benz, 1998). They include experimental studies, quasi-experimental studies and other methods that emphasize on valid and reliable measures that allow results to be generalized to the larger population. Quantitative research methods are applicable in situations where the researcher begins with a theory in order to test it either to confirm or disconfirm a hypothesized theory (Newman and Benz, 1998).

Qualitative research approach is philosophically rooted in the natural and positivist views. It tends to reflect some individual phenomenological perspective while quantitative research emphasizes on common reality on which people can agree. Qualitative researchers believe in seeing existing multiple realities and interpretations coming from different individuals and they see reality as a social construct

(Newman and Benz, 1998). The major bone of contention between qualitative and quantitative protagonists emanate from the differences in assumptions about what constitutes reality and whether it is or not measurable. However, the either-or world is fast disappearing as observed by Newman and Benz (1998). They argued that the use of the dichotomy to classify research was premised on faulty ground. They proposed the use of a continuum where a research can begin with a qualitative approach and ends with a quantitative approach. In this scenario the qualitative methods inform the foundational strategies that are likely to be followed by quantitative methods (Newman and Benz, 1998). Authors such as Teddlie, Creswell, Leech and Onwuegbuzie, Johnson, Onwuegbuzie and Turner and many others have termed this new bridging development 'mixed methods' approach.

Mixed methods approach is broadly defined as a method of inquiry to knowledge that seeks to consider multiple viewpoints, positions and research positions that always embrace viewpoints of qualitative and quantitative research (Johnson and Onwuegbuzie, 2004, Johnson, Onwuegbuzie and Turner, 2007). Johnson et al., (2007) observed that mixed methods approach is a synthesis of ideas that combine ideas from qualitative and quantitative research. They position mixed methods between the extremes of Plato (quantitative) and the Sophist (qualitative). They valued and respected these viewpoints but they however proposed a workable middle viewpoint in solving research problems. Prior to the use of the term 'mixed methods', many other terms had been coined by contemporary researchers, terms such as multiple operationalism, multi- method research, critical multiplism and integrative research. However, the term mixed methods have gained more popularity than its preceding ones. Mixed method approach is more appealing to social sciences than in other disciplines.

Mixed methods approach has many branches that a researcher can choose to use for research design. Teddlie and Yu (2007) identified three types of mixed methods as follows:

Firstly, there is sequential mixed method-this approach allows the results of one approach to be employed in the next phase of the same research project. The approaches can either QUAN-Qual mixed methods or QUAL-Quan mixed methods. In the former QUAN influences the subsequent qualitative methodology, while in the later, QUAL influences the quantitative methodology. *Secondly*, there is the concurrent mixed methods- this approach allows researchers to triangulate their findings from different QUAL and QUAN components. The purpose of this is to confirm or corroborate research findings. *Thirdly*, there is multilevel mixed methods- this approach is associated with organizational studies where different units of analysis are nested within the other. Therefore, in these studies investigators are more interested in answering questions related to the nested units and their interactions.

There are many variations of these typologies and they each depend on the authors. Johnson et al, (2007) developed a continuum that can be used to classify types of mixed methods as depicted in Figure 5.1.

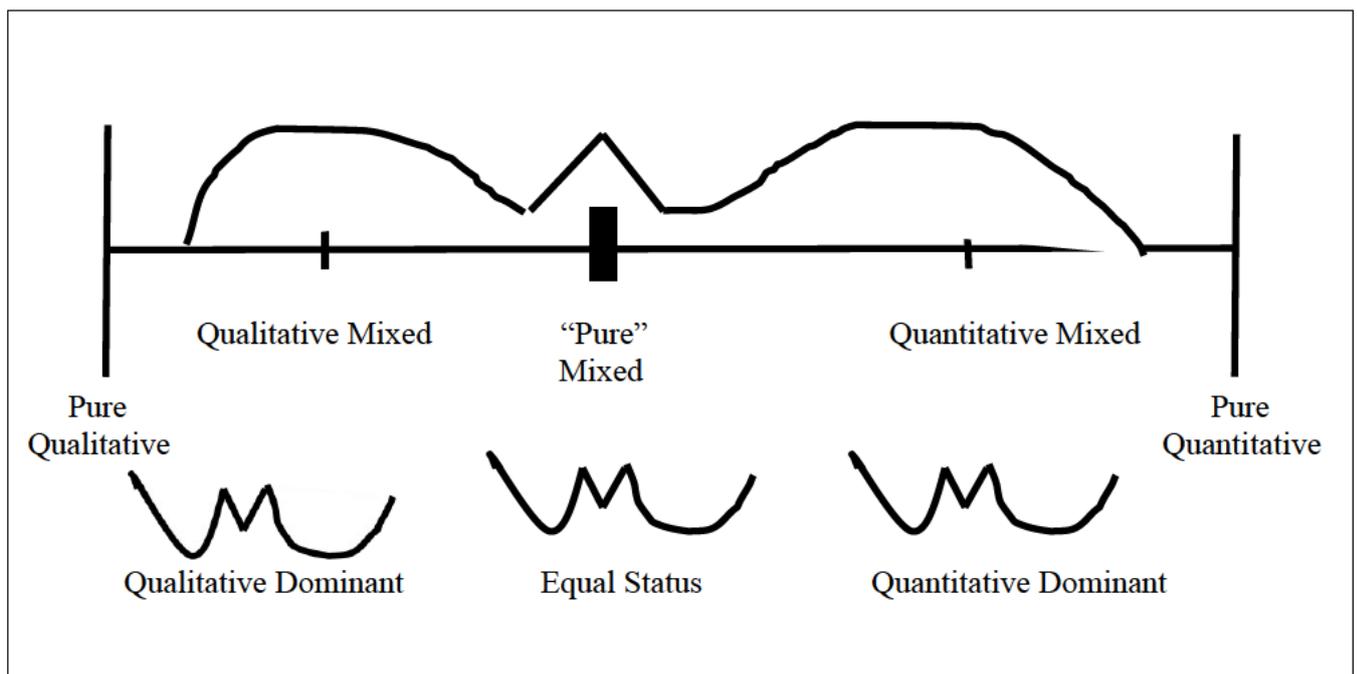


Figure 5.1: Qualitative-Quantitative Continuum

Source: Johnson *et al.* 2007

The quantitative dominant status is a type of mixed methods that relies on quantitative, post-positivist view of the research process while concurrently recognizing the importance of qualitative data, and approaches that will benefit the research project. The qualitative dominant status is another type mixed methods research in which one relies on qualitative, constructivist-poststructuralist-critical view of the research process while taking cognizant of the additional quantitative approaches. The area under equal

dominant status is the home for those researchers who identify themselves as mixed methods research. The importance and relevance of mixed methods researched cannot be overlooked. There are so many justifications for using mixed methods research, the major ones being participant enrichment, instrument fidelity, treatment integrity and significance of enhancements, that is, facilitating thickness and richness of data, augmenting interpretations and usefulness of research findings. The next section therefore discusses how the mixed methods research was employed in this study.

5.4 Research Design

The study employed a mixed methods approach given the complicated nature of the relationship between mobile banking, livelihoods and poverty (Sife et al., 2010). Similarly, mixed methods approach is further defined as ‘research method that involves collecting, analysing and interpreting quantitative and qualitative data in a single study for the broad purposes of breadth and depth of understanding and corroboration’ (De Lisle, 2011, Leech and Onwuegbuzie, 2009). The study employed a partially mixed sequential dominant design. Quantitative and qualitative approaches were employed contemporaneously, with the quantitative methodology dominating (De Lisle, 2011, Leech and Onwuegbuzie, 2009). The quantitative approach was used for the overall research design of the study whereas the qualitative method was used for developing the survey instrument (Sife et al., 2010). Though still in its adolescence stage, the mixed method design brings on board the differing strengths of quantitative and qualitative methods attenuating the limitations of each methodology (Sife et al., 2010, Leech and Onwuegbuzie, 2009). De Lisle (2011) noted that some issues are best captured by adopting a multiple mental models and employing different methodological approaches. Sife et al. (2010) further stressed the importance of formulating multidisciplinary approaches to consider challenges and prejudices enabled by ICTs. Therefore, the study employed the research design shown in Figure 5.2.

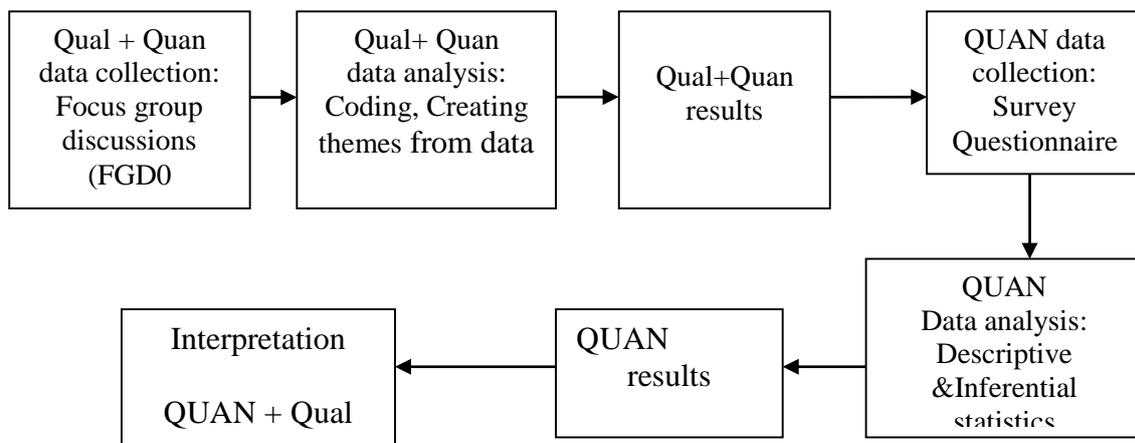


Figure 5.2: Partially Mixed Sequential Dominant Design

Source: Leech and Onwuegbuzie (2009) and Sife et al. (2010)

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

5.5 Study Population and Sampling

The research study was carried in the Midlands Province of Zimbabwe. The Midlands Province was drawn provinces using a purposive sampling approach (Macharia and Okunoye, 2013). Zimbabwe has ten geopolitical regions classified as provinces. The Midlands Province is centrally located in the country. It has a diverse ethnic grouping of people. The midlands province administratively demarcated into 14 districts. The districts range from the northern most to southern part. The districts comprise Gokwe North; Gokwe Town; Gokwe South; Kwekwe Rural; Kwekwe; Redcliff; Gweru Rural; Chirumanzi; Shurugwi Rural; Shurugwi; Zvishavane Rural; Zvishavane; Mberengwa. Eight study districts were selected to constitutes the sampling frame. Mining and farming serve as the major economic activities with cattle ranching playing a lesser role. The province was chosen due to its extremes of development, mixed cultures and mobile phone coverage (penetration). Table 5.1 below shows the composition of the population by age and gender.

Table 5.1: Populations by age and gender for the Midlands Province

Age Group (Years)	Male (%)	Female (%)	Total (%)	Number
0 – 4	7.6	7.7	15.3	246 482
5 – 9	6.7	6.8	13.5	218 543
10 – 14	6.9	6.8	13.8	222 489
15 – 19	5.6	5.9	11.1	179 147
20 – 24	4.1	4.9	9.0	144 973
25 – 29	3.7	4.4	8.1	131 095
30 – 34	3.2	3.5	6.7	107 205
35 – 39	2.6	2.7	5.3	85 352
40 – 44	1.9	1.9	3.8	61 473
45 – 49	1.1	1.4	2.5	40 497
50 – 54	1.0	1.6	2.6	42 290
55 – 59	0.9	1.2	2.1	35 041
60 – 64	0.7	1.0	1.7	27 691
65 – 69	0.6	0.8	1.4	21 950
70 – 74	0.5	0.6	1.1	17 182
75+	0.8	1.0	1.8	28 909
NS	0.1	0.2	0.3	4 622
TOTAL	48.1	51.9	100	1 614 941

Source: ZIMSTATS (2012)

5.5.1 Target Population

The research population for this study comprised all the households that use mobile money in all the rural districts in the province (Sife et al., 2010). The size of the population in each district is as shown in Table 5.2:

Table 5.2: Individual Population Size by District

Rural District	Population Size
Zvishavane	72 513
Mberengwa	185 757
Chirumanzu	80 351
Kwekwe Rural	174 727
Gweru Rural	91 806
Gokwe North	240 352
Gokwe South	305 982
Shurugwi Rural	77 570
TOTAL	1 229058

Source: ZIMSTATS (2012)

Kwekwe rural district was selected through simple random sampling technique. It has a population size of 174 727. Given an average size of five individuals per household, the district had a total of 34945 households. Therefore, as discussed in stage two of the sampling procedure, the target population size for this study was deemed 8258 households.

5.5.2 Sampling Methods

Sampling can be defined as the act of choosing a representative part of the population with the goal of establishing the main feature of the whole population (Gentles, Charles, Ploeg and McKibbin, 2015). Onwuegbuzie and Leech (2007) define sampling simply as the techniques employed to choose the study participants (e.g. people, groups, subgroups, situations and events). Sampling can further be grouped into two categories based on which research philosophy is being used. Teddlie and Yu (2007) identify these categories as probability sampling and non-probability sampling techniques. Probability sampling is associated with quantitative studies while non-probability sampling technique is employed in conducting qualitative studies.

Teddlie and Yu (2007) highlight the basic probability sampling methods that can be employed in conducting quantitative research as random sampling, stratified sampling and cluster sampling. The sampling methods are briefly discussed in the below:

Random sampling- this is the sampling technique where a sampling unit has equal chance of being included in the sample in a clearly defined study population. In this sampling method, the study population size is known to the research and well defined. Researchers normally use this sampling method for its simplicity and ease of use and above all it allows generalisability of results to the whole population.

The next sampling method is *stratified sampling* technique. It is a sampling method that allows researchers to divide the entire study population into sub-population or strata such that each sample unit belongs to a stratum. Units are then selected from those strata. The method is more applicable to situations where the study population is too large for random sampling.

Cluster sampling is a sampling method used when the sampling unit is not an individual but a cluster that occurs naturally. The method can also be used when the research has limited in terms of money and time resources (Teddlé and Yu, 2007).

On the other hand, non-probability sampling methods discussed by Teddlé and Yu (2007) were purposive *sampling, convenience sampling and theoretical sampling*. In *purposive sampling* method study units are chosen on the basis of the researcher's specified criterion instead of using a random sampling approach. The researchers use this sampling method they want to select respondents who are particularly informative. They look for respondents who possess certain traits or qualities and who are knowledgeable and have experience with the phenomenon under investigation (Palinkas, Horwitz, Green, Wisdom, Duan and Hoagwood, 2015).

The other non-probability sampling technique that can be used in qualitative studies is *convenience sampling*. It is a sampling method that targets participants who are readily available, accessible and easy to contact. The method provides acceptable sample in many situations, though it is not adequate in every situation (Koerber and McMichael, 2008). *Theoretical sampling* is another qualitative sampling technique that can be adopted by researchers. It is very similar to purposive sampling in many ways, however, it differs with purposive sampling in that its sampling criteria develops along the study itself and is basically applied with grounded theory. The study used the mixed methods approach and therefore the sampling methods chosen in this research were purposive sampling for the initial qualitative part of the study and then the stratified sampling approach for selecting the respondents in the quantitative part of the research. The sampling procedures used in this study are discussed later in the sections that follow below.

5.5.3 Sample Size

It is important to determine the sample size required in order to achieve an appropriate statistical power for a proposed model before data collection procedure (Hoe, 2008). In structural equation modeling, a sample size of between 200 and 400 respondents is deemed appropriate (Bagozzi and Yi, 2012, Kline, 2012, Hair et al., 1998, Iacobucci, 2010, Lei and Wu, 2007). Macharia and Okunoye (2013) and Lei and Wu (2007) highlighted the need for an appropriate sample size in multivariate research, recommending a sample size which is ten times or more than the number of constructs used in the model. However, Hair et al. (1998) warned that a sample size larger than 400 leads to high sensitivity and result in poor fit for the goodness-of-fit measure. Therefore, in this study a sample size of 367 was determined given the population size above.

Calculation of the Sample Size

Using the formula developed by Krejcie and Morgan (1970) for determining the sample size, a sample size of 367 was calculated as follows: $S = X^2NP (1-P) / [d^2 (N-1) + P (1-P)]$. Where S= Sample size, N = Population size, X^2 = Value of Chi-Square @ d. f. = 1 at the desired confidence interval from the tables, P = Population proportion (assumed to be 0.5), d = degree of accuracy. Given that N =627171, $X^2=2.71$ @ 10% confidence interval, P=0.5 and d=0.1, then the sample size is $S = X^2NP (1-P) / [d^2 (N-1) + P (1-P)] = 2303003.15/6272.3775= 367$.

5.5.4 Sampling Procedure I

In the first part of the study data collection, purposive sampling was used to select research participants to be involved in focus group discussions. Six groups or units were chosen for focus group discussions. The hegemony strategy was used to select groups for in depth and insightful discussions, to collect group narratives on mobile money. The main criteria were that the participants must have had used mobile money before either for sending and receiving money, their experiences in mobile money usage was very important. The group members were those individuals who represented a wide variety of perspectives (e.g. those who had bank accounts, once been members of the local savings and lending schemes, farmers etc). The group selection criteria included a balance between gender and age of focus group discussion participants. The size of group varied between 6 and 8 members.

The six group discussions were conducted in Silobela and Zhombe, both of these areas are part of Kwekwe rural district. Although almost 5 years had passed mobile money was still regarded as a fairly new financial innovation. The respondents were allowed to use any of the 3 widely used languages in the area (Ndebele, Shona and English). The focus group recorded and later taken for transcription. For transcription purposes the research solicited the services of Dr Zhou, who is a linguist based at Bindura University of Science Education. The findings of the focus group discussion are presented in chapter 6

of this thesis, the chapter concludes with a table summarising the themes that emerged from focus group discussions.

5.5.5 Sampling Procedure II

A multi-stage stratified random sampling technique was employed in selecting the respondents to fill in the questionnaire survey instrument. Most studies on household surveys use multi-stage designs to reduce survey costs (Mathers, Fox and Hunn, 1998). In this study four sampling stages were involved in drawing research participants as follows:

Stage One-Selection of study District

The stage employed the simple random technique to choose a single out of a sample of eight districts in the Province. All the rural districts were numbered on similar sized chips and put in a hat and then Kwekwe district was drawn out of eight.

Stage Two-Sampling of the Wards

Kwekwe rural district has 22 wards that were used for 2012 population census. This study adopted the same wards for sampling procedure. Again a simple random sampling method was employed to choose the wards that were used for further sampling of villages and household. The 22 wards were numbered and put in a hat and then 6 wards were randomly picked from the hat. The drawn wards and the respective population sizes are shown in the Table 5.3.

Table 5.3: Target Population for the study

WARD NUMBER	NUMBER OF HOUSEHOLDS(HH)
WARD 10	1297
WARD 11	1367
WARD 13	1282
WARD 15	1450
WARD 16	817
WARD 21	2045
TOTAL	8258

Source: ZIMSTATS (2012)

Stage Sampling of Villages

The stage involved drawing a sampling frame comprising of villages found in the particular ward (Sife et al., 2010). The villages formed the Primary Sampling Units (PSU). Stratified random sampling of each village was used based on their local government wards. The village provided administrative convenience and flexibility for stratification (Mathers et al., 1998). Three villages were chosen from the total number of villages in the ward. On average each ward had 12 villages. The villages were also

put in a hat and 3 were drawn from each list. A total of 18 villages were chosen from all the six wards drawn from stage two of the sampling design.

Stage Four-Sampling of 18 Households per village

The sampling units in this stage comprised household heads that had at least used mobile money for transactions. The information was collected from household heads; normally in the rural setup household heads have information on resource acquisition and expenditure on livelihood assets. This was due to the fact that in rural areas livelihood assets are owned at the household level represented by the household head. Using a sampling procedure known as the probability-proportional-to-estimated-size (PPES) sampling, a fixed number of households per sampled PSU was systematically chosen. In each village, the household list (names) were obtained from the village heads, the households would be assigned numbers from say 1-40. The numbers were placed in a hat and the first number was selected using a random number picked from the hat. The subsequent household was then selected using a fixed interval, i.e. every n^{th} household. For example, in a village with 45 households and only 18 were required, the sample interval was calculated as follows: $45/18=2.5=3$. Then the numbers 1,2, and 3 were put in a hat and then a number was randomly selected, in this case it was 2. The household allocated number 2 was chosen and thereafter every third household was chosen up to the end of the household list. This was done for all the 18 villages. Then if in case the household had never used mobile money the next household was chosen. The low design effect guided the optimum number of household to be selected in each primary sampling unit, which depended on the data collection structure and the homogeneity of clustering of PSUs. In this case the optimum number for each PSU was 18 as supported by Cochran (1977) for household sampling.

5.6 Instrument Development

As highlighted above, the study used a mixed method approach and hence the questionnaire was employed as the main data collection instrument. The instrument development procedure was done in stages where the first stage used a qualitative approach for data gathering in a pilot survey. Study participants of the focused group discussion were selected purposively on the basis on their socioeconomic characteristics as well as their experience in using the mobile financial services. The results of the focus group discussions were collated and analyzed. These results were instructive in the development of the questionnaire. The sequence was necessitated by the need for data convergence of qualitative and quantitative data where two group of respondents might possess different characteristics (Sife et al., 2010).

Primary data for the pilot study was gathered through focused group discussions and questionnaires. After an in-depth analysis of focused group discussion result, the next step was the development of a

questionnaire for the pilot study. To add on the questionnaire measures developed from group discussions, some questionnaire items were adopted and modified from previous empirical studies such as Ismail and Masinge (2011), Sife *et al.* (2010), and Gross, Hogarth and Schmeiser (2012). Questions utilizing a Likert type scale were employed since the constructs that were being measured on the effects of mobile money usage on livelihoods is extensive and would contain multiple aspects that is not amenable to measurement using a single item.

5.6.1 Mobile Money Measures

In general, the instrument development procedure followed the outline given by Mackenzie *et al.* (2011) combine with Chu (2002) guidelines. The steps involved in the development of the mobile money scales are shown in Figure 5.3.

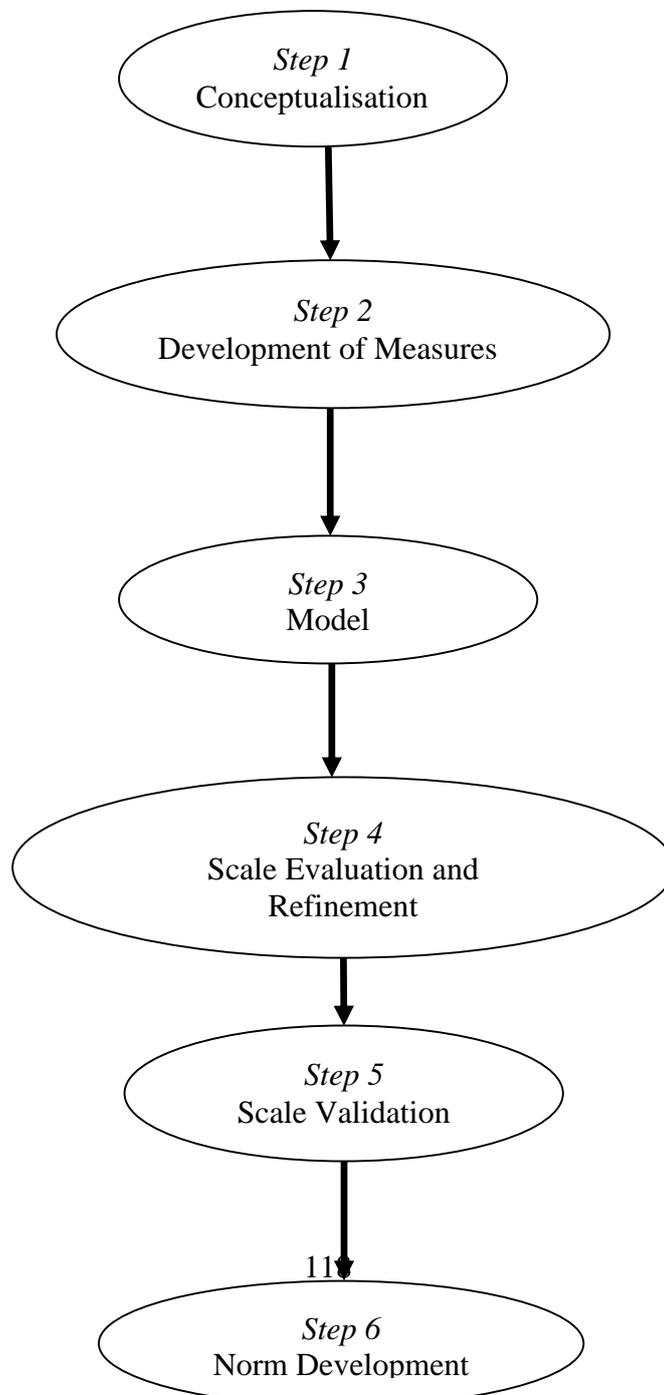


Figure 5.3: Scale development procedure

Source: Mackenzie *et al.* (2011)

The scale development procedure in figure 5.3 is further explained below:

Step 1- the conceptualization stage involved the development of conceptual definition of the constructs.

Step 2 – Item generation /the development of measures. The process involved coming up the items representing the constructs and assessing content validity of the measures.

Step 3- the stage involved model specification, formally specifying the measurement model.

Step 4 – The scale validation and refinement stage was concerned with data collection, where data was collected refined.

Step 5 – Validation involved were data was collected from the new sample and re-examined the scale properties, validity assessment and cross validation was conducted.

Step 6– Norm development is basically attaching or giving meaning to the scores etc.

Chu's (2002) modified approach was much simpler and straight forward as entailed the following procedures:

Step 1: Item generation

This step entails creation of items on each scale.

Step 2: Assessment of Content Adequacy

The step involves the test for conceptual consistency.

Step 3: Questionnaire Administration

The stage involves pilot questionnaire administration, determining the scales and determining the adequate sample size.

Step 4: Factor Analysis

Exploratory factor analysis was employed first to identify the underlying factor structure of the items.

Step 5: Internal consistency

This step tests for internal consistency of the scale by assessing its reliability.

Step 6: Construct Validity

The stage involves checking for construct validity using validity criterion.

Step 7: Replication

The last stage which involves the repeating of the scale testing process with a new data set.

The questionnaire was composed of the following data items: demographic profile; mobile money/phone related data; and mobile money usage related data and mobile money impact related data. The data gathered through focus group discussions was used to expand on the items for the scales. Some of the items were duplicated but Chu (2002) noted that to a certain extent redundancy was desirable. The instrument was then pilot-tested to identify if all the relevant variables were tested and also to check for the order and ambiguity of questions.

5.6.2 Pilot study of the questionnaire

A five-point scale, ranging from strongly agreed (1) to strongly disagreed (5), was attached to the items on each scale. The survey instrument was then administered in ward 21 where a total of 40 households were targeted for the pilot study. Three cases were disregarded for missing values. The results of the pilot-tests are shown below beginning with profile of the respondents are shown in Table 5.4.

Table 5.4: Respondent Profile

Demographic Profile	N	Percentage
Gender		
Female	15	40.5
Male	22	59.6
Total	37	100%
AGE		
16-25 years	2	5.4
26-35 years	13	35.1
36-45 years	9	24.3
46-55 years	4	10.9
>55 years	9	24.3
Total	37	100%
MARITAL		
Married	27	73
Divorced	2	5.4
Widowed	3	8.1
Single	5	13.5
Total	37	100%
EDUCATION		
Primary	8	21.6
Secondary	20	54.1
Tertiary	9	24.3
Total	37	100%
OCCUPATION		
Employed	20	54.1
Unemployed	7	18.9
Self-employed	10	27
Total	37	100%

Source: Primary data

The results show that the majority of them were males (59.6%), married (73%), employed (54.1%) with secondary education (54.1%) and a mean age of 30.5 years. The findings here reflected a more patriarchal family set up as indicated by the majority of male's respondents heading their household.

5.6.3 Exploratory Factor Analysis (EFA)

The study used exploratory factor analysis for the purpose of data reduction and summarizing data (Chu, 2002). Exploratory factor analysis was further preferred to determine and confirm the underlying factor structure of the scales. The principal axis factoring method was used with the Varimax rotation and Kaiser normalization to extract factors.

Before conducting exploratory factor analysis, it was important to first examine the data matrix whether data satisfied the statistical assumptions, that is, normality, linearity and homoscedasticity (Hair et al. 1998). According to Chu (2002) the issue of multicollinearity violating the above stated assumptions about data as a certain degree of multicollinearity is acceptable. In the case of factor analysis, it is desirable since the objective of factor analysis is to establish a group of variables that are interrelated. There are fundamental guidelines that assist in checking correlation of items. The guidelines are that correlation needs to be above 0.3, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy needs to be closer to 1 as much as possible while partial correlation must be as much smaller as possible an indication that a true factor structure exists (Chu, 2002). If the Kaiser- Meyer- Olkin index is less than 0.5 it will be inappropriate to conduct factor analysis whereas an index of 1 indicates that the variables are being predicted with less error from other variables. The Bartlett's test of sphericity is another measure to quantify the extent of inter-correlation among the study variables (Chu, 2002). The significance of Bartlett's test of sphericity cannot be ignored as it is a statistical test that indicates the presence of correlations among the variables. Therefore, using the above guidelines, the data matrix was examined through visual inspection. It was noted that a number of correlations were greater than 0.3 resulting items with 0.3 or less being deleted and retaining those with values greater than 0.3 being retained for further analysis. The final results of the factor analysis are discussed in the following sections.

5.6.4 Bartlett's Test and Kaiser-Meyer-Olkin Test

The Bartlett's Test of Sphericity and Kaiser-Meyer-Olkin Test of Sampling Adequacy are the commonly used tests to provide more complex measures for assessing the strength of the relationships and suggesting the factorability of the variables (Beavers, Lounsbury, Richards, Huck, Skolits and Esquivel, 2013). The Kaiser-Meyer- Olkin Test of Sampling Adequacy is a measure of shared variance

in the item. The Bartlett's Test of sphericity was used to evaluate the determinant value if it is statistically different from zero. The results of the pilot test are shown below in Table 5.5.

Table 5.5: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.880
Approx. Chi-Square	19424.594
Bartlett's Test of Sphericity Df	666
Sig	.000

Source: Primary Data.

The result for the KMO in this study was 0.88, a meritorious result that provides an indication to proceed with the exploratory factor analysis. Values 0.49 and below are unacceptable and it is discouraged to proceed with factor analysis (Beavers et al., 2013). The Bartlett's test produced a significant test result 0.000. The test provides evidence that the observed correlation matrix is statistically different from a singular matrix, confirming that a linear combination exists.

5.6.5 Kaiser Criterion Method

Table 5.10, presents the Eigenvalues and the variance explained. The Eigenvalue is a value with each factor describing the amount of variance in the items that can be explained by that factor (Beavers et al., 2013). Using the initial extraction 7 factors were determined to sufficiently represent the mobile money scale.

Table 5.6: Total Variance Explained

Source: Primary Data.

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.620	28.704	28.704	10.402	28.114	28.114	5.868	15.859	15.859
2	6.802	18.383	47.086	6.725	18.177	46.291	5.669	15.323	31.182
3	4.396	11.881	58.967	4.197	11.344	57.635	5.559	15.024	46.206
4	3.224	8.714	67.681	3.118	8.427	66.062	5.015	13.555	59.761
5	2.071	5.598	73.279	1.825	4.933	70.995	2.437	6.585	66.346

6	1.671	4.517	77.796	1.340	3.622	74.618	2.177	5.883	72.230
7	1.331	3.596	81.392	1.043	2.819	77.437	1.927	5.207	77.437
8	.806	2.177	83.569						
9	.744	2.011	85.581						
10	.655	1.769	87.350						
11	.521	1.408	88.757						
12	.493	1.333	90.091						
13	.474	1.280	91.371						
14	.385	1.040	92.411						
15	.359	.972	93.383						
16	.314	.848	94.231						
17	.249	.673	94.904						
18	.236	.637	95.541						
19	.205	.554	96.095						
20	.188	.509	96.604						
21	.173	.468	97.072						
22	.168	.454	97.526						
23	.155	.420	97.946						
24	.135	.366	98.312						
25	.118	.319	98.631						
26	.109	.293	98.924						
27	.091	.247	99.171						
28	.072	.195	99.366						
29	.068	.183	99.549						
30	.055	.149	99.698						
31	.038	.103	99.801						
32	.026	.071	99.871						
33	.018	.049	99.920						
34	.017	.045	99.965						
35	.006	.015	99.980						
36	.005	.013	99.993						
37	.003	.007	100.000						

Extraction Method: Principal Axis Factoring.

The Kaiser criterion was used to determine which factor to retain. The Eigenvalues greater or equal to one were used to retain factors. Literature suggests that 75-90% of the variance must be accounted for in order to retain the scales. The 7 factors extracted in table 6, accounted for 77.44% and the figure falls within the recommended thresh hold. The reasoning behind the Kaiser Criterion is that a component with an Eigenvalue greater than one accounts for more variance than would a single item (Beavers et al., 2013).

5.6.6 Factor Extraction Method

The common factor analysis allows the exploration of underlying constructs through items thought to be reflective measures of the construct (Byrne, 2010). The principal axis factoring method of extraction was used in the analysis to gain an understanding of the latent variables (Beavers et al., 2013). The principal axis factoring method is appealing as it requires no sample distributional assumptions and can be used even if data are not normally distributed (Beavers et al., 2013). The Varimax rotation was used which attempts to maximise the variance of squared loadings on a factor. Therefore, Table 5.7 shows the rotated factor matrix.

Table 5.7: Rotated Factor Matrix^a

	Factor						
	1	2	3	4	5	6	7
Q25: I have received money through MM from relatives		.844					
Q26: I have received money through MM from friends		.893					
Q27: It is easier to receive money through MM		.902					
Q28: Mobile money is helpful for many transactions		.915					
Q29: Money received through MM has improved my income		.826					
Q30: Receiving money through mobile money is cheaper		.811					
Q31: I receive money remittances through the MM service		.788					
Q32: I get communication on financial information					.508		
Q33: I communicate when there is an emergency					.437		
Q35: I communication with suppliers of inputs					.786		
Q36: I get communication about available loan facilities					.837		
Q37: Has improved my communication networks					.489		
Q38: Saving is important to me.			.877				
Q39: I have used mobile money to save for emergencies			.961				
Q40: Mobile money improves saving			.968				
Q41: I have used mobile money to save for projects			.845				

Q42: I have used mobile money to save for family needs			.922		
Q43: It is easier to save using mobile money			.964		
Q44: Loan application faster through mobile money	.858				
Q45: I have used mobile money to access a loans from a family member	.971				
Q46: I have used mobile money to access a loans from the bank	.975				
Q47: I have used mobile money to access a loan from a business	.980				
Q48: Mobile money has improved loan access.	.973				
Q49: Through mobile money loan access is much easier.	.976				
Q50: I have used mobile money to start for livelihood projects				.645	
Q51: I have used mobile money to pay for fertiliser				.889	
Q52: I have used mobile money to buy seeds for farming projects				.923	
Q53: I have used mobile money to buy farm equipment				.868	
Q54: I have used mobile money to pay service providers				.897	
Q55: Mobile money has reduced my costs				.905	
Q56: I have used mobile money to buy furniture					.765
Q57: I have used mobile money to buy food and groceries					
Q58: I have used mobile money to buy home appliances					.927
Q60: I have used mobile money to make home renovations					.535
Q61: Mobile money has improved my life style				.799	
Q62: Mobile money has increased my wealth				.809	
Q63: Mobile money has been used to buy livestock				.484	

Extraction Method: Principal Axis Factoring.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Source: Primary Data.

The principal axis factoring method was used because the items were believed to reflect the underlying constructs. Factor loadings of less than 0.4 were suppressed. With the results of the exploratory factor analysis indicating that underlying factor structure existed then next step in the data analysis was to conduct structural equation modelling as indicated in the following sections.

The pilot study results were then used to develop the final questionnaire that was used in this full-scale study. On welfare, instead of developing a scale on it was broken into variables wealth and consumption. The scales items were then increased in the pilot study to 45 items in the final questionnaire. Questionnaire items from 1 to 17 sought data on socioeconomic issues and data mobile money usage levels. Then questions from 19 to 64 were on a 5-point Likert-battery scale addressing the relationship between mobile money usage and impact variables on the well-being of households. The research participants were requested to show the degree of agreement with the given attitudinal scales.

The study variables under investigation were mobile money, savings, productivity, loan/credit, income, communication, consumption and wealth. The questionnaire scales sought to show how mobile money influences these variables and the consequent effect on the livelihood of the rural people. The study variables are identified and explained section 5.6.7 that follows below.

5.6.7 Study Variables

The major variables that were used in the study model are summarised in Table 5.8.

Table 5.8: Description of variables used in the model

Variable Names	Variable description
Independent Variables	
Gender	1 = male, 2 = female
Age of household head (hhh)	
Marital status	1 = married, 2 = divorced, 3 = widowed, 4 = single
Education	1 = primary, 2 = secondary, 3 = tertiary, 4 = other
Occupation	1 = employed, 2 = self- employed, 3 = unemployed, 4 = pensioner
Bank account ownership	1 = yes, 2 = no
Former methods for transfer	1 = bus driver, 2 = bank, 3 = post office, 4 = western union
Mobile phone ownership	1 = yes, 2 = no

Mobile money registration	1 = yes, 2 = no
Mobile Money Use	Represented by frequency of use of the service and the average amounts used.
Frequency of mobile money usage	1 = daily, 2 = weekly, 3 = monthly, 4 = occasionally
Average net amount of money	Reflects the average net amount of money per month transacted over mobile money the service
Distance (walked to the nearest mobile money agent)	1 = < 1km, 2 = 1km – 2 km, 2 = 2km -5km, 3 = 5km – 10 km, 4 = > 10 km
Mediating Variables (mediated path ways)	The variables that link mobile money and Well-being as represented by Wealth
Remittances =====>Productivity	Remittances are mediate between Mobile Money Use and productivity; therefore, remittance is a mediating variable.
Remittances ==>Consumption	Remittances mediate between Mobile Money Use and consumption
Communication ==> Savings	Communication mediates between Mobile Money Use and savings
Communication =>Productivity	Communication mediates between Mobile Money Use and wealth
Savings ==> Wealth	Savings mediate for both communication and remittances and wealth.
Consumption==>Wealth	Consumption mediates between remittances and wealth.
Productivity ==> Wealth	Productivity mediates for both communication and remittances and wealth.
Dependent Variables	The variable that is influenced by other variables.
Wealth	Represents well-being of mobile money users as defined in literature

Source: Research / Author

Savings

Mobile money services are a combination of a mobile phone device and savings account. This combination enables people with no formal bank accounts to engage in a secure and more cost effective savings mechanism to those who reside far from bank branch networks. Mobile money service in fact leads to an improvement in efficiency and regularity of savings (Nandhi, 2012). Mobile money transforms the banking culture in that it ushers in novel ways of accessing services supporting

livelihoods (Radcliffe and Voorhies, 2012, Boateng, 2011, Alleman and Rappoport, 2010, Morawczynski and Pickens, 2009, Jagun and Heeks, 2007).

Remittances

Mobile money services enable customers to receive funds sent by their benefactors regardless of geographical distance between the sender and the receiver. This factor alone, *ceteris paribus* leads to improvements in the economic well-being of the poor (Hinson, 2011, Alleman and Rappoport, 2010, Morawczynski and Pickens, 2009). Magunha, Bailey and Cliffe (2009) are of the view that research conducted on mobile money remittances has focused on the latter's contribution to the economic development to the exclusion of other salient variables.

Communication

The mobile phone may be used as the communication medium as well as tool for banking services. The interactions between transacting parties result in relational benefits. Mobile banking eliminates middleman. The elimination of middleman shrinks informational asymmetries thereby increasing the frequency of transactions. The combined effect of the foregoing leads to reduction in market inefficiency (Dermish et al., 2012, Hinson, 2011, Bhavnani et al., 2008, Abraham, 2006).

Productivity

Accessibility to good financial services plays an important role in funding productive activities that promote agricultural and non-agricultural rural enterprises whereas communication is expected to have an effect on people productivity leading to improvement on the livelihood of rural households (Oluwatayo, 2013, Hassan and Semkwiji, 2011, Alleman and Rappoport, 2010, Abraham, 2006). While Boadi, Boateng, Hinson and Opoku (2007) asserts that the ability to manage or use time effectively leads to increased productivity.

Consumption

Consumption is regarded as the primary component of economic well-being and an indicator of living standard. It is a more stable measure and in agricultural societies it is smoothed over time and better reflects real living standards, therefore more preferred in measuring living standards (Natal and Moratti, 2012). It constitutes items such as food purchases, self-produced food items, food received as gifts, remittances and non-food items (Deaton and Zaidi, 2002).

Wealth

Durand and Smith (2013) viewed wealth in general as economic resources in the form of assets that reflect the economic well-being of mobile money users. Therefore, all the assets owned by the

household represent wealth. The assets include land livestock and farming equipment. However, for the purposes of this study, the focus is those wealth increases as a result of mobile money related transfers.

5.7 Data Collection Procedure

Data was collected over a period from July to September (3 months) in the chosen primary sub units (PSUs). The PSUs were divided into two, one group for the researcher and the other for the research assistant. A questionnaire was used to gather data by the researcher and a research assistant, who would distribute the research instrument to the selected household. When a household was chosen, a household head was requested to fill in the questionnaire while the researcher was waiting and any help required in filling in the question was rendered. The selection of households was done according to the procedure explained above. Two research assistants were recruited to assist with data collection as the area to be covered was very big. They were trained before they were sent to the field for data collection. The training focused on in the instrument how to translate it when they meet mobile money users who were not conversant with the English language.

5.8 Validity and Reliability

Items used for the development of constructs were adapted from preceding research to ensure the content validity of the scale to be used (Macharia and Okunoye, 2013, Shen, Huang, Chu and Hsu, 2010). The other types of validity to be tested are discriminant and convergent validity. To assess the internal consistency of each construct, the Cronbach's alpha coefficient was computed to enable the results to reveal adequate reliability. Through exploratory factor analysis done above, these measures were assessed for validity and reliability was also tested. The instrument were deemed reliable and valid.

5.9 Data Analysis Procedure

The analysis procedure followed two in the study was determined by the partially mixed methods design. Qualitative data analysis was done, where the focus group discussion (FGD) results were coded and presented in a thematic approach. The results were presented separately in chapter six. Then the quantitative data analysis was then done through inferential and multivariate statistical techniques. In order to fully explore the impact of mobile money usage in rural communities, data analysis was conducted though descriptive statistics, exploratory factor analysis and Structural Equation modelling (SEM) in particular the software for path analysis called **Analysis of Moment Structures (AMOS)** was used. Structural equation modelling is a multivariate technique that is recommended for data analysis that tests more than one dependent variable, (Bagozzi and Yi, 2012). Structural equation modelling was preferred over other multivariate techniques due to a variety of reasons. Therefore, in this study, it was chosen for its ability to provide the information on how well the model fits data. Moreover, the

technique was preferred for its ability to be used on data that violates normality assumptions (Bryne, 2010). Before a two-stage approach in SEM was used conducted exploratory factor analysis (EFA) was done to validate the measurement instrument.

The first stage performed the following: 1) confirmatory factor analysis, 2) average variance extracted, 3) Composite Reliability and Cronbach Alphas. Composite reliability and Cronbach alpha assess the extent to which the measurement items were reliably measuring their respective constructs. Construct validity was measured by convergent validity and discriminant validity. Convergent validity was measured through t-values for item loadings and discriminant validity requires that average variance extracted for the two constructs exceed the squared correlation between them (Fornell and Larcker, 1981).

The second stage tested the structural model to determine its adequacy in representing the constructs. The overall model fit was tested through goodness of fit statistically using fit indices (measures) like the Chi-square/degrees of freedom (CMIN/df), goodness of fit index (GFI), the comparative fit index (CFI), Tucker Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA). The fit index values range between 0 and 1, with values closer to 1 indicating a good fit (Byrne, 1989). Table 5.4 relates the study objectives, research questions and the type of analysis used for each specific objective.

5.10 Data Analysis Procedure

Narayanan (2012) has noted the growth of SEM methods that have included continuous, categorical and a combination of these approaches. The growth of these methods has also been accompanied by the similar growth of software packages for data analysis in SEM studies. The software packages have grown since Joreskog's program capabilities of conventional SEM, they have grown to include: mixture in multilevel modelling; latent class analysis; finite mixture modelling; and latent profile analysis. New software programs that are powerful to combine all these capabilities in a unified single software have been developed and the classic example is the Multiple Plus (Mplus) program. Narayanan (2012) identified most common packages on the market and are being used, these are Linear Structural Relations (LISREL), Analysis of Moment Structures (AMOS), R package lavaan, SAS PROC CALIS, R package Sem, Equation Structural program (EQS), Mplus, and R package OpenMix. According to Narayanan (2012) no single study had evaluated these software packages in a single study to identify their strengths and key features in a comparative form. These packages include commercial and free ware.

When the above software packages were assessed on model evaluation, they reported different values on fit indices. LISREL and SAS PROC CALIS reported a wide range of fit indices while R package

SEM, OpenMix and Mplus report relatively fewer indices. When reporting the Hoelter's N which is the largest sample size for which the model fails to be rejected: AMOS reports at 0.01 and 0.05 significance level, LISREL only reported at 0.01 significance level, while SAS PROC CALIS reported at 0.05 significance level. Narayanan (2012) found that AMOS, LISREL and SAS PROC CALIS were the only packages that report all the fit indices.

These packages have different ways of dealing with non-normal data. They use bootstrapping, scaling corrections to fit statistics and standard errors based on Maximum Likelihood estimation method, and the asymptotically distribution free (ADF) estimators sometimes referred to as weighted least squares (WLS). On ADF AMOS, SAS PROC CALIS, R package lavaan, LISREL, Mplus and EQS have shown that they are capable of performing it. On the statistical standard error, LISREL, EQS, Mplus and R package lavaan were the only packages that showed that they can handle it. Bootstrapping is rarely known used and thus few packages can handle bootstrapping like AMOS, R package lavaan, Mplus and EQS. All the identified software packages were able to handle missing data and can perform Maximum Likelihood (ML) estimation.

These different software packages have unique features that distinguish them from each other (Narayanan, 2012). AMOS has an excellent graphical user interface and a well organised output that can be quickly accessed by users. It can perform Bayesian estimation, provides several bootstrapping options. In the absence of a theory it can use specification search to find the model. SAS PROC CALIS can perform MI analysis of missing data while its distinguishing feature is its flexibility on model specification in a variety of differing formats. EQS made SEM much simpler by providing a number of options creating models. The software program is more relevant for exploratory analysis. Its outstanding feature is on handling non-normal data and handling missing data. Above all its ability to compute the Lagrange multiplier and Wald tests and further perform the reliability estimates of the measurement model. Lastly LISREL can perform multilevel modelling, generalised linear model and recursive models. The main feature of LISREL is that it has the ability to estimate observation residuals in factor analysis and structural equation models.

Nachtigall, Kroehne, Funke and Steyer (2003) further concur that the use of software packages has greatly enhanced data analysis by providing graphical user interface allowing users to configure path diagrams, calculate model fit and estimate parameters with ease by just a simple click. The use of packages has actually reduced demand on users to run programmed model instructions. Consequently, the use of packages has allowed the application of SEM by people with less statistical knowledge.

5.11 CB-SEM and the choice of AMOS

Hair, Gabriel and Patel (2014) noted that there is no golden rule when deciding on the choice of software when performing a CB-SEM. However, they do point out a few factors that must be considered when deciding on the type of software were to use. The factors included the ease availability of software within the institution, previous training on the chosen software for data analysis. In some instances, computer programming skills are required for certain packages and above all the familiarity with covariance based structural equation modelling (CB-SEM). The other factor is the availability of colleagues with experience with the chosen software package (Hair et al., 2014).

Therefore, in this study a number of factors were considered before choosing AMOS software. The choice was influenced largely by the availability of an expert in AMOS and who was knowledgeable in CB-SEM. The other influencing factor was the feature in the software that allowed easy to use graphical user interface and the non-requirement for coding instructions through the program. The software allowed the user to draw a graphical representation of the proposed model. Finally, Table 5.9 summarises the data analysis procedure followed in the present study.

Table 5.9: Summary of data analysis procedure

Research Objectives	Research Questions	Data Analysis Procedures
The overall objective of the study was to develop a structural model for the mobile money usage's impacts on the livelihoods of rural households.	What model can be developed from mobile money usage impacts on the rural livelihoods?	Structural Equation modelling (SEM)
Specific objectives were		
1. To determine mobile money usage levels in rural communities.	What is the extent of the usage of mobile money services in rural Zimbabwe?	<ul style="list-style-type: none"> • Descriptive statistics (Table of Frequencies) • Inferential statistics in particular the Chi-Square Test.
2. To determine the effects of using mobile money service on the economic well-being (livelihood) of rural households.	What are the effects of mobile money usage on the livelihoods of Zimbabwe's rural communities?	SEM analysis in particular <ul style="list-style-type: none"> • Correlation analysis • Regression analysis and factor analysis. Multivariate analysis.

3. To identify challenges of mobile money usage.	What are the mobile money usage challenges faced by rural communities?	<ul style="list-style-type: none"> • Coding • Thematic analysis of focus group discussions (FGD)
4. To suggest ways of improving the delivery of mobile financial services to the rural communities.	What are the strategies that can be developed to improve the delivery of mobile financial services the rural communities in Zimbabwe?	

Source: Researcher / Author

5.12 Summary

The chapter covered research philosophies, research design used in this research, population and sampling and the sample size for this study. Data collection procedure, validity and reliability measures were explained and finally the data analysis procedure was discussed, showing in detail how data were analysed. The next chapter analyses qualitative data and discusses the research findings.

CHAPTER SIX

DATA PRESENTATION AND ANALYSIS FOR FGD

6.1 Introduction

As indicated earlier, the study used the focus group discussion approach to gather data for the pilot study. The instrument was piloted and produced interesting and critical results. As a result, the other instruments of the study were then developed from the focused group discussion guide. The researcher conducted two focus group discussions. Participants in the focus groups ranged between 26 and 65 years and both sexes were represented. Some of the participants were banked villagers while some were unbanked; and banked refers to receiving financial services traditionally from the mainstream banking system. The different participants (banked, unbanked, female and male) were envisaged to encourage debate and attract varying perspectives and experiences on the usage and impact of mobile money on previously financially excluded rural communities. The variation was further boosted by bringing on board people from different professions and occupations in the rural study area; these included pensioners, artisanal miners, teachers, vendors, farmers, shop keepers, and those that are not employed.

The study area is characterised by farming and mining. Unlike in some parts of Zimbabwe, villagers in the study area own vast stretches of land, on which farming activities are carried out. Further, there are vast stretches of state land, which, due to large deposits of gold, has attracted people from all over the country who come to do mining activities. These are popularly known as makorokoza (practically denoting illegal miners). The increase in the illegal mining activities has coincided with the increase in the unemployment rate in the past two decades. Therefore, illegal mining activities have provided the income generation alternative where the government has failed. The mining activities have also led to the growth of vending in the area, a phenomenon usually associated with the urban areas. The different income generation activities in the study area have allowed a lot of cash circulation in the study area. However, the area is largely excluded from the formal banking system. Communities have to travel long distances to get to the nearest urban area, where the banks are. Worse than the distance is the state of roads in the study area, shutting some parts of it from easy access to the towns. On average, the focus group discussions lasted one hour but some went beyond the one hour scheduled mark due to arising issues sparked by the debate. Language flexibility was allowed to encourage openness on the part of the participants. The three languages used in the area are English, Ndebele and Shona.

6.2 Validity and Reliability of qualitative findings

In order ensure credibility and trustworthiness of the study, a number of strategies were employed by the researcher. These strategies included the use peer scrutiny, where colleagues were asked to go through the recordings and evaluate the emerging themes so as to expose or uncover any issues / biases that might have been overlooked by in transcription of data. Furthermore, the truth value aspect and credibility was enhanced the use of recorded audios that allowed researchers (researcher, research assistants) to revisit data to uncover any emerging themes and reporting of themes without distorting participant contributions. Overall, solicitation of the expertise (linguist) allowed neutrality and consistency in transcribing and interpreting the research findings.

6.3 Mobile money usage

The indication from the qualitative data from the focus group discussions showed that mobile money is generally used in the form of deposits and withdrawals (cash-in and cash-out) respectively, transfer of funds and purchases of airtime credit. While the airtime purchase facility mostly dealt with small amounts of money, it was the most popularly and frequently used facility due to the different communication needs of the community members. In addition, what made airtime purchase more frequently used is that it did not involve, and practically solved the problem of, walking long distances to get to airtime retail shops or agents.

The airtime purchase function was followed by the combination of deposits and withdrawals. Because of the rural to urban migration index in Zimbabwe, there was bound to be an increase in fund inflows between the urban centres and the rural areas, hence the high deposit/ withdrawal usage of mobile money services in the study area. The fund transfers were also increased due to the fact that mining activities had attracted to the area people from different communities, hence the necessity to send money to their families. These were generally from other rural areas of the country.

Data also indicates that usage of mobile money services for bill payments was very low. There were very few bills to be paid in the study area. This is congruent with the nature of rural areas in Zimbabwe, where there is no electricity (and therefore no electricity bills); where there are community boreholes and no piped municipality water, and therefore not water bills. One participant indicated:

“There are no bills to pay here. No electricity and no piped water. I only use my eco-cash to pay for my DSTV bill, and that is because I use solar energy. Otherwise those who do not have solar do not pay any bills.”

The other bill that participants indicated they paid using mobile money was school fees. Participants indicated that in recent years they started paying fees for their children using mobile money services.

Further, data indicates that savings and loans were not frequently used. The general indication from most of the participants in the focus group discussions was that mobile money services had improved the financial inclusion of the study area as previously family members needed to travel from the urban centres (mostly Kwekwe town) to deliver money in the rural areas or they had to send money through bus drivers. Sending money through bus drivers was indicated as the most frequently previously used informal method of sending and receiving money between the urban and rural areas. One participant said;

“My children used to come from Harare to give us money, which was very expensive. They also used to send with bus drivers and this was problematic as I also had to travel to Kwekwe to wait for the bus because there are no buses coming to this place directly from Harare. Now, they just send using eco-cash and there is an agent just around the corner.”

Participants concurred indicated that mobile money services had greatly improved their access to financial services. The excerpt above indicates that the distance travelled to access money services is insignificant. Most participants in the focused group discussion indicated that the distances travelled to access financial services had reduced significantly to an average of less than 10 kilometres. Previously, villagers and professionals in the study area, as literature generally indicates, used to travel hundreds of kilometres to the nearest bank, whether they were banked or they were just receiving money through money gram, Western Union or any such service.

Participants indicated that mobile money services had brought with them real time transactions as they could get or sent money instantly. A participant indicated thus;

“The eco-cash agent is three minutes away so whenever my daughter sends me money I know if I need to I will be having the money in just under 10 minutes.”

They experienced speedy transfer of funds, and this was effective in dealing with financial emergencies. However, with the worsening of cash shortages beginning 2017 the mobile money services also took a hit.

Mobile money services were perceived by the focused group discussion participants to reduce substantially any chances of loss of funds. Participants indicated that in the past the risk of loss of funds through misplacement of bags in the buses or being mugged on the way from collecting the money was very high. With mobile money services, they indicated, most of the business was done on the phone and loss was minimal. Even when the phone was lost or stolen, access to funds was still protected through a pin. This indicates that mobile money services also came with a significant level of security for funds.

The frequency of use of mobile money services ranged from a number of times a week to a number of times a month. By comparison, the unemployed used it less frequently; in a once-off basis from time to time. Those in business also indicated that there was significant ease of business with the use of mobile money services. One business person said:

“Replenishing my stock for business is now easy and transport costs have been cut down. I can now just send money directly to somebody in Harare and they buy me the replenishment. That way, I do not pay for transport costs of having to travel to Harare myself.”

Small scale miners and vendors also indicated that they had benefited from ease of doing business facilitated by mobile money services. While there are transaction services involved in mobile money services, the participants indicated that these were cheaper and MMS was still a cheaper option considering what it took in the past.

The integration of mobile money services into the formal banking services, through linking banking accounts to mobile money services, was a huge benefit for the employed and pensioner participants in the study area. A pensioner said;

“Eco-cash has helped me a lot. My transport costs have reduced significantly as the costs I used to incur going to town to get my pension income from the bank no longer apply as I now just transfer funds from my bank account into my mobile money wallet. All the other transactions I then do from my eco-cash.”

An unemployed participant said;

“Even if I am unemployed, I have been able to receive money through eco-cash, there has been some difference. It does not matter that the money I receive is little but I get it easily and without travelling for long distances.”

The fact that mobile money services facilitated the transfer of very small amounts of money, as little as \$10 or even less, was welcomed by the participants. This, the participants agreed, allowed them to attend to emergencies at a very low cost.

The study was also interested in establishing the financial literacy of participants in focus group discussions. It was established that on the general participants had little knowledge of formal financial facilities relating to savings and credit and loans. The indication was that villagers still relied on their traditional saving methods of hiding money in the house. This is, however, no longer limited just to the rural areas as the urban majority has also adopted it to cushion themselves from the worsening cash shortages. Knowledge of formal financial facilities offered on mobile money services was a preserve of the young employed group. While information was relayed to the participants by way of notice flushes on mobile phones informing them on available savings options, most participants said they had not done anything about them as they did not know how to go about the whole process. Participants submitted the following:

“I have received promotional messages on eco-save but ignored them because I did not understand them.”

“I find it difficult to save because I use eco-cash mostly to receive money when I have an emergency. So, the money I ever have is always for something specific, making it difficult to put anything aside.”

“I have not heard about the savings facility and if I have enough knowledge I would want to save, especially when I have surplus from my deals.”

Data indicates that those most members used mobile money services to receive money and as soon as they received the money they cashed-out all or most of it and those who had surplus after their ‘emergencies’ reverted back to putting money under their pillows.

6.4 Challenges

While mobile money usage greatly improved the lives of the rural folk in Zimbabwe, it did not, however, come without its own set of challenges. Participants indicated that they still faced some challenges in using mobile money. The major challenge indicated was to do with mobile phone network interruption, which affected their usage of the mobile money facility. One participant indicated:

Mobile money is very convenient and effective, especially during emergencies. However, sometimes network is poor and if you have an emergency you will be inconvenienced as you would have to wait for improvement of network.

However, it was indicated that the challenge of network was far much better than the challenge of having to travel long distances to the urban areas to collect money. Participants also indicated that this was better than the anxiety caused by waiting for a bus driver to deliver money, which was risky and still took a lot of time as the buses had schedules. All the same, it was indicated, network interruptions did not always occur and whenever they did they did not last very long.

An even bigger challenge was that of certain parts in the rural areas still having no network coverage at all. In such areas the challenge was the necessity to walk long distances to access network. One participant said:

Where I stay there is no mobile phone network. We have the phones and we use mobile money but we have to walk some distance for us to access the network. I wish Econet would make sure we also have network here. All, the same walking to the network is still ok because I still get money from my children in Harare quicker and cheaper than having to go to Kwekwe to wait for it. Sometimes I just leave my phone with friends where there is network and when the alerts come in they send a child to let me know.

As indicated, some villagers still walked long distances to access both telecommunications services and mobile money services due to the fact that there are still some small pockets of the rural communities where there is poor or no mobile phone network.

Another major challenge faced by the rural communities in their usage of mobile money is the retail environment that still refused mobile money purchases. This was a huge challenge as most rural people used their money for the purchase of basic commodities, especially food. A number of retail shops were reported not to accept purchases through mobile money, a huge set back to the adoption and usage of mobile money. Those who did already use mobile money indicated there was no motivation to join as they would not be able to buy from local shops using soft money. A participant indicated thus;

The problem is that some of these grocery shops refuse to take ecocash and insist on us buying cash. So, even if you have a lot of money in your phone it will not help you because you cannot buy from some shops. A few have started accepting eco-cash but they charge you much more than the price of the goods. What makes it worse is that the eco-cash agents are also sometimes without the cash as there is no cash at the bank.

The above excerpt also brings out the issue of retail shops taking advantage of the consumers to cash in on the use of soft money. While mobile money is relatively cheap in terms of service fees, the prices of goods were hiked when one was using mobile money to purchase in some shops in the rural areas.

Retailers charged extra, claiming they would also be charged to access the mobile money, which increased costs of using mobile money services. The cash-out alternative, which would ensure that the users withdrew all their money or converted the mobile money into hard cash, also seems to be a challenge in Zimbabwe in the height of severe cash shortages. Mobile money agents would need to access hard cash from banks and clients, both which are increasingly without hard cash.

Besides retail shops, the participants indicated that they also did not have the benefit of paying tuition for their children in the rural schools through mobile money services as most schools in their communities rejected payment using such a platform. Participants indicated that this was a huge challenge as cash was very hard to come by and most of them had children in local schools and they regularly received money from their elder children and spouses working in urban areas to pay the fees. The same applied to transport service providers. Villagers who needed to travel buy public transport faced a huge challenge in that most of these did not take payments in soft money as they always insisted on cash. This was of concern as rural people needed to travel for medical care, to visit relatives, for funerals and to do shopping wherever they preferred. The problem forced rural people to do shopping in the few shops that accepted mobile money, which, as indicated earlier, were very expensive. They are also forced to settle for poorer health services within reach as travelling to better ones was a huge problem without hard cash.

Data also generally indicates that there is need for the mobile money service providers to educate the clientele on how they can access the loan and savings facilities associated with mobile money. Findings indicate that while the rural folk have taken to mobile money with enthusiasm, the same has not happened with the attendant savings facilities.

6.5 Discussion

The findings from focus group discussion indicate that access to financial services by rural communities in Zimbabwe have increased substantially due to the coming on board of mobile money services. These findings concur with those by Morawczynski and Pickens (2009), Mas and Morawczynski (2009) and Mbiti and Weil (2011). However, communities were yet to fully adapt to the savings and loan facilities. Further, the findings indicated that there is still need for mobile money service providers to market their products and to educate their clientele base. This is necessary to address a number of issues, including the problem of non-acceptance of payments by retail shops and the problem of non-adoption of the savings and loan facilities that come with mobile money. The findings also indicate that there is need to integrate mobile money services policies with consumer services regulation to address the problem of increased costs of doing business that unscrupulous retailers effect on mobile money transactions.

6.6 Summary of emerging themes

Table 6.1 presents a summary of the emerging themes from a focus group discussion conducted.

Table 6.1: Emerging themes

	Transfers	Cost Reduction	Distance Walked	Savings	Communication	Network Coverage
FGD 1	▪	▪		▪	▪	▪
FGD 2	▪	▪		▪	▪	▪
FGD 3	▪	▪	▪		▪	▪
FGD 4	▪	▪	▪			▪
FGD 5	▪	▪	▪	▪		▪
FGD 6	▪	▪	▪		▪	▪

Key: ▪ indicates that the theme emerged in the focus group discussion (FGD)

Source: Primary data

In Table 6.1, the most prominent themes in all FGDs were the transfers, cost reduction and challenges relating to network coverage, these came up in all focus group discussions.

6.7 Summary

The chapter presented and analysed qualitative data from focus group discussions. The findings indicate high levels of usage and adoption of mobile money services among the rural populations. However, it is also indicated that mobile money usage comes with a number of challenges. The next chapter presents the quantitative methods, descriptive statistics, inferential statistics, measurement model and the structural model testing, hypothesis testing and the discussion of the study findings.

CHAPTER SEVEN

DATA PRESENTATION AND ANALYSIS

7.1 Introduction

The previous chapter highlighted the methodology used in the study and clearly showing how data was collected. Therefore, this chapter begins with a description of the sample demographics of the respondents and provides a step by step a detailed analysis of the Structural Equation Modelling (SEM) outputs of the proposed and modified models for the Confirmatory Factor Analysis and Structural model. The main objectives of the chapter are to provide an overview of the effect of mobile money on rural financial inclusion. Another objective of the study was to show the direct and indirect effects of mobile money on the wellbeing of rural household and to test the hypothesis, report and discuss the results of hypothesis testing.

7.2 Sample Demographics

This section presents sample demographics and respondents' characteristics like gender, marital status, educational level, age and income status as shown in Table 7.1. The response rate of 95.64% was achieved. Of the 367 households sampled 4.44% were not available at their homesteads even after repeated visits were made to meet them. Therefore, a total of 351 household responses eventually made the total sample used in the study.

Table 7.1 Demographic Profile

GENDER	Frequency	Percent	Valid Percent	Cumulative Percent
Male	173	49.3	49.3	49.3
Female	178	50.7	50.7	100.0
Total	351	100.0	100.0	
Age of Respondents				
<21 YEARS	10	2.8	2.8	2.8
21-35 YEARS	71	20.2	20.2	23.1
36-50 YEARS	175	49.9	49.9	72.9
51 YEARS AND ABOVE	95	27.1	27.1	100.0
Total	351	100.0	100.0	
MARITAL STATUS				
Married	259	73.8	73.8	73.8
Divorced	14	4.0	4.0	77.8
Widowed	48	13.7	13.7	91.5
Single	30	8.5	8.5	100.0
Total	351	100.0	100.0	
LEVEL OF EDUCATION				
Primary	72	20.5	20.5	20.5
Secondary	229	65.2	65.2	85.8
Tertiary	22	6.3	6.3	92.0
Other	28	8.0	8.0	100.0
Total	351	100.0	100.0	
OCCUPATION				
Employed	30	8.5	8.5	8.5
Self Employed	181	51.6	51.6	60.1
Unemployed	130	37.0	37.0	97.2
Pensioner	10	2.8	2.8	100.0
Total	351	100.0	100.0	

Source: Primary Data

The composition of the respondents was balanced as shown in table 6.1 above with 50.7% being females while 49.3% of the respondents were males. The majority (49.9%) of these respondents were aged between 36 and 50 years while 27.1% were above 51 years. A very insignificant percentage of the respondents were below 21 years. There were very few rural households that had a child heading the

family. On marital status, the results showed that the majority of the respondents were married with 73.8% and only 4% were divorcees.

On the level of education, Table 7.1 above shows that 65.2% of the respondents had attained a secondary level of education, 20.5% indicated a primary level of education and 6.3% attained tertiary level of education. This implies a 92% level of literacy. The findings are consistent with the widely reported view that Zimbabwe has very high literacy levels when compared to other countries in the region.

Due to the economic meltdown the level of employment reported was very low, only 8.5% of the respondents indicated that they were formally employed, with 88% reporting either unemployed or self-employed and an insignificant 2.8% being pensioners. The findings also show that there few employment opportunities in the rural hence most people would migrate to urban areas to seek job opportunities. The results were very consistent with economic figures on the levels of unemployment (Zimstats, 2015).

7.3 Mobile Money Access and Usage

Data relating to previous methods of access to financial services such as bank account ownership, former methods of sending money and storage of money is presented in the Table 7.2 below. In addition, mobile money access and usage data is analysed.

Table 7.2: Mobile Money Access and Usage

Bank Account	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	45	12.8	12.8	12.8
No	305	86.9	86.9	99.7
20	1	.3	.3	100.0
Total	351	100.0	100.0	
Purpose of Account				
Salary	14	4.0	4.0	4.0
Savings	9	2.6	2.6	6.6
Both	22	6.3	6.3	12.8
Not applicable	306	87.2	87.2	100.0
Total	351	100.0	100.0	
Former Methods of Remitting				
Bus Driver	206	58.7	58.7	58.7
Bank	24	6.8	6.8	65.5
Post	109	31.1	31.1	96.6
Western Union	12	3.4	3.4	100.0
Total	351	100.0	100.0	
Mobile Phone Ownership				
Yes	345	98.3	98.3	98.3
No	6	1.7	1.7	100.0
Total	351	100.0	100.0	
Registered MM User				
Yes	339	96.6	96.6	96.6
No	12	3.4	3.4	100.0
Total	351	100.0	100.0	
Service Provider				
Bank	1	.3	.3	.3
Mobile Operator	349	99.4	99.4	99.7
Not Applicable	1	.3	.3	100.0
Total	351	100.0	100.0	
Frequency of use				
Daily	1	.3	.3	.3
Weekly	10	2.8	2.8	3.1
Monthly	81	23.1	23.1	26.2

Occasionally	259	73.8	73.8	100.0
Total	351	100.0	100.0	
Distance from the nearest Agent				
<1km	45	12.8	12.8	12.8
1km-2km	53	15.1	15.1	27.9
2km-5km	107	30.5	30.5	58.4
5km-10km	28	8.0	8.0	66.4
>10km	118	33.6	33.6	100.0
Total	351	100.0	100.0	
Former methods of storing money				
ISAL	43	12.3	12.3	12.3
Bank	51	14.5	14.5	26.8
Under the mattress	245	69.8	69.8	96.6
Relative	11	3.1	3.1	99.7
Not Applicable	1	.3	.3	100.0
Total	351	100.0	100.0	
Link ISAL with Mobile Money				
Yes	34	9.7	9.7	9.7
No	11	3.1	3.1	12.8
Do not know	2	.6	.6	13.4
Not applicable	304	86.6	86.6	100.0
Total	351	100.0	100.0	

Source: Primary Data

The study findings show that prior to the adoption of mobile money services rural individuals used both informal and formal channels of sending money. Sending money using bus drivers was the most popular method as indicated by 58.7% of the respondents followed by 31.1% using the post office through registered letters. The number of respondents who sent/received money through Western Union or banks was very insignificant accounting for just 6.8% and 3.4% respectively.

On the former methods of storing money, the findings showed a similar trend with former methods of sending money. The traditional informal methods (under the mattress) had 69.8% of the respondents storing their money either under the mattress or a relative while formal methods like banks accounted for 15%. The findings are consistent with (Morawczynski, 2009, Mbiti and Weil, 2011, Munyegera and Matsumoto, 2016).

7.4 Account and Mobile phone ownership

The findings showed that of the 351 respondents 86.9% never had an account with a financial institution and only 12.8% had bank accounts. The figures point to a very large number of rural people who are possibly financially excluded if one were to only use bank account ownership as an indicator of financial inclusion. On the other hand, the respondents were investigated on mobile phone ownership and mobile money registration. The results were revealing, 98.3% of the respondents indicated that they owned a mobile phone and of that group 96.6% were registered mobile money users. This was reflective of the national mobile phone coverage as indicated by research (Broadcasting Board of Governors, 2012; Bandyopadhyay, 2010). As expected mobile money adoption was very high in the rural areas as shown in table above. Clearly it shows that if properly established, mobile money use can provide solutions to financial inclusion problems that have bedevilled the rural areas for a very long time. These findings are consistent with the previous research findings by Munyegera and Matsumoto (2016).

In the assessment of frequency of usage, the results indicate that 73.8 % of respondents occasionally used the mobile money services while 23.1% reported that they used it on a monthly basis. Weekly and daily usage was very negligible accounting for just 2.8% of the respondents. The findings reflect on the remittances received. Previous studies indicated that most of the rural household depended much on the remittances received from friends/relatives who live either in the urban area or abroad (López *et al.*, 2001).

The respondents were also asked to indicate the distance they walked to the nearest mobile money agent. Distance walked was very important to this study as the exclusion of the rural majority from formal banking services was largely premised on the distances that they had to travel to access banking infrastructure, which is largely in the urban areas as indicated by research (Alexandre *et al.*, 2011, Mas, 2010b). The results showed that 58.4% of the respondents walk distances of between zero to five kilometres to access mobile money service to either send or receive money. Eight percent (8%) walk between 5km and 10 km to get the service while 33.6% of the respondents indicated that they travel distances greater than 10km to access the nearest mobile money service. It is important to indicate that the distances (0 to 10km) walked by the majority of the respondents to the nearest mobile money service provider are the same distances the rural folk have always walked to the nearest clinics, schools, shopping centres, dip tanks and police station among other critical services accessed by the rural folk. Furthermore, mobile money users were grouped into three categories based on the amount of money received, i.e. small, moderate, high and large net receivers of remittances. Their remittance frequencies were presented together with distance walked to the nearest mobile money agent. The results are shown in the crosstab below. Consistent with the above analysis, the results showed that

the majority of the mobile money users received small to moderate amounts of money. In terms of distances a significant number of users in different categories still travelled long distances (>10km) to access their mobile financial services. In the same vein the study also attempted to relate the average amount and the distances walked by users to the mobile money agent. The results were presented in Table 7.3.

Table 7.3: Average mount (AMR) versus Distance walked to a mobile money agent

	Distance walked to the nearest mobile money agent					Total
	<1km	1km-2km	2km-5km	5km-10km	>10km	
Small AMR	18	14	33	9	31	105
Moderate AMR	12	22	34	8	38	114
High AMR	8	10	23	7	37	85
Large AMR	7	7	17	4	12	47
Total	45	53	107	28	118	351

Source: Primary Data

In contrast to traditional financial services, there has been a great improvement in accessing of financial services with the emergence of mobile money compared to bank access in terms of distance to the nearest bank branch for the rural people. Most banks and financial institutions are located in urban centres and the least distance to the nearest branch is 60km. Therefore, it can be seen that mobile money has greatly reduced the distance to the nearest bank as the majority of the respondent walk distances less than 5km. However, there is potential to further reduce distance and improve access to mobile money if agents were to be increased. There was an attempt to measure an association between the amount received and the distance walked to the nearest mobile money agent. The results of the Chi-square test are presented in the Table 7.4 below:

Table 7.4: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.100 ^a	12	.607
Likelihood Ratio	9.888	12	.626
Linear-by-Linear Association	.707	1	.401
N of Valid Cases	351		

a. 1 cells (5.0%) have expected count less than 5. The minimum expected count is 3.75.

Source: Primary Data

The results showed that there was no association between distance and amount received as indicated by a chi-square value of 10.100 and a p-value of 0.607.

The cost of establishing a mobile money agent is far less compared to establishing a bank branch. In some instances, it costs nothing as these agents can be hosted within a supermarket or a store. Similar observations were made by Munyegeera and Matsumoto (2016) who noted that mobile money had greatly reduced distance walked by mobile money users to access financial services in Uganda. Consequently mobile money technology/ service has the potential to bridge the gap between the disadvantaged individuals who have less access to formal financial services (Ky et al., 2016). The results demonstrated that the poor, through mobile money service, now have access to financial services. This state of affairs has potential for the involvement of the rural communities in economic activities of their country at large as they now have access to the central driver of the economy; finance. The respondents were asked to indicate the services they use mobile money for and their responses were presented as mean scores in Table 7.5.

Table 7.5: Mobile Money Uses

Mobile Money Uses	N	Minimum	Maximum	Mean	Std. Deviation
To receive money	351	1	4	1.81	.473
To safely store funds	351	1	5	2.09	.759
To send money	351	1	5	2.33	1.050
To top up airtime	351	1	5	2.34	1.102
To pay bills	351	1	5	3.52	1.050
To pay school fees	351	1	5	3.68	.914
Valid N (listwise)	351				

Source: Primary Data

The mean values for mobile money uses were calculated as shown in table 7.5 above. The results showed that for the rural households, mobile money was used to receive money from friends and relatives either in the urban centres or abroad. This is in line with the growth of both rural to urban migration and migration into the diaspora, which have been on a steady increase since the earliest signs of the depreciation of the Zimbabwean economy two decades ago. The respondents also indicated that they generally use mobile money service as a fund storage facility as shown by a mean value of 2.09. Sending money and airtime top up were also shown as the services popular with mobile money users. However, with regards to bill payment and school fees payment, mobile money users revealed that they were not using the services as shown by mean values 3.52 and 3.68 respectively. The possible

explanation could be that most of the businesses operating in rural communities have not yet embraced mobile money payment systems. The businesses in rural communities are only just starting to embrace the use of mobile money as an official transacting channel.

The data usage (receive money, pay school fees, airtime top-up, funds storage and bill payment) was further transformed to create categories to measure mobile money uses by rural communities. The usage categories were labelled as low user, moderate user and high users. The results are presented in the Table 7.6:

Table 7.6: Mobile Money Usage Category

Usage Levels	Frequency	Percent	Valid Percent	Cumulative Percent
Low User	58	16.5	16.5	16.5
Moderate User	222	63.2	63.2	79.8
High User	71	20.2	20.2	100.0
Total	351	100.0	100.0	

Source: Primary Data

Generally, most users of the mobile money services were moderate users with a 63.2% usage rate. Again, there was an attempt to test for an association between usage and the level of education of users. Before carrying out a Chi-square test, a crosstab was used to present data on the level of education and the mobile money usage (MMU) category. The crosstab is presented in Table 7.7:

Table 7.7: Level of education * MMU_CATEGORY

Level of Education		MMU_CATEGORY			Total
		Low User	Moderate User	High User	
Level of education	Primary	28	40	4	72
	Secondary	20	159	50	229
	Tertiary	1	8	13	22
Total		49	207	67	323

Source: Primary Data

In terms of user distribution, the majority (229) of users attained secondary education level, while most users belonged to the moderate user category.

Furthermore, a Chi-square test was done and the results of a Chi-square test are presented in the Table 7.8:

Table 7.8: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	62.803 ^a	4	.000
Likelihood Ratio	55.007	4	.000
Linear-by-Linear Association	48.834	1	.000
N of Valid Cases	323		

a. 2 cells (22.2%) have expected count less than 5. The minimum expected count is 3.34.

Source: Primary Data

On the association between usage and level of education, the results showed that level of education has a strong bearing on the usage of mobile money services with a Pearson Chi-square value of 62.803 at the p value of 0.000. The results show that higher education implies more usage of mobile money services.

7.5 Factor Analysis

Before conducting SEM exploratory factor analysis was done. Yang (2005) refers to factor analysis as the common term that represents a number of statistical procedures that explain a set of observed variables in terms of hypothetical constructs called factors. The two commonly used factor analysis techniques are exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Exploratory factor analysis is usually used to discover latent variables with a larger number of manifest variables whereas confirmatory is preferably applied for confirming a given factor structure based on theory of previous research (Yang, 2005). Factor analysis is usually used when developing and validating measurement instruments.

A number of situations have been identified in which factor analysis can be used (Yang, 2005). The situations include when the researcher desires to discover underlining dimensions for a given phenomenon and in this regard the situation calls for exploratory factor analysis approach. Another situation is when the researcher wants to develop and validate an instrument or an assessment tool to measure an abstract concept for either theoretical or practical interest. Furthermore factor analysis can be used in testing the original construct and theories, that is, it can be used to examine the dimensionality of the construct (Yang, 2005).

Therefore, in this research exploratory factor analysis (EFA) was employed to help prepare for hypothesis testing and to verify the scales for uni-dimensionality (Conway and Huffcutt, 2003). The instrument was developed, administered and the responses were again subjected to exploratory factor analysis before using confirmatory factor analysis (Beavers et al., 2013). Exploratory factor analysis was used to create, develop and refine the measurement scales in the methodology section.

7.6 Structural Equation Modelling with AMOS

The structural equation modelling (SEM) was used as the main statistical analysis technique of the study. SEM is a family of statistical models that examines a series of causal relationships simultaneously. It is particularly useful in testing multiple factors affecting a phenomenon or a behaviour. The SEM analysis is done in two steps; the first step consists of assessing the validity and the reliability of the instruments used by the researcher. This is done through the development and assessment of a measurement model also called confirmatory factor analysis (CFA). The second step consists of testing the hypotheses suggested by the research model.

7.7 Measurement model

Confirmatory factor analysis or the measurement model was performed using the Structural Equation Modelling (SEM) approach. IBM SPSS Amos24 was the package used to run the SEM analysis. The measurement model shows the link between the observed and the unobserved variables. The confirmatory factor analysis shows how each measure loads into a particular factor as measured variable come together to represent a construct. Therefore, CFA is used for model validation and reliability checks. In this study the estimation of the confirmatory measurement model preceded the estimation of the Structural Model. Figure 7.1 below shows the results of the initial measurement model and then the final measurement model.

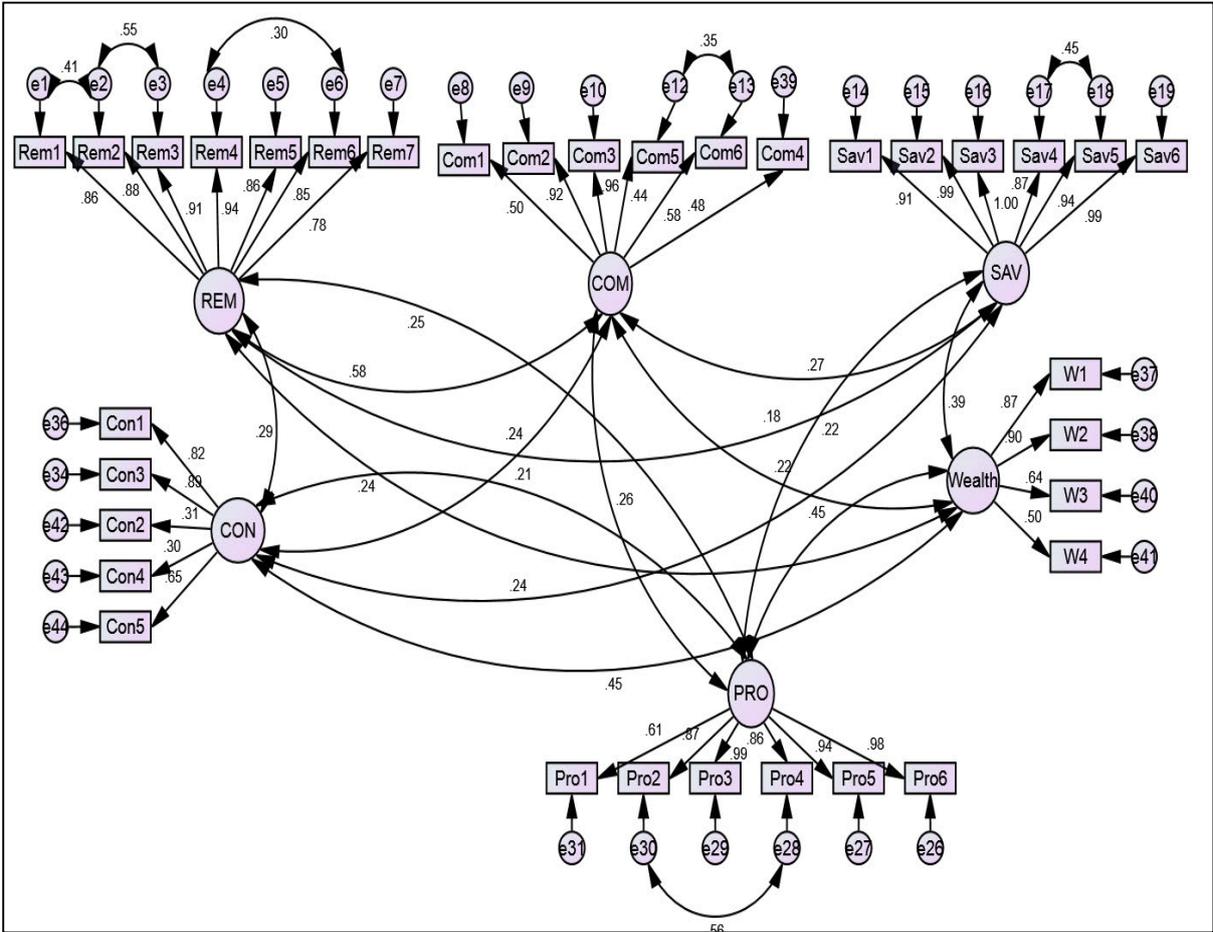


Figure 7.1: Proposed Measurement Model

Source: AMOS Output

The measurement model was tested using confirmatory factor analysis (CFA). From the initial proposed model (Figure 6.1), the CFA results displayed unsatisfactory fit indices: ($\chi^2/df = 4.350$, GFI = 0.743; TLI = 0.870, CFI = 0.883, RMSEA = 0.098). A close diagnosis of the modification indices assisted to pinpoint the inter-item correlations affecting the model fit such as the correlation between *Pro2* and *Pro4* or the correlation between *Com5* and *Com6*. The standardised residual covariance matrix retrieved from the AMOS outputs also showed that some items were to be deleted from the analysis to improve the model fit. These items (*Com4*; *W3*; *W4*; *Con2*; *Con4*; *Con5*) were deleted because of high standardised residual covariance matrix (above) and cross loading issues as indicated in the modification indices (Hair et al., 1998).

Deletion of items reduced the measurement error and increased reliability among items (Ford et al., 1986) which in turn also enhanced the model fit. After refining the model, the final measurement model was designed. Figure 7.2 presents the final measurement model:

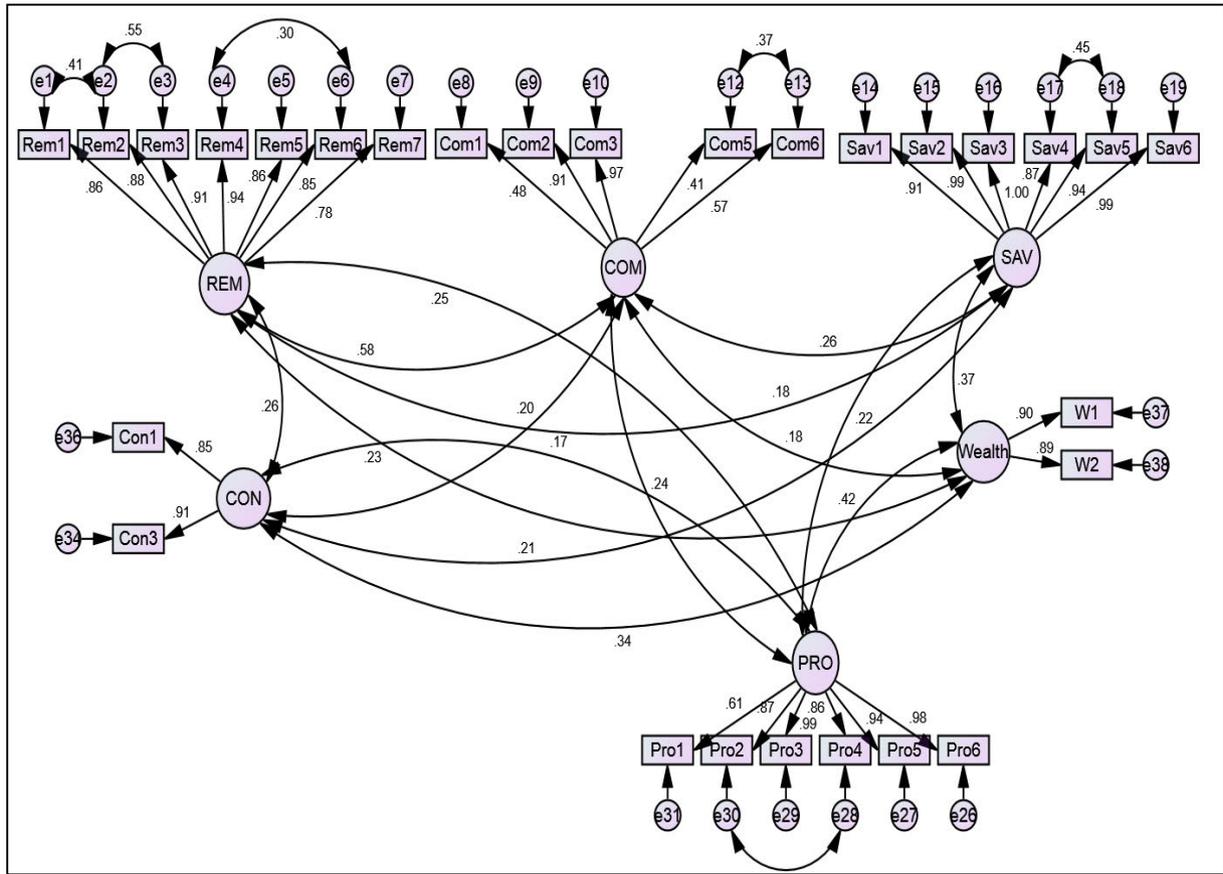


Figure 7.2: Final Measurement Model: Confirmatory Factor Analysis (CFA)

Source: AMOS Output

7.7.1 Interpretation of the Measurement Model

The bigger circles represent the latent variables also called “constructs”; for example, in the measurement model above we have six constructs. “CON” stands for “CONSUMPTION”; “REM” stands for “REMITTANCE”; “COM” stands for “COMMUNICATION”, “SAV” stands for “SAVINGS”, “Wealth” stands for “WEALTH” and “PRO” stands for “PRODUCTIVITY”. Each one of these constructs is measured through various numbers of valid items. For example, CONSUMPTION (CON) had 5 items but only 2 items were valid in the Zimbabwean context. All the 7 items measuring the construct REMITTANCE were valid. The construct COMMUNICATION initially had 6 items but only five of them were valid, etc. All the items represented in the measurement model are presumed to be valid in the Zimbabwean environment; this validity is further confirmed through the reliability and validity tests.

The contribution of each item in the construct is indicated by its factor loading; any factor loading above .5 is acceptable, while anything below .5 indicates a poor measure. For example, the factor loading of the item (Con1) is .85; meaning, item Con1 measures “CONSUMPTION” at 85% and the item (Con3) measures “CONSUMPTION” at 91%. Since there is always a margin of error when measuring abstract

constructs, an error term is associated with each item. In the case of “CONSUMPTION” for example, e36 is the error term of the item (Con1), e34 the error term of (Con3) etc.

The coefficients of double-headed arrows indicate the bivariate correlation coefficients between constructs. For example, the correlation coefficient between REMITTANCE and PRODUCTIVITY is .25; meaning when one of these two variables increase of 1 standard deviation, the other variable also increases of 25% of its own standard deviation. The correlation table later specifies whether these correlations are significant or not. Considering that the purpose of the measurement model is to assess the validity of the scales in Zimbabwe, the next section examines the reliability, the convergent validity, and the discriminant validity of the instruments.

7.7.2 Reliability, Convergent and Discriminant Validity Assessment

The reliability and validity of the scales was assessed through a series of reliability tests (Alpha Cronbach coefficient and composite reliability), convergent validity and discriminant validity tests. The results are presented in Table 7.9.

Table 7.9: Reliability and Validity Assessment

	Cronbach Alpha	CR	AVE	MSV
CON	.864	0.871	0.771	0.115
REM	.957	0.956	0.765	0.333
COM	.777	0.818	0.501	0.333
SAV	.983	0.983	0.905	0.138
PRO	.958	0.955	0.782	0.179
Wealth	.720	0.890	0.802	0.179

Source: Primary Data.

7.7.2.1 Construct Reliability

Construct reliability checks the internal consistency of indicators to measure a concept (thoroughness) while composite reliability measures internal homogeneity of a set of items. The reliability of a scale is acceptable when the Cronbach’s Alpha or the composite reliability coefficient is at least equal to 0.7. If the values of the coefficient (alpha) are above 0.7, then the reliability is considered to be good (Anderson and Gerbing, 1988, Bagozzi and Yi, 2012). The results in table 7.9 above show Cronbach Alpha for the six-construct ranging between 0.720 and 0.983, while the composite reliability ranged from 0.871 to 0.983. Overall the coefficient results indicate good reliability of the scales as they are all above the recommended threshold.

7.7.2.2 Discriminant Validity

It is the extent to which a measure (construct) is distinct from the other measures (constructs). Discriminant validity was established through the AVE analysis, where a comparison of the Average Variance Extracted with the squared correlation of each of the construct was conducted. According to Hair Jr, Black, Babin and Anderson (2014), the AVE of a latent variable should be higher than the squared correlations between the latent variable and all the other latent variables. Fornell and Lacker (1981) maintain that discriminant validity is achieved when the following conditions are satisfied, that is, firstly if the correlation of latent variable score with measurement item reflecting a pattern of loading where the measurement items load highly on their theoretically assigned factor and lowly on other factors. Secondly the square root of each construct must be greater (larger) than the correlation of the specific construct with other constructs in the model and it the square root must be at least 0.5.

Moreover, the discriminant validity of a scale is good when the Maximum Shared Variance (MSV) coefficient is lower than the AVE coefficient. Table 7.9 above summarised the reliability and validity coefficients of the scales represented in the measurement model (see Appendix I for the calculation of the Average Variance Extracted).

The overall result indicates a good reliability and validity of all the scales involved in this study as Cronbach alphas and composite reliability coefficients are both above 0.7. Meaning each item involved in this study measured in average at least 70% of its construct. The convergent validity of all constructs is good because their AVE ranges between 0.501 and 0.905 which is above 0.5 the recommended threshold.

Table 7.10 presents the correlation and the square root of AVEs matrix used to determine discriminant validity.

Table 7.10: Correlation & Square root of AVEs Matrix

	CON	REM	COM	SAV	PRO	Wealth
CON	0.878					
REM	0.261	0.870				
COM	0.201	0.577	0.708			
SAV	0.213	0.176	0.261	0.951		
PRO	0.166	0.247	0.244	0.218	0.885	
Wealth	0.339	0.228	0.184	0.372	0.423	0.895

Source: Primary Data.

The discriminant validity is supported because all the correlation coefficients of all variables are lower than the Squared Root of their AVE (in blue). For example, .878 is greater than all the correlation coefficients contained in its column. Similarly, .870 is greater than all the correlation coefficients between REM and all the other constructs. The details of factor loadings and correlation coefficients displayed on the measurement model are presented in table 7.11.

7.7.2.3 Convergent Validity

Convergent validity is achieved when each measurement item correlates strongly with its assumed theoretical construct (Fornell and Larcker, 1981). They farther say that items that measure a construct must converge or reflect a high proportion of variance in common. The benchmark for standardised factor loadings for indicators is 0.7 although 0.6 is also considered an acceptable level (Fornell and Larcker, 1981). In this study, all the factor loadings were greater than 0.7 that is, they ranged between 0.7 and 0.99 for most of the indicators as shown by standardised regression weights in Table 7.11. Convergent validity of a scale is good when the Average Variance Extracted (AVE) coefficient is above the threshold of 0.5.

7.7.2.4 Factor Loadings

Factor loadings reflect the degree to which each item on the scale is linked to a factor. It reflects the extent to which differences in respondents' responses to the item arise from differences among their levels of underlying psychological constructs being assessed by the that item. If an item is hypothesized that it loads unto a particular factor, then it must have a high significant-positive factor loading. All factor loadings indicating significantly high values are retained while those factor loadings with small or insignificant are removed. The conclusion reached is that the items are not related to that factor. The recommended threshold for factor loading is 0.5 (Fornell and Larcker, 1981). The factor loadings for the measurement model are presented in Table 7.11.

Table 7.11: Standardised Regression Weights: (Group number 1 - Default model)

Variable			Estimate	P-value
Remittance				
Rem1	<---	REM	.859	***
Rem2	<---	REM	.883	***
Rem3	<---	REM	.912	***
Rem4	<---	REM	.937	***
Rem5	<---	REM	.863	***
Rem6	<---	REM	.846	***

Variable			Estimate	P-value
Rem7	<---	REM	.784	***
Communication				
Com1	<---	COM	.481	***
Com2	<---	COM	.914	***
Com3	<---	COM	.973	***
Com5	<---	COM	.411	***
Com6	<---	COM	.569	***
Savings				
Sav1	<---	SAV	.909	***
Sav2	<---	SAV	.989	***
Sav3	<---	SAV	.999	***
Sav4	<---	SAV	.869	***
Sav5	<---	SAV	.938	***
Sav6	<---	SAV	.993	***
Productivity				
Pro6	<---	PRO	.982	***
Pro5	<---	PRO	.940	***
Pro4	<---	PRO	.857	***
Pro3	<---	PRO	.988	***
Pro2	<---	PRO	.871	***
Pro1	<---	PRO	.614	***
Consumption				
Con3	<---	CON	.909	***
Con1	<---	CON	.846	***
Wealth				
W2	<---	Wealth	.894	***
W1	<---	Wealth	.896	***

*** indicates significant relationship at the level 0.0001

Source: Primary Data.

Table 7.11 above shows that all the items have good factor loadings as most of their estimates are above >0.5 the required threshold. They are also all significant at 99% confidence interval; this implies that the instruments used in this study were very good measures.

7.7.2.5 Correlation estimates of the measurement model

Table 7.12 below shows the correlation estimates for the measurement model.

Table 7.12: Correlations: (Group number 1 - Default model)

			Estimate	P-value
REM	<-->	COM	.577	***
REM	<-->	SAV	.176	.002
REM	<-->	PRO	.247	***
REM	<-->	CON	.261	***
REM	<-->	Wealth	.228	***
COM	<-->	SAV	.261	***
COM	<-->	PRO	.244	***
COM	<-->	CON	.201	.002
COM	<-->	Wealth	.184	.003
SAV	<-->	PRO	.218	***
SAV	<-->	CON	.213	***
SAV	<-->	Wealth	.372	***
PRO	<-->	CON	.166	.005
PRO	<-->	Wealth	.423	***
CON	<-->	Wealth	.339	***
e28	<-->	e30	.562	***
e2	<-->	e3	.551	***
e4	<-->	e6	.304	***
e17	<-->	e18	.453	***
e1	<-->	e2	.407	***
e12	<-->	e13	.368	***

*** indicates significant relationship at the level 0.0001

Source: Primary Data.

Table 7.12 indicates an overall acceptable level of correlations between constructs (for most estimates are less than 0.7. Table7.12 also indicates that all the correlations are significant at 99% confidence interval. Meaning we have 99% of chances to see these relationships occurring in the sample.

7.8 Model Evaluation Criteria (Goodness of Fit Analysis)

After the validation of the measurement model was established, then confirmatory factor analysis (CFA) was conducted to determine the model fit of the measurement model. Maximum Likelihood (ML) was used as an estimation method.

The primary objective in Structural Equation Modelling (SEM) is to establish the extent to which hypothetical data fits sample data. The evaluation of model fit must be based on a diverse number of criteria. Therefore, for this study the measures used to evaluate the model fit were the Chi-square, Goodness of Fit Index (GFI), Comparative Fit Index (CFI), the Tucker Lewis Index (TLI) and the Root Mean Square Error of Approximation (RMSEA). The model fit indices are simply different ways (formula) to calculate the model fit. Table 7.13 presents the commonly reported fit indices with their recommended thresholds.

Table 7.13: Common Model Fit Indices with their recommended threshold

Measure	Threshold
Chi-square/degree of freedom (CMIN/df)	< 3 good; < 5 sometimes acceptable
CFI (Comparative Fit Index)	>.80 sometime acceptable; >.90 good
GFI(Goodness-Of-Fit-Index)	>.80 sometime acceptable; >.90 good
TLI (Tucker Lewis Index)	>.80 sometime acceptable; >.90 good
RMSEA (Root Mean Square Error of Approximation)	<.05 good; .05 to .1 moderate; >.1 bad

Source: Hair Jr et al. (2014)

In interpreting the results of this study, the recommended thresholds in Table 7.13 by Hair et al, (2014) were used.

7.8.1 Chi-Square (X^2) Goodness of Fit

The Chi-square of the measurement model above is 920.484, Degrees of freedom = 329 and its P value is (.000). The Chi-square is used to evaluate the relationship between the model specification and its empirical data. It assesses the statistical probability that observed sample and SEM estimated covariance matrices are the same (equal). From Table 7.13 above, the chi-square (CMIN/DF) value less than 3 is deemed good, while values greater than 3 and less than 5 are acceptable (Hair et al, 2014). However, as the value increases beyond 5 the fit of an over identified model worsens. Chi-square is thus regarded as a badness-of-fit index, as its value increase the worse the model fits into the empirical data. Therefore, Table 7.14 below presents the model fit indices of the measurement model where the CMIN/df value is 2.798. This is an indication of a good model fit in the population from which the sample was drawn,

that is, it supports the theoretical model being tested. Table 7.14 below shows the important model fit indices of the measurement model that was presented in figure 7.2 above.

Table 7.14: Model Fit Indices of the Measurement Model

Fit indices	Value
CMIN/df	2.798 (good)
GFI	.842 (acceptable)
CFI	.954 (good)
TLI	.947 (good)
RMSEA	.072 (moderate)

Source: Primary Data.

7.8.2 Goodness of Fit Index (GFI)

It is similar to the squared correlation (R^2), with GFI value equal to one indicating a perfect model fit, GFI value greater than 0.9 regarded as good and a GFI value greater than 0.8 sometimes acceptable as shown in the threshold Table 7.14. Therefore, based on the study results presented in Table 7.14, GFI has an acceptable value of 0.842.

7.8.3 Comparative Fit Index (CFI)

It is regarded as an incremental and improvement of the normed fit index (Hu and Bentler, 1999). As indicated in table 7.14, the values range between zero and one with values close to 1 reflecting a better fit. CFI values greater than 0.9 are regarded as good while values greater than 0.8 are sometimes acceptable (Hair Jr et al., 2014). Table 7.14 shows that a CFI value of 0.954 was achieved for the measurement model, an indication of a good fit.

7.8.4 Tucker Lewis Index (TLI)

It is also similar to the normed fit index (NFI), however, it differs with the NFI in the sense that it compares the normed Chi-square value for the null and specified model which accounts for model complexity (Tucker and Lewis, 1973). For the TL index, models with good fit have values approaching 1 and in principle models with higher values indicate a better fit than models with a lower value. As shown in Table 7.14 above, the measurement model has a TLI value of 0.947 which is an indication of a good fit (Hair et al., 2014).

7.8.5 Root Mean Square Error of Approximation (RMSEA)

It is a measure of how well a model fits the population, not just the sample used for estimation. Contrary to other fit measures discussed above, low values of RMSEA are an indication of a better fit. Hair Jr et al. (2014) recommended values less than 0.05 as good indicators of model fit, while values ranging between 0.05 to 0.1 are regarded as moderate and values greater than 0.1 indicating a bad fit. The RMSEA value of 0.072 was achieved for the measurement model as shown in Table 7.14.

From the analysis presented in the preceding sections on model fit indices, we can conclude that the measurement model of the study fits the data satisfactorily. The relationships illustrated in the measurement model in Figure 7.2 indicated a satisfactory overall model fit and therefore, the proposed model fits well with observed data. All the instruments used in the measurement model are reliable and valid in the rural Zimbabwean context. Given that the confirmatory factor analysis (CFA) provided satisfactory results, we then move to the structural model.

7.9 Structural Model

The structural model was tested using the maximum likelihood performed with AMOS 24 and the final hypothesised model is presented in Figure 7.3. The figure below shows the paths and their standardised regression coefficients.

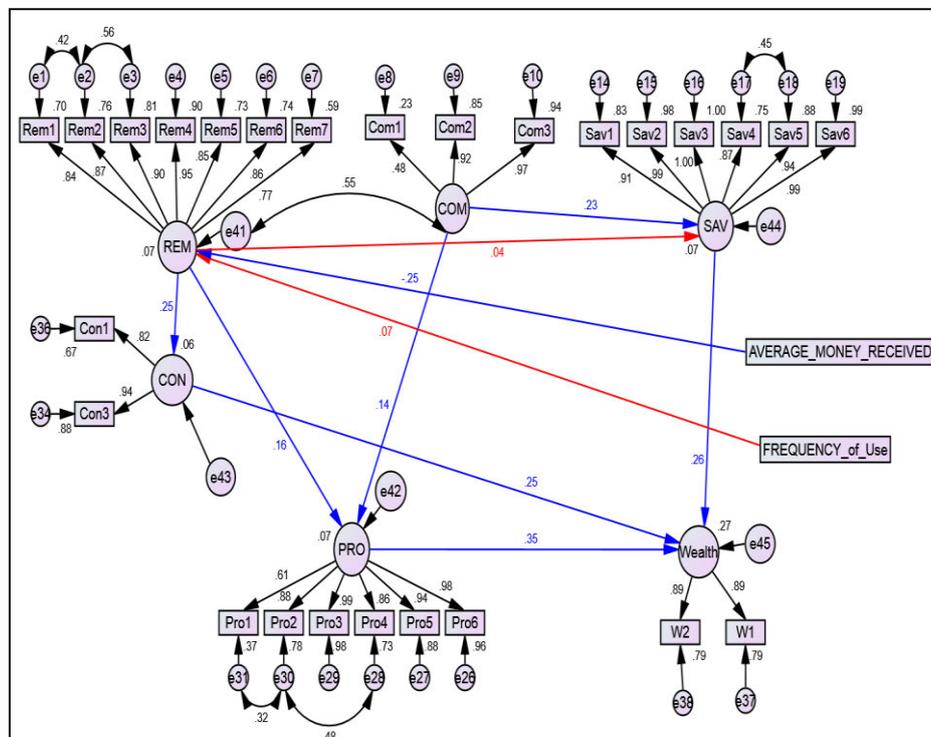


Figure 7.3: Structural Model

Source: Primary data

The blue arrows in the model indicate the significant relationships in the structural model. Details of regression weights and correlation coefficients displayed on the structural model (Figure 7.3) are provided in the tables below. The Chi-square of the structural model is (Figure 7.3) 884.439, Degrees of freedom = 4337 and its P value is .000.

7.9.1 Model Fit Indices

The process of determining the structural model fit followed the same steps conducted when assessing the measurement model fit. Table 7.15 below presents some important model fit indices of the structural model as shown in Figure 7.3 above.

Table 7.15: Fit Indices

Fit indices	Value
CMIN/Df	2.631 (good)
GFI	.846 (acceptable)
CFI	.956 (good)
TLI	.951 (good)
RMSEA	.068 (good)

Source: Primary Data.

The model fit indices above show that there is a satisfactory fit for the structural model. A comparison of the model fit indices in Table 7.15 with the recommended thresholds in table 7.13 presented earlier, indicate that there is a satisfactory model fit (Hair Jr *et al.*, 2014). Therefore, we can conclude that the structural model fits the data satisfactorily and that the structural model (Figure 7.3) can be used with confidence to conclude on the research hypotheses.

7.9.2 Regression Weights and Hypotheses Testing

SEM results are presented in Table 7.16 below indicating the regression (or estimate) coefficients of the various relationships in the structural model (Figure 7.3) as well as their p values. The SEM findings were assessed using the estimated path coefficient (beta) with critical ratio (C.R. equivalent to the t-values) and p-value. Therefore, to decide whether to reject/accept a hypothesised relationship, the significance testing decision rule was applied. Where t-values greater or equal to 1.96 and p-values less or equal to 0.05 the relationship was regarded as significant and where the p-value is greater than 0.05 the relationship is considered not significant (Byrne, 2010).

Table 7.16: Regression Weights: (Group number 1 - Default Model)

Hypothesis	Dependent Variables (DV)		Independent Variables (IV)	Estimate	Critical Ratio (C.R.)	P value	Hypothesis Conclusion
H ₁	Remittances	<---	Frequency of use	.068		.130	Not Supported
H ₂	Remittances	<---	Average money received	-.254		***	Supported
H ₃	Productivity	<---	Remittances	.163		.011	Supported
H ₄	Consumption	<---	Remittances	.248		***	Supported
H ₅	Savings	<---	Communication	.261		***	Supported
H ₆	Productivity	<---	Communication	.141		.031	Supported
H ₇	Wealth	<---	Consumption	.245		***	Supported
H ₈	Wealth	<---	Savings	.261		***	Supported
H ₉	Wealth	<---	Productivity	.346		***	Supported

*** indicates significant relationship at the level 0.0001

Source: Primary Data.

The results in Table 7.16 above showed that only the relationship between Frequency of use and remittances is non-significant. All the other relationships in the structural model were significant at least at 95% confidence interval and they are further discussed in the following section.

7.10 Discussion of the results

The SEM model has shown the potential pathways through which mobile money impacts on the welfare of the rural households. Based on the results presented above, there is positive and direct impact of mobile money on remittances, consumption, productivity, communication and savings and indirectly on the welfare of rural households. The findings were consistent with theoretical assertions and validated empirical studies (Kasseeah and Tandrayen-Ragoobur, 2012, Donner and Tellez, 2008, Jenkins, 2008).

7.10.1 Average Money received increases mobile money remittances

The standardised estimated path coefficient for the hypothesised relationship has a negative and insignificant effect on remittances. This is indicated by its beta coefficient value of -0.254 and a p-value greater than 0.05. Therefore, when the average money received increase by one standard deviation, remittance goes down by 0.254 of its own standard deviation. It is the amount of money received that

determines the amount of money to be used. The impact of mobile money on household welfare is presumed on remittance flows from household members working outside the village. The adoption and usage of cost effective mobile financial service has greatly improved the way the family members can support their family members back in the village. Similar observations were made by (Andrianaivo and Kpodar, 2012) on how mobile financial services boost financial inclusion to the rural poor. With an increased income from relatives and friends mobile money users are able to meet their monthly financial needs and the excess can therefore be appropriated for other competing needs like consumption, savings and productivity areas. The SEM findings are confirm untested theorised assertions by (Alampay et al., 2017) and (Hinson, 2011) that mobile financial services has developmental impact on remittances, financial inclusion and livelihood efficiencies. The findings also confirm empirical evidence from (Munyegera and Matsumoto, 2016, Jack and Suri, 2011, Mbiti and Weil, 2011, Morawczynski and Pickens, 2009) on the impact of mobile money on remittance.

7.10.2 Mobile money Remittances increases Productivity of rural people

The standardised estimated path coefficient for the hypothesised relationship shows that remittance has a positive and significant effect on productivity. This is indicated by a beta coefficient value of 0.163 and a p-value (0.011) lower than 0.05. An increase in remittance of 1 standard deviation has a direct effect (increase) in productivity of 0.163. The results point to a positive relationship between remittances and productivity, as confirmed by the supportive evidence. The findings are consistent with previous findings by Quartey and Blankson (2014) and De Janvry and Sadoulet (2009) on the relationship between the variables remittance and productivity. The results suggest that remitted funds are allocated to promote economic development in productive activities. The main identified productive activity in this study was in agricultural sector which forms the main livelihood activity of the rural household.

7.10.3 Remittances increases Consumption of the rural households

The standardised estimated path coefficient for the hypothesised relationship indicates that remittances have a positive and significant effect on consumption. As remittances increase by one standard deviation, consumption goes up by 0.245. Remittances determine the level of consumption of rural households. The results seem to imply that remittances improve the income levels of the rural people and have an impact on the expenditure patterns consequently pointing to an increase in consumption. These result are analogous to Tenaw and Islam (2009) findings where remittances were seen as a source of income with a poverty reduction effect to the rural poor. Similarly, Zarate-Hoyos (2004) reached the same conclusion on the effect of remittances on consumption showing a high tendency to allocate remittances to consumption. Remittances increase consumption in the category of food items, as they are partly sent to supplement the incomes of the rural household (Munyegera and Matsumoto, 2016).

7.10.4 Communication has a positive effect on savings of the rural households

The reported standardised path coefficient for the hypothesised relationship indicates that communication has a positive and significant effect on saving patterns of the rural people. This is revealed by beta coefficient of 0.261 and a p-value (***) lower than 0.01. The hypothesised relationship is supported by the results. The study findings corroborate existing previous results (Demombynes and Thegeya, 2012, Morawczynski, 2009). The communication function of the mobile phone is very important especially when savings is incorporated in the informal group savings schemes such as the internal saving and lending (ISAL) and the ROSCAs. It allows the group members to maintain a permanent record on the transactions carried out through the mobile money facility as it provides detailed transaction record. Mobile money therefore fulfils one of the major security requirements of an online transaction, which is non-repudiation by a third party after a transaction has taken place. Therefore, in the context of group saving schemes, any improvement in communication in relation to mobile money has positive effect on the group's savings (Kumar and Gupta, 2009). It has helped the rural households to migrate from the traditional saving methods to more secure formal method of saving. This is one way of formalising rural financial services. The more important implication of this result is on financial inclusion, once the members are able to save their funds using the mobile money facility it means they become financially included. Previous studies have pointed out that access to savings is one of the features of a financially inclusive system (Sangare, 2015, Alexandre and Eisenhart, 2013, Must and Ludewig, 2010).

7.10.5 Communication has positive effect on productivity of rural households

As shown in Table 7.16 above, the path coefficient for the relationship between communication and productivity in the model is significant with standardised estimated coefficient value of 0.141 and a p-value of 0.031. The results support the hypothesised relationship and they seem to validate empirical research on the relationship between communication and productivity (Sekabira and Qaim, 2016, Mbabazize et al., 2014, Vancel, 2012, Tenaw and Islam, 2009). The mobile phone technology serves dual purpose, on one hand it's a communication tool for mobilising and coordinating production resources on the other hand it provides mobile money transfer and payment services for materials, equipment and other production related services. It was emphasised earlier that rural livelihood is much depended on agricultural activity; hence the mobile phone can be used in sourcing out inputs and also to share market information. It is also used to receive payment for the products and also to make payments for services rendered to the producer. Hence the advent of mobile money has had some significant impact to the productivity of rural households through increased efficiency and reduced costs as revealed in the study findings.

7.10.6 Productivity has a positive effect on the well-being of rural households

The standardised estimated beta coefficient of the proposed model has positive and significant effect on wealth as hypothesised. The estimated coefficient value of 0.346 and p-value (***) that is lower than 0.01 indicate that productivity is key contributor of rural wealth. Any improvement on productivity has a positive and significant net effect on wealth of rural household. Agricultural productivity is an important factor in reducing poverty for the rural communities, that is, growth in yields and productivity improves the income of these individuals which in turn positively impacts on their wealth (De Janvry and Sadoulet, 2009).

7.10.7 Savings have a positive effect on the Well-being (Wealth) of rural households

The SEM findings indicate a moderate support of the hypothesised relationship between savings and wellbeing (wealth). The estimated coefficient value of 0.261 and p-value (***) is positive and significant, the results validate the hypothesised relationship. The results seem to suggest that an increase in savings tend to result in an increase of 0.261 in wealth of the rural households. It can therefore be deduced from the indirect relationship between mobile money and wealth that mobile money through savings has an effect of increasing wealth of rural households.

7.11 Predictor of wealth for the rural Household

The main research question posited to determine the effects of mobile money services on the livelihood on rural households. The objective was to establish the contribution of mobile money in increasing /reducing poverty of the rural people. The relationship between mobile money and wealth was mediated by variables such as remittances, communication, productivity and savings. Table 7.16 shows that out of the nine hypothesised causal relationships eight of them were significant.

Furthermore, Table 7.17 presents the predictor of remittances and their significance in predicting remittances.

Table 7.17: Significant predictor of Remittances

Predictor	Regression weights	Variance explained
Average Money Received	-.25	7%

Source: Primary Data.

According to Table 7.17, Average money received is the only predictor of Remittances; there is a negative relationship between Average money received and Remittances. In other words, those with low average money received reported high level of remittance. An improvement of Average money received can negatively affect Remittances up to 7%.

Table 7.18 presents the predictor of consumption and the power of remittances in predicting consumption.

Table 7.18: Significant predictor of Consumption

Predictor	Regression weights	Variance explained
Remittances	.25	6%

Source: Primary Data.

According to Table 7.18, only Remittances significantly predicts Consumption; in other words, if the economic regulators want to enhance Consumption they should develop interventions which aim at improving remittance flow. Any improvement on Remittances will have some effect on Consumption. Remittances as a predictor can improve Consumption up to 6%.

Table 7.19 presents predictors of Productivity in the structural model. Remittances and communication were shown as significant predictors of productivity.

Table 7.19: Significant predictors of Productivity

Predictors	Regression weights	Variance explained
Remittances	.16	7%
Communication	.14	

Source: Primary Data.

According to Table 7.19 above, two variables in the model predict Productivity namely; Remittances and communication. Remittance is the strongest predictor of productivity as its regression weight (.16) is greater than the regression weight (.14) of communication. However, their impact is small as they only account for 7% of the variance explained of Productivity.

Table 7.20 presents significant predictors of Wealth. Productivity, Consumption and Savings were shown in the model as predictors of Wealth.

Table 7.20: Significant predictors of Wealth

Predictors	Regression weights	Variance explained
Productivity	.35	
Consumption	.25	27%
Saving	.26	

Source: Primary Data.

According to Table 7.20, three variables in the model predict Wealth namely; Productivity, Consumption and savings. Productivity is the strongest predictor of Wealth as its regression weight (.35) is greater than the regression weights of the other two predictors. Therefore, in the Zimbabwean

context, people wealth depends more on Productivity than any other factor. However, all three predictors taken together have the potential to positively affect household wealth (well-being) by 27%. Table 7.21 presents the predictor of Savings and its predictive power in the structural model.

Table 7.21: Significant predictor of Savings

Predictor	Regression weights	Variance explained
Communication	.26	7%

Source: Primary Data.

In Table 7.21, only Communication significantly predicts Savings. Given the nature of savings for the rural households, it is clear that they receive money from their relatives abroad to buy assets for them. The money can be sent and be saved until such a time they are able to invest (buy equipment, machinery or livestock). So, they tend to rely heavily on the communication of the sender. On the other hand, this is a reflection of community savings scheme (ISALs) where members send communication messages in relation to the group savings. This implies that, to enhance and improve Savings, the mobile money saving facility should develop interventions which aim at improving their group communication. An improvement on Communication can affect Savings up to 7%.

7.11.1 Correlation estimates of the structural model

In presenting the correlation estimates of the structural model in Table 7.22 below, the findings reveal that the dependent variable (wealth) is significantly correlated with all the other independent variables with moderate coefficient scores. The moderate correlation estimate is normally expected to explain discriminant validity (Fornell and Larcker, 1981). These correlation estimates suggest that the model performs well in terms of testing theory.

Table 7.22: Correlations: (Group number 1 - Default model)

			Estimate	P-value
e41	<-->	COM	.549	***
e28	<-->	e30	.484	***
e17	<-->	e18	.453	***
e2	<-->	e3	.562	***
e1	<-->	e2	.417	***
e30	<-->	e31	.323	***

*** indicates significant relationship at the level 0.0001

Source: Primary Data.

Table 7.22 shows that the majority of the correlations estimates in the structural model (Figure 7.3) are moderate (less than .6) and significant at 99% interval confidence.

7.12 Summary

The chapter presented and reported on the study results. The findings were done in two steps, where in the descriptive statistics were presented first and the measurement model and the structural models were presented and analysed. The results were then discussed in the context of the empirical results. The next chapter provides summary, conclusions and the recommendations of the study.

CHAPTER EIGHT

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

8.1 Summary of the study

The *first chapter* introduced mobile money concept, background and its impact on financial inclusivity. The background information pointed out that mobile money was seen to have solved the infrastructural lacuna that hindered an all-encompassing financial ecosystem. Furthermore, mobile money generated attention researchers and other stakeholders, particularly in the developing countries. Its introduction had been lauded for overcoming infrastructural barriers that lead to high cost of banking in rural populations. Mobile communication networks had been seen to enable information to move freely, creating market efficiency, entrepreneurship and financial innovations of accessing finance by the hitherto unbanked rural households. The term of mobile money service implies a continuum of banking services that are availed to customers through the usage of mobile phone devices. Hence mobile money facility enhanced financial inclusion among the rural poor people who were previously overlooked by the traditional banks. However, as a result of pressing economic challenges in Zimbabwe, mobile network operators such as Econet, Netone and Telecel and some banks have made great strides towards the exploitation of available opportunities through the launching of a broad array of mobile money services. Mobile phone technology had a great potential as it offered multitudes of people (millions) residing in emerging markets unfettered access to cellular phones and the potential to access banking services. Even globally there has been a steady growth of mobile communication in the past few decades. Both mobile communications and mobile financial services have picked up and play an important role in poverty reduction among the rural poor masses. There is a dichotomous relationship between telecommunications infrastructure and mobile phone ownership. An aspect that resulted in the growth of mobile money in scope and complexity never imagined before due to a large population of the poor rural masses.

Therefore, the implication is that mobile financial services have played a major role in eliminating financial exclusion of large populations of rural people who did not have access to financial services in yet to be developed countries like Zimbabwe. The mobile money services promised financial inclusion in the form of access to financial services with possibilities to save money. Kenya's M-Pesa boasting of over 14 million of registered users appears to be the current pinnacle in mobile money services usage in Africa for the previously unbanked or under banked populations. Admittedly, it emerged that mobile

finance innovations were still at their infancy of implementation. But now other countries were fast catching up with Zimbabwe now using 95% digital currency.

The rural unbanked included: traders, micro-businesses, workers and people who did not have bank accounts but had unmet needs for financial services. This was largely due to lack of access and geographical reach. The rural masses are excluded from accessing the financial services which are mainly concentrated in towns and cities and as a result they were not able to gain access to affordable and appropriate financial products and services from any formal mainstream financial providers.

The major research objectives of the study were to develop a model on the impact of mobile money service usage on the livelihood of rural populations in Zimbabwe. The specific objectives of the study were:

1. To determining the usage levels of mobile money

The study identified mobile money uses and through the questionnaire data was collected and analysed to assess the extent which the rural households used the mobile money service. The study objective was achieved as different usage levels were revealed with most respondents falling in the moderate category of users.

2. To determine the impact of mobile money on rural household wellbeing

Empirical literature review identified the major effects of mobile money service usage on the rural household. The main effects were noted on remittances, communication, savings, consumption and productivity. These factors were then used to develop a structural model that was then tested and validated by empirical data using the SEM technique.

3. To identify the challenges of mobile money use

Through focus group discussions and questionnaire, the challenges varied from those that were related to mobile network operators to those that showed policy contradictions on the party of regulatory authorities.

4. To provide suggestions to improve the delivery of mobile financial service

A number of recommendations were made on the basis of the study results. They were addressing different stakeholders to improve the service to the rural households and mobile money users in general.

In *chapter two*, the main focus at highlighting the historical trends in the development of mobile banking, mobile money and financial inclusion in Zimbabwe. Extant literature revealed that generally the Zimbabwean banking industry is complex with financial institutions initially tending to carryout different and specialised functions. Merchant banks specialised in exports and imports finance while commercial banks were either into mining or farming. However, this financial landscape gradually

changed with the introduction of ESAP late around 1993 to 2003. The shift was an effect of financial liberalization in Zimbabwe that saw a whole new financial player coming in. Currently, the financial system has many players offering a wide range of financial products and services. With economic hardships and rapid depreciation of bank savings new financial players like community saving groups, churches and labour unions also emerged and participated in the financial sector. Literature reviewed pointed out the need for an efficient financial payment system if the national financial system were to be efficient. The advent of the digital banking piggy-banking on the telecommunications technologies has offered access to financial services to the previously side-lined members of society. The high mobile phone penetration into banking has led to partnerships between banks and mobile network operators resulting in the offering of different financial services to a wider community.

However, it has emerged that some rural areas where network coverage is still poor, mobile money is still hardly adopted. Zimbabwe national payment system has been experiencing progressive mobile payment system growth from the year 2010 to 2014. Recent trends, like migration to the urban areas, the diaspora world, due two decades of economic meltdown, have boosted mobile money usage. Zimbabwe diaspora community lost faith in the banking system and prefer the use of mobile money platforms as Eco-cash, Global Remit and Mukuru.com to banks and allied institutions to remit funds back home from all over the world.

In most developing countries financial services are characterised by financial exclusion, for example, the excluded rural masses depend on unorthodox financial services mainly for lines of credit which still accounts for 30% while formal credit accounts for a paltry 13%. In this survey it should be understood that term financial inclusion is used to refer the ability of users of a financial system to have easy access, availability of the service for use by everyone in the economy. Generally, mobile money serves to reduce dependence on cash and accelerates the development of accounts which are the backbone of financial inclusion and financial integrity. It offers an opportunity for consumers to use electronic money as an option other than using cash. The few studies that have been carried out globally, on mobile banking services, targeted its effects on previously under privileged communities in yet to be developed countries. The studies reveal that the uptake and use of mobile financial services has enhanced financial inclusion and consequently reduced levels of poverty among the rural households. Therefore, financial inclusion has achieved high levels of inclusion in societies that were previously excluded from formal financial services. Hence the chapter discussed the development of financial services growth in Zimbabwe and the development of mobile money and up to its current status. However, in Zimbabwe, there are currently no studies that have empirically verified these assertions.

Chapter three looked at the theories and models of mobile money like the open federated brick and click bank models, the livelihood model, the Townsend model of financial deepening and growth, the theory of Change and the conceptual framework that explained the short and long term impacts of

mobile money usage. The theories provided the basis for main study constructs for use in the present study. The chapter also looked at each of these variables in depth and then proposed a hypothesis on each variable and concluded by proposing a model to be used when assessing on the impacts of mobile money service usage by rural households. Mobile financial service intervention on the financial services needs of the low and low-middle income countries was found to have developmental impact and this framework was very key in shaping the present study. The long-term impacts could be noted at micro-and macro-levels, where micro level impact was observed on livelihood efficiencies, savings, and changes in consumption. While macro level impacts comprised of: economic growth; both domestic and international remittances; and financial inclusion. On the effects of mobile money services usage, the literature inquiry revealed that they were few studies that have been carried out to date on impact assessment on the phenomenon of rural population's livelihood. However, an empirical review of the effect of mobile money services usage invariably disclosed some positive correlation with: savings; communication remittances; increased income; improved productivity; and low costs. Economic well-being has no universal definition but the concept represents a collection of assets or wealth used to generate welfare. The inquiry established that income alone was not enough a measure of economic well-being it is therefore complimented with other indicators of economic well-being such as consumption and wealth. Income flows were considered a major measure used to assess well-being, however it was noted that consumption was more preferable over time. Wealth and income are the main pillars available to support consumption, through savings that income generates. Individuals were seen to obtain their well-being from the direct consumption of services and goods and from income receipts. Therefore, this makes consumption a better measure of well-being than income.

In *chapter four* the study addressed the aspect of how mobile money remittances impact on productivity, remittances and on consumption. The focus of literature review was to establish relationships that existed from the review on empirical evidence. The review discussed the effect communication had on productivity of the same rural populations. Furthermore, an attempt was made to predict the impact enhanced productivity and savings had on wealth of the rural people. In this study mobile money remittances were regarded as the major income source for the rural folk. And as such remittances were regarded as central to their welfare system since they enhanced the purchasing power of the otherwise would be poorer rural people. Basing on Keynesian theory of income and consumption; the inquiry postulated that as income increased savings would also increase, which implied that income had a direct impact on household savings. An argument that confirms that access to financial services had positive effects on consumption levels. Empirical review pointed out that consumption patterns of households receiving mobile remittances changed significantly. An observation that implied remittances generally improved the standard of living for the poverty stricken rural populations. In an attempt to establish the relationship between remittances and productivity the inquiry indicated that mobile money solved credit

needs of the small and marginalized rural farmers ordinarily neglected by financial service providers since they were regarded as high risk.

During the inquiry it became apparent that mobile remittances had a positive effect on the economy in numerous. Its effects were noted in investment, growth, consumption, income distribution and poverty reduction levels. In this light, the unbanked could be romped into the mainstream economy. Similarly, it emerged that economic policies aimed at uplifting the rural poor could be integrated with mobile remittances to enhance agricultural productivity of the rural poor. Remittances were found not only to enhance agricultural productivity but to assist the rural poor procure the much-needed agricultural inputs and implements. Studies carried out to establish expenditure per household on equipment and machinery found it to be high for households and groups receiving remittances in rural communities.

In the empirical review, it was found that cellular phones were a major medium of information exchange as well as a tool for economic development. The short message service (sms) emerged to be a powerful communication tool enabling economic and efficient ordering of farm inputs, mobile money transfers and mobile money payments for services related to agriculture.

Finally, it emerged during the inquiry into mobile money remittances that, rural and agricultural financing contribute to poverty reduction and improved livelihoods of rural households. Even the evidence-based literature reviewed suggested positive impacts on consumption, income, and production though it was still debatable. Structural Equation Modelling (SEM) which is a family of statistical techniques that allow researchers to test multivariate models was considered for analysis. This was an attempt to try and justify statistical treatment of the factors that could influence the livelihood strategies of rural poor and on how cellular phones could be employed to deliver banking services to these previously excluded communities. A structural model was then proposed to be used in testing the hypothesis that usage of mobile money leads to improved economic well-being of rural people through better communication, improved remittances and enhanced savings.

In *chapter five* the study dwelt with research methodology used, beginning with the identification of the research paradigm pursued culminating in the identification of a specific research philosophy, research design, study population, sampling procedures, research instruments, data collection procedures, validity and reliability and data analysis procedure. It was established that researches were generally based on certain philosophical assumptions. It was these assumptions determined what the researcher deemed to be valid research as well as what was the appropriate method. Research then is nothing more than a set of beliefs determining what would be investigated and how it would be done. In other words, a research is more of the researcher's worldview of things or phenomenon.

On research design, a mixed methods approach was deemed to be appropriate for the inquiry given the intricate relationship between mobile banking, livelihoods and poverty. However, the qualitative method was briefly employed in the development of survey instrument based on focus group discussion.

The study population was made up of all rural households in the Midlands province with Kwekwe rural district as the target, totalling to 34945 rural households. A sampling procedure was employed on a target population of 8258 households. After determining the sample size required an appropriate sample of 367 and appropriate in multivariate research, was obtained. For the Sampling Procedure a multi-stage stratified random sampling technique was adopted in selecting the respondents. With simple random sampling used to select wards to be used for further sampling of villages and household. Again, using a sampling procedure known as the probability-proportional-to-estimated-size (PPES) sampling, a fixed number of households per primary sub unit was systematically chosen. This resulted in the optimum number 18 for each PSU. As for the instruments, a questionnaire and structured interview guide for focus group discussions. The questionnaire was designed in stages and the first stage qualitative in approach through focus group discussions and then a pilot survey. *Chapter six* presented the analysis of focus group discussions while *chapter 7* presented and analysed data from quantitative method approach. Data was analysed using structural equation modelling technique. The findings from these two chapters are summarized in section 8.2.

8.2 Summary of the findings

The findings of the study revealed that rural household were now travelling shorter distances to the nearest financial services, hence access was greatly improved as a result of the mobile money service. The results also showed that most households were migrating from the informal financial services to embrace the new technologically driven financial services.

Using theoretical framework and mobile money theories, mobile money impacts on economic wellbeing such as communication, remittances, savings, productivity and consumption were identified. A research model was then proposed to validate these effects. The proposed model was then tested using AMOS 24, first the measurement model through CFA and secondly the structural model. The initial measurement model failed to fit data and then the measurement model was modified and a measurement model was found with a satisfactory goodness of fit compared to the initial proposed model. The goodness of fit indices were as follows, CMIN=2.798, GFI=0.842, CFI=0.954, TLI=0.947 and RAMSEA=0.072.

Similarly, the structural model was tested for fit and the results were found to be satisfactory as indicated by the following indices CMIN=2.631, GFI=0.846, CFI=0.956, TLI=0.951 and RAMSEA=0.068.

Seven pathways showing impacts were hypothesized and tested in the model. Of the hypothesized paths in the model all the seven hypotheses were confirmed while two new hypotheses emerged, one was supported and the other was not supported. The analysis in general affirmed the theoretical assertions for instance, mobile money remittances increased productivity and consumption of the rural household,

while communication had positive effect on savings and productivity as well. Remittance was confirmed as a predictor of consumption and productivity. The import of the finding is that mobile money positively affects consumption patterns of rural households and their productivity yields. Savings, consumption and productivity were regarded as significant predictors of wealth. The beta coefficients for the hypothesized relationships are as follows:

- (i) Remittances has a positive impact on productivity ($\beta = 0.163$, $p=0.011$).
- (ii) Remittances has a positive effect on consumption ($\beta = 0.248$, $p=0.000$).
- (iii) Communication has a positive effect on savings ($\beta = 0.261$, $p=0.000$).
- (iv) Communication has a positive effect on productivity ($\beta = 0.141$, $p=0.031$).
- (v) Savings has a positive effect on wealth ($\beta = 0.261$, $p=0.000$).
- (vi) Productivity has a positive effect on wealth ($\beta = 0.346$, $p=0.000$).

In general, all the hypothesized relationships were all confirmed.

8.3 Conclusions

Mobile money service has greatly improved access to rural financial services as demonstrated by shorter distances walked to get mobile money services, consequently reducing transportation costs associated with travelling to commercial banks and other financial institutions. Moreover, mobile money has brought convenience in the access of the services by rural people. It has made it possible for transacting parties to exchange even smaller amounts facilitating risk –sharing. In the case of emergence household members can easily borrow from friends/ relatives to deal with an emergence, it would be easier for members to pool small amounts together.

On the impacts of mobile money, the results have shown that rural productivity is positively influenced by the use of mobile money remittances. There are productivity gains as mobile money allows rural households to access market information, inputs and increased income from higher agricultural yields.

The study also showed that mobile money positively influenced household consumption. Household consumption improved in food and clothing items, while expenditure on infrastructure like housing remained low. Mobile money users also invested in livestock (cattle, goats), especially those who received higher remittances.

Savings was reported as the major impact of mobile money use, as household were able to store their money safely in the wallet until they have accumulated a balance that would allow them to buy an asset. Consequently, this has long term impacts in that it would allow household members to work their way out of poverty and vulnerabilities and thereby improving their wellbeing.

Finally, both the measurement model and the structural model were confirmed and the model can be used to predict the impact of mobile money on rural households' well-being was shown in the model. Though the predictive power of the model was not high but still there was good fit between the empirical data and the proposed model.

8.4 Study contributions

The study made contributions in the mobile money research in a number of ways;

To begin with, the most important contribution made in the study was the development of a structural model under new empirical research set up. Using theories/frameworks the current study used variables such as communication, remittances, savings, productivity and consumption to explain the impact of mobile money service usage on rural populations' livelihoods. It is a new dimension as far as literature is concerned. No single study has attempted to investigate the impact of all these variables in a unitary study as the current study has done. Very few studies have been conducted with the main focus of linking mobile money and economic development, and in the Zimbabwean context no such study has been conducted particularly investigating the kind of relationships. The study was birthed from literature search and analysis that showed few quantitative studies that were done on this phenomenon (welfare). Research on the impact on savings, productivity and credit has remained scanty and sketchy and thus this study contributed in filling the identified gap.

The study made contribution on the methodology by developing and validating new reliable and valid scales that are unique to this study. The validity and reliability of the measures was affirmed through the measurement model and the structural model (Saleh, 2006).

8.5 Recommendations

The study made the following recommendations:

Some mobile money users still walk long distances to access their mobile money services. There is need to roll out programs by financial regulators that encourage use of mobile money in various transaction activities, possibly encouraging shop owners and small traders in the rural areas to integrate their services to the mobile money service. This will allow businesses that operate in the rural communities to adopt the mobile money service and reduce demand for cash. Cashless environment must be promoted through government agencies. All shops will effectively act as mobile money agents. The rejection of mobile money by shop owners in rural areas discourages people from using mobile money preferring to use hard cash instead and this will worsen the cash crisis in the country.

Mobile money players need to create products that typically met the financial needs of rural people. Products that can actually transform the rural livelihoods relate to savings and credits.

While saving has been partially adopted by rural households, microcredit facility has not been adopted. Therefore, there is a need to come up with a way of extending credit facility to rural household with minimum risk to service provider. The starting point could be credit facilities for agricultural activities, or promotion of the already existing schemes like ROSCAs and ISALs. These are the lending schemes which rural people are already familiar with. Promotion of mobile money ROSCAs or ISALs will formalize the services. These schemes if properly marketed will attract many rural mobile money users to borrow to finance small agricultural projects. Also credit application must be made much simpler or instant such that with a few screen forms it can be possible for the individual to apply for a loan. This will have a positive effect of encouraging rural mobile money users to move away from informal sources of credit to the formals channels. The loan can be tied to the member's group thereby creating a joint responsibility of repayment in the event the member defaults in their repayment obligation.

Creating rural banks in the form of existing agents necessitated by collaboration of network services will reduce costs for these banks. For starters, the loan amounts must very small, similar to an airtime top-up borrowing facility. There is also a need to improve on the promotion of such facilities to the rural people in a way and language they understand.

The study confirmed the major challenges facing the rural populations and how the banks had failed to serve the needs of the rural people due to infrastructural challenges, lack of skills by bank employees to serve the rural market. Therefore, banks need to partner with mobile money operators to develop products that will meet the user needs. The study shows that rural poor have financial needs that can be tapped into. The rural people have their own forms of collateral e.g. livestock can be used in such schemes to act as collateral. Thus, serving the rural people on the basis of what they have and their financial needs.

Finally, the study recommends that mobile network operators (MNOs) and mobile money service providers need to improve the network challenges experienced by rural people especially on the mobile money service availability. MNOs may need to collaborate and share the network infrastructure especially in the rural areas as this will improve their network coverage instant of inconveniencing users with infrequent service.

8.6 Future Research

In future, research efforts must be directed in the investigation of mobile money credit facilities and how they impact on the welfare of rural communities especially the mobile based community schemes ROSCAs and ISALs. This is due to the fact that most of mobile money users indicated that they did not use this facility though it is being offered by mobile financial services providers. Future research must be directed to use of mobile money services that have adopted ROSCAs and ISALs for accessing credit using rural based forms of collateral.

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Appendix 1: Calculation of Average Variance Extracted (AVE)

Formula for Average Variance Extracted (AVE)

$$AVE = \frac{\sum(\text{standardised loadings}^2)}{\sum(\text{standardised loadings}^2) + \sum E_j}$$

Where $\sum E_j$ is the sum indicator measurement error?

E_j is calculated as $(1 - \text{standardized loadings})^2$

a) Average Variance Extracted for Remittance

$$\sum (0.859^2 + 0.883^2 + 0.912^2 + 0.937^2 + 0.863^2 + 0.846^2 + 0.784^2)$$

$$\sum (0.859^2 + 0.883^2 + 0.912^2 + 0.937^2 + 0.863^2 + 0.846^2 + 0.784^2) + \sum (1 - 0.859^2) + (1 - 0.883^2) + (1 - 0.912^2) + (1 - 0.937^2) + (1 - 0.863^2) + (1 - 0.846^2) + (1 - 0.784^2)$$

$$= \frac{4.588}{4.588 + 1.412}$$

AVE = 0.765

b) Average Variance Extracted for Communication

$$\sum (0.481^2 + 0.914^2 + 0.973^2 + 0.411^2 + 0.569^2)$$

$$\sum (0.481^2 + 0.914^2 + 0.973^2 + 0.411^2 + 0.569^2) + \sum (1 - 0.481^2) + (1 - 0.914^2) + (1 - 0.973^2) + (1 - 0.411^2) + (1 - 0.569^2)$$

$$= \frac{2.506}{2.506 + 2.494}$$

AVE = 0.501

c) Average Variance Extracted for Savings

$$\sum (0.909^2 + 0.989^2 + 0.999^2 + 0.869^2 + 0.938^2 + 0.993^2)$$

$$\sum (0.909^2 + 0.989^2 + 0.999^2 + 0.869^2 + 0.938^2 + 0.993^2) + \sum (1 - 0.909^2) + (1 - 0.989^2) + (1 - 0.999^2) + (1 - 0.869^2) + (1 - 0.938^2) + (1 - 0.993^2)$$

$$= \frac{5.432}{5.432 + 0.577}$$

AVE = 0.905

d) Average Variance Extracted for Productivity

$$\frac{\sum(0.982^2 + 0.940^2 + 0.857^2 + 0.988^2 + 0.871^2 + 0.614^2)}{\sum(0.982^2 + 0.940^2 + 0.857^2 + 0.988^2 + 0.871^2 + 0.614^2) + \sum(1-0.982^2) + (1- 0.940^2) + (1-0.857^2) + (1- 0.988^2) + (1- 0.871^2) + (1- 0.614^2)}$$
$$= \frac{4.694}{4.694 + 1.306}$$

AVE = 0.782

e) Average Variance Extracted for Consumption

$$\frac{\sum(0.909^2 + 0.846^2)}{\sum(0.909^2 + 0.846^2) + \sum(1-0.909^2) + (1- 0.846^2)}$$
$$= \frac{1.542}{1.542 + 0.458}$$

AVE = 0.771

f) Average Variance Extracted for Wealth

$$\frac{\sum(0.894^2 + 0.896^2)}{\sum(0.894^2 + 0.896^2) + \sum(1-0.894^2) + (1-0.896^2)}$$
$$= \frac{1.602}{1.602 + 0.398}$$

AVE = 0.802

Appendix 2: Interview Guide

FOCUS GROUP DISCUSSION TOPICS GUIDE

Study Title: Mobile money as a strategy for financial inclusion: improving livelihood of rural consumers in Zimbabwe

By

Thulani Dube (213573270)

School of Management, IT and Governance: College of Law and Management Studies

1. Mobile money usage in the rural communities
 - Indicate and discuss level of usage of different mobile money facilities in the community.
2. The impact of mobile money usage on livelihoods in the rural communities
 - Ascertain the impact of mobile money usage on members of the community and the development patterns in the community
3. Challenges associated with mobile money usage in the rural communities that communities have experienced
 - Identify, quantify and discuss challenges experienced in relation to the use of mobile money in the rural communities
4. Strategies that can be developed to improve delivery of mobile money services to rural communities
 - Identify gaps in mobile money usage
 - Suggest and elaborate on strategies that can be employed to improve use of mobile money services

END OF GUIDE

Appendix 3: Questionnaire

Mobile money as a strategy for financial inclusion: improving livelihood of rural consumers in Zimbabwe

Please complete the questionnaire by ticking the appropriate box corresponding to your answer.

NB: You are free to withdraw from this research at any time without any negative or undesirable consequences to you.

Ward		Village	
------	--	---------	--

1. Gender

(1) Male	(2) Female
----------	------------

2. Age

(1) below 21	(2) 21-35Yrs	(3) 36-50Yrs	(4) 51Yrs & Above
--------------	--------------	--------------	-------------------

3. Marital Status

(1) Married	(2) Divorced	(3) Widowed	(4) Single
-------------	--------------	-------------	------------

4. Education Level

(1) Primary	(2) Secondary	(3) Tertiary	(4) Other
-------------	---------------	--------------	-----------

5. Occupation

(1) Employed	(2) Self Employed	(3) Unemployed	(4) Pensioner
--------------	-------------------	----------------	---------------

6. What is your average monthly income?

--

7. Bank Account

(1) Yes	(2) No
---------	--------

8. If yes, Purpose of Account

(1) Salary	(2) Savings	(3) Both	(4) Not Applicable
------------	-------------	----------	--------------------

9. Former methods used for sending/receiving money before mobile money transfers.

(1) Bus driver	(2) Bank	(3) Post	(4) Western Union
----------------	----------	----------	-------------------

10. Do you have a mobile phone?

(1) Yes	(2) No
---------	--------

11. Are you a registered user of mobile money?

(1) Yes	(2) No
---------	--------

12. Who is your service provider?

(1) Bank	(2) Mobile Operator
----------	---------------------

13. Indicate the frequency of use of mobile money service per month.

(1) Daily	(2) Weekly	(3) Monthly	(4) Occasionally
-----------	------------	-------------	------------------

14. What is the monthly average value of money sent using mobile money service?

15. What is the monthly average value of money received through the mobile money service?

16. What is the approximate distance walked to access the nearest mobile money agent from where you live?

(1) <1km	(2) 1km-2km	(3) 2km-5km	(4) 5km-10km	(5) >10km
----------	-------------	-------------	--------------	-----------

17. Prior to mobile money service, which of the following methods did you use to store/keep your money?

(1) ISAL	(2) Bank	(3) Under the Mattress	(4) Relative
----------	----------	------------------------	--------------

18. If ISAL, are you able to combine ISAL and mobile money?

(1) Yes	(2) No	(3) Don't Know	(4) Not Applicable
---------	--------	----------------	--------------------

MOBILE MONEY USES

19. I have used mobile money to purchase airtime

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

20. I have used mobile money to pay bills.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

21. I have used mobile money to pay school fees for my kids.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

22. I have used mobile money service when sending money.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

23. I have used the mobile money to safely store money.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

24. I have used mobile money service to receive money.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

REMITTANCES

25. I have received money through mobile money from family members and relatives.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

26. I have received money through mobile money from friends.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

27. Receiving money through mobile money makes life easier.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

28. Mobile money is helpful for many transactions

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

29. Money received through mobile money has improved my income.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

30. Receiving money through mobile money is much cheaper.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

31. I now receive my money remittances through the mobile money service.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

COMMUNICATION

32. Through the mobile phone service I have get communication on financial information from banks

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

33. Through the mobile phone service I am able communicate with family members when there is an emergency.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

34. Through the mobile phone service I get communication about money received.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

35. Through the mobile phone service I communicate with suppliers.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

36. Through mobile phone service I get communication about loan facilities available.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

37. Mobile money service has improved my communication networks

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

SAVINGS

38. Saving is important to me.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

39. Through mobile money I can now save for emergencies

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

40. Mobile money improves saving.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

41. Through mobile money I can now save to finance my projects.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

42. Through mobile money I am able to save for long-term family needs.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

43. It is easier to save through mobile money service.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

PRODUCTIVITY

44. Through mobile money I have received cash to start livelihood projects

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

45. Through mobile money I have paid for fertilizer for farm projects

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

46. Through mobile money I have paid for seeds for farming projects

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

47. Through mobile money I have paid for farm equipment.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

48. Through mobile money I have paid service providers for project inputs.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

49. Through mobile money I have managed to save on transportation costs.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

CONSUMPTION

50. I have bought home furniture from mobile money transfers.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

51. I have bought food and groceries from mobile money transfers.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

52. I have bought home appliances from mobile money transfers.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

53. I have bought clothes for the family from mobile money transfers.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

54. I have bought material for home renovations from mobile money transfers.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

WEALTH

55. Money received through mobile money transfers has improved my life style.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

56. Money received through money transfers has increased my wealth.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

57. Money received through mobile money transfers has been used to buy livestock (goat, donkey, cattle).

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

58. Money received through mobile money transfers has been used for property development.

Strongly agreed (1)	Agreed (2)	Neutral (3)	Disagreed (4)	Strongly disagreed (5)
---------------------	------------	-------------	---------------	------------------------

Comments

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Thank you for your support!!!

Appendix 4: Editing Certificate

B	S	BE STILL COMMUNICATIONS For effective communication solutions	bestillcommunications@gmail.com
C	C		landamasuku@gmail.com +27835841854; +27618043021

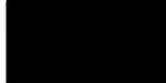
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This document certifies that a copy of the thesis whose title appears below was edited for proper English language usage, grammar, punctuation, spelling, and overall style by Dr Nhlanhla Landa whose academic qualifications appear in the footer of this document.

TITLE: MOBILE MONEY AS A STRATEGY FOR FINANCIAL INCLUSION: IMPROVING LIVELIHOOD OF RURAL CONSUMERS IN ZIMBABWE

AUTHORS: THULANI DUBE (213573270)

DATE: 30 April 2018


Signature

PhD Applied Linguistics (UFH), MA Applied Linguistics (MSU), BA (Honours) English and Communication (MSU)

Appendix 5: Turnitin Report

Mobile money as a strategy for financial inclusion: improving livelihood of rural consumers in Zimbabwe

ORIGINALITY REPORT

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Appendix 6: Ethical Clearance



19 April 2016

Mr Thulani Dube (213573270)
School of Management, IT & Governance
Westville Campus

Dear Mr Dube,

Protocol reference number: HSS/0378/016D

Project title: Mobile money as a strategy for financial inclusion: Improving livelihood of rural consumers in Zimbabwe

Full Approval – Expedited Approval

With regards to your application received on 08 April 2016. The documents submitted have been accepted by the Humanities & Social Sciences Research Ethics Committee and **FULL APPROVAL** for the protocol has been granted.

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: Dr Mabutho Sibanda and Dr Z Khan
Cc Academic Leader Research: Professor Brian McArthur
Cc School Administrator: Ms Angela Pearce

Humanities & Social Sciences Research Ethics Committee

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