USAGE OF MOBILE BANKING SERVICES AND FINANCIAL INCLUSION OF RURAL POPULATIONS IN RWANDA: A CASE STUDY OF KARONGI DISTRICT

A Dissertation Submitted to the University of Rwanda, College of Business and Economics in Partial Fulfillment of the Requirements for the Award of a Master Degree of Business Administration (Finance Option)

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DECLARATION

I, KOBISINGE Jolly, hereby declare that the work presented in this distortion entitled the Usage of mobile banking services and financial inclusion of rural populations in Rwanda. Case study KARONGI DISTRICT is my very original work and has never presented elsewhere for any academic qualification.

Any reference in terms of books or any other written or electronic materials are indicated in the Bibliography.

KOBUSINGE JOLLY

Date...../...../2018

Signature.....

APPROVAL

This is to certify that this thesis entitled "Usage of mobile banking services and financial inclusion of rural populations in Rwanda: A case study of Karongi district" was conducted by JOLLY KOBUSINGE under my supervision and guidance.

Signature……. Date…….

Supervisor……

DEDICATION

To the Almighty God.

To my beloved mother and memory of my father

To my beloved Husband and my family

To my friends and colleagues

To my brothers and sisters

To fellow patriots

I dedicate this work.

ACKNOWLEDGEMENT

Foremost, I would like to express my sincere gratitude to my supervisor Dr Philippe NDIKUBWIMANA for his continuous support of my master's study and research, for their patience, motivation, enthusiasm, and immense knowledge. His guidance helped me in all the time of research and writing of this research project. I could not have imagined having a better supervisor and mentor for my master's study.

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I owe most profound thanks to my Husband for his responsibilty, tangible contribution towards my education. His toil and sacrifice made it possible for me to attain good education.

It is also a paramount moment to recognize a significant support that was given by Karongi District staff for the accomplishment of this research, God bless you all.

I would like to send my sincere appreciations to my lovely mum,brothers & sisters who did a great work ,their continuous prayers and encouraged me.

Special thanks to my beloved church REVIVAL TEMPLE, my pastor Mr. & Mrs GATETE Godfrey for their prayers rendered to me.

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ABSTRACT

The adoption of Information communication Technologies (ICT) has pervaded every sector and the banking sector has not been spared. ICTs are adopted with the hope that they will increase efficiency, effectiveness and broader customer participation. This study aimed at investigating on the impact of mobile banking on financial inclusion. The objectives were to: examine to which extent the use of technology adoption in banking services affects financial inclusion in Karongi District; to determine the level of financial inclusion by (a) examining the number of active users of financial products and services and (b) the level of access to financial information provided by banks in Karongi District; to establish the extent to which income level influence the relationship between mobile banking and financial inclusion of the rural population in Karongi District; and to determine to which extent the personal factors (Gender, educational level, Age) affect the relationship between mobile banking and financial inclusion of the rural population in Karongi District. A descriptive and analytical methods were adopted mixed with correlation on a sample size of 246 estimated using slovin's formula from a target population of financial providers in Karongi District totaling to 634. Questionnaires were designed and distributed to collect data and using SPSS version 22 analyzed according to each objective. The finding revealed that the majority of the respondents were male, unemployed, uneducated and earned above 120000 frw. Mobile Money, agent, ATM banking technologies were adopted though majority adopted mobile banking. There was sufficient evidence to conclude that mobile banking positively affects financial inclusion through the various technologies. A positive relationship existed between personal factors and financial inclusion and between Personal Factors and Mobile Banking implying that personal factors had a positive effect on mobile banking and financial inclusion. The most significant personal factor common to both was employment status. The regression produced for the relationship between income level and mobile banking and financial inclusion was also positive and statistically significant. The research made recommendations to stakeholders and ministry of finance to design more initiatives for promoting financial inclusion through the use of technologies such as mobile banking but also consider the challenges to such technologies in rural settings.

Key words: financial inclusion, Mobile banking, financial services and access to financial services.

LIST OF ABBREVIATIONS/ ACRONYMS

ATM : Automated Teller Machine

DRC : Democratic Republic of Congo

EAC : East African Community

GDP : Gross Domestic Product

GMM : Generalized **Method** of Moments

GSMA : Groupe Spéciale Mobile) Association

ICT : Information Communication Technology

MFI : Microfinance Institutions

NSDP : **Net State Domestic Product**

PDA : Personal Digital Assistant

SACCO : Savings and Credit Cooperative Organizations

SDG : Sustainable Development Goals

TAM : Technology Acceptance Model

TRA : Theory of Reasoned Action

UNCDF : United Nations Capital Development Fund

CHAPTER ONE: GENERAL INTRODUCTION

1.0 Introduction

This chapter presents the background of the study, the problem statement, objectives of the study, problem statement, objectives of the study, research questions, significance, limitation, scope and organization of the study.

1.1 Background

The desire by nations globally to deliver financial services and products at an affordable cost to the part of their population that is lies in the lower segment of the economic pyramid cannot be over emphasized. However countries have fulfilled this desire in varying ways, with others achieving a greater scale than others (Beck, Demirguc-Kunt, & Peria, 2005). A comparison between countries shows that in Ethiopia there is 1: 100,000 ratio of commercial bank to people while Canada's ratio stands at 1:200 (Klapper & Demirguc-Kunt, 2012). The attempt to provide financial services to more people is commonly known as financial inclusion and there is evidence to show that financial inclusion has become a key factor in economic development of nations globally.

The UNCDF report of January 2009 illustrates that financial inclusion has been of importance in third world countries since the early 2000s after a research found that financial exclusion correlated directly to poverty in third world countries. The banking services in these nations are still inadequate to include people from full participation in accessing financial services such as saving, insurance, payments, short and long-term credit, pensions or local money transfers. These nations have a large number of the unbanked characterized by lack of bank account and cannot access financial services from these financial institutions (Federal Deposit Insurance Corporation, 2003)

and often times resort to risky measures like hording cash or holding their assets in things like gold.

There are several factors that contribute to economic growth and financial inclusion has been cited by scholars as a possible key contributor.

Research by Klapper & Demirguc-Kunt (2012) "Well-functioning financial systems serve a vital purpose, offering savings, credit, payment, and risk management products to people with a wide range of needs. Inclusive financial systems allowing broad access to financial services, without price or non-price barriers to their use are especially likely to benefit poor people and other disadvantaged groups. Without inclusive financial systems, poor people must rely on their own limited savings to invest in their education or become entrepreneurs and small enterprises must rely on their limited earnings to pursue promising growth opportunities. This can contribute to persistent income inequality and slower economic growth." (p.94).

Other researchers argue that a well-developed financial system increases economic development in a nation (Beck, Demirguc-Kunt, & Peria, 2005) found a statistically significant and positive relationship between both access to and use of traditional consumer financial services, and economic development.

However access to finance does not mean the services are being used and other factors such as the cost of services, socio-cultural concerns, and opportunity costs all may combine to deter the use of a financial service. Hence creating the services and creating how the services will be accessed and used are key important aspects in financial inclusion. Several attempts have been made and discussed in literature about how to extend the services closer the user as well as motivate them to use it. This research study focuses on the use of mobile banking technologies for this end.

Mobile phones affect the lives of billions of people around the globe, including the poor. The changing mobile technology has revealed opportunities and allowed nearly three billion people without bank accounts (Oluwatayo, 2012) to access financial services. The lack of opportunities to access financial services by vulnerable and poor groups has motivated innovation by financial institutions in a variety of ways and that includes the concept of mobile banking.

Mobile banking can reach the previously 'unbanked' low income earners and the unemployed as long as they have access to a cell phone. "While innovations in microfinance have taken centre stage in efforts to expand financial access over the last two decades, attention is now shifting to opportunities to reform formal banking systems to open up savings, loan and insurance products to the financially excluded" (Hanohan & King, 2012). The significance of mobile banking in this regard is that it brings financial services to the previously 'unbanked' areas hence financial inclusion. According to (Ismail and Masinge, 2011), "despite the obvious potential benefits of mobile banking, questions remain about whether low-income customers will adopt the relatively new technology at a scale sufficient to make it worth offering." This question is still relevant for this present paper because Rwanda has shown tremendous improvement in financial inclusion in the recent years from 21% before 2012 to over 90% by 2016 (Alliance for Financial Inclusion, 2014) and it was estimated that in total 89% of adults accounting to about 5.2 million individuals were financially included with Nyarugenge and Kicukiro districts shooting as high as 97% (Natinal Bank of Rwanda, 2015). More and more Rwandans were using both formal and informal financial services and products a success highly attributed to introduction of Umurenge SACCOs, the expansion of bank and MFI branches, the introduction of agent banking, and the modernization of financial services such as mobile banking, ATMs and mobile money, have all helped to drive financial inclusion in Rwanda (Natinal Bank of Rwanda, 2015).

1.2 Problem Statement

It has been shown that there exists a wide divide between the urban and the rural as far as financial inclusion is concerned (Financial inclusion Expert Group, SME Finance sub-group, International Finance Cooperation, World Bank Group, & G 20s Seoul Summit, 2010; Ishengoma, 2011; Mago, 2014). Overall exclusion stood at 11% amounting to about 0.7Million adult Rwandan who neither had access to formal nor informal products and services (Alliance for Financial Inclusion, 2014). It was found that the district of Karongi, 22% was excluded as compared to 3% in Nyarugenge district. The efforts to expand financial services and products by the various innovative means left out the poor, those in remote rural areas, the women and the youth (Alliance for Financial Inclusion, 2014)

Formal financial service concentration in Rwanda tends to favor the urban population and exclude the rural who majorly have irregular incomes (Alliance for Financial Inclusion, 2014). While the government and other development partners have recognized the existence of this problem and devised innovative solutions such as the Umurenge SAACO schemes, there is little initiative being done to utilize the capabilities of mobile devices in extending financial services to the excluded. Most SACCOs do not have ATMs neither do they incorporate mobile phone services in their financial products. Therefore many are only saving organizations and not situated for daily financial needs of their clients.

Incorporating vital and basic services that the poor require into a banking service would greatly increase their use of financial services hence finding a need to access financial services. A study in Tanzania by Ishengoma (2011) found that 79% of Tanzanians used mobile banking and it had increased access to financial services particularly to the illiterate individuals of the population because they perceived the mobile technologies as providing easy of service and convenience.

Rwanda too has recommended the need to innovate design of product distribution among the populations and since 2012 the mobile banking usage slightly increased and included 1.2 Million registered users (11.5%) of entire population but compared to other East African member countries like Kenya whose registration was 67% in the same year (Argent, Hanson, & Gomez, 2013) and ATM per 1000 adult stood at 0.8 compared to 7.3 of Kenya (World Bank, 2010). the findings are in consistence with the report of Natinal Bank of Rwanda (2015) which concludes that "There is a greater need for the continued use of other distribution models to provide support for the poor and low income earners. Therefore, the financial inclusion journey still requires striking a delicate balance between over-and- under regulation and a new generation of innovators with vision, passion and determination, who will find ways around obstacles (p. 15)".

Therefore, this study aimed at investigating the use of Mobile Technologies in improving financial inclusion in Rwanda. The focus is on rural populations and especially Karongi District that has performed poorly. The study provides empirical literature that is lacking in the topic especially that which is relevant in Rwanda. It is evident that financial inclusion reports are increasing in Rwanda however majority of these reports are surveys that do not provide correlation about the variables.

1.3 Objectives of the study

The main objective of this study was to establish the impact of mobile banking on financial inclusion of the rural populations of Rwanda.

1.3.1 Research Specific Objectives

i. To examine to which extent the use of technology adoption in banking services affects financial inclusion in Karongi District

ii. To determine the level of financial inclusion by:
    a. Examining the number of active users of financial products and services
    b. The level of access to financial information provided by banks in Karongi District.
iii. To establish the extent to which income level influence the relationship between mobile banking and financial inclusion of the rural population in Karongi District.
iv. To determine to which extent the personal factors (Gender, educational level, Age) affect the relationship between mobile banking and financial inclusion of the rural population in Karongi District

1.3.2 Research Questions

i. To what extent is the use of technology adoption in banking services affects financial inclusion in Karongi District
ii. What is the level of financial inclusion examined by:
    a. the number of active users of financial products and services
    b. the level of access to financial information provided by banks in Karongi District.
iii. To what extent does income level influence the relationship between mobile banking and financial inclusion of the rural population in Karongi District.
iv. To what extent does the personal factors (Gender, educational level & Employment status) affect the relationship between mobile banking and financial inclusion of the rural population in Karongi District

1.5 Significance of the study

This study aimed at informing decision makers at all levels in the financial service sector on how to use mobile banking to improve financial inclusion. This being an empirical study, the ability to provide trustworthy data unlike anecdotal publications justified the use of this study to inform

policy makers. The findings of the research will be replicable by other researchers therefore its significance to other scholars will not only bring the gap in the area in Rwanda but also provide a basis for further studies in the field.

The researcher will find the experience gained from this study valuable and fulfilling. Upon it motivation for further explorations and scholarly publication will exude.

1.6 Limitations of the study

This study was limited by scope due to financial constraints and time. The researcher would have desired to carry out the study at a nationwide scale so that more data is generated. However, the sample size generated for this study was sufficing the requirements of a reliable finding for the academic requirements of this study. Another possible limitation was the biases of the respondents due to the use of questionnaires. Respondents wanted to provide a dishonest fact about situations when asked through questionnaires. However, they were assured that their confidentiality was maintained and no part of the responses reflected their personal opinions moreover lead question approach was employed with some questions not directly questioning an aspect but rather justifying a given response.

1.7 The Scope of the Study

The scope of the study covered time, content and geographic scope.

The study covered a period of ten years from 2008 to 2018 since this is a justifiable scope for most reliable studies and was conducted from January, 2018 to October 2018 so as to qualify for graduation.

The study was geographically limited to Karongi district which is located in the western province with Rutsiro district in the North, DRC on the west, Nyamagabe on the south and Ruhango on the

east. While the content was limited to mobile banking and its effects on financial inclusion. Mobile banking was the independent variable while financial inclusion was the dependent variable.

1.8 Organization of the study

This research project has five chapters with chapter one presenting the introduction to the study. The included subsections in chapter one are background, problem statement, objectives, significance, limitation and scope. Chapter two discussed the related literature while chapter three discussed methodology of the study. Chapter four presents and discusses the findings while in chapter five, summarizes the finding and draws conclusion and recommendation is made thereafter.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter discusses the literature related to the topic and presents it by presenting the theoretical literature, empirical literature and conceptual framework.

2.1 Concept review

2.1.1 Concept of Financial Inclusion

According to the World Bank, financial inclusion is the proportion of individuals and firms that use financial services (World Bank, 2018). It has a multitude of dimensions, reflecting the variety of possible financial services, from payments and savings accounts to credit, insurance, pensions, and securities markets. It can be determined differently for individuals and for firms and more extensive availability of financial services allows individuals and firms to take advantage of business opportunities, invest in education, save for retirement, and insure against risks (Beck et al., 2005). But not all financial services are appropriate for everyone, and especially for credit there is a risk of over extension. Financial inclusion has been differentiated from access and the argument is that inclusion may not necessarily imply access. Figure 2.1 shows the structure of financial inclusion.

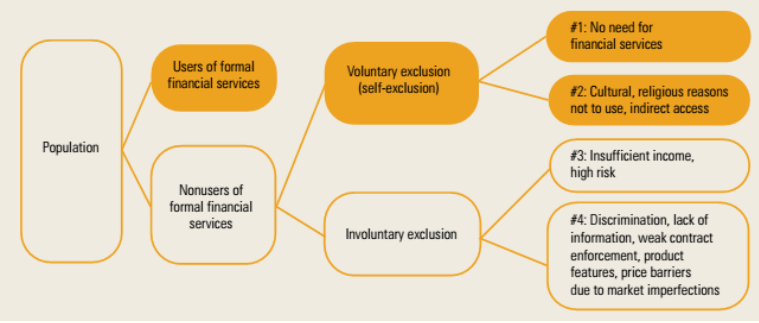

Figure 2. 1Structure of financial inclusion and access

Source: (Klapper & Demirguc-Kunt, 2012)

Some individuals and firms may have access too, but not choose to use some financial services. Some may not have direct access, for example, others may use someone else's bank account. The non-users include individuals who prefer to deal in cash and firms without promising investment projects. From a policy maker's viewpoint, non-users do not constitute an issue because their nonuse is driven by lack of demand. Also, nonuse for religious reasons can be addressed by allowing the entry of financial institutions that offer, for instance, Shari'acompliant financial services (Klapper & Demirguc-Kunt, 2012).

2.1.2 Measures of Financial Inclusion

According to Kempson, Atkinston, and Pilley (2004) financial inclusion can be measured through three basic dimensions; banking penetration, availability of the banking services and usage of banking system. The variables include; the size of the banked population, i.e. the proportion of people having a bank account is a measure of the banking penetration of the system, number of branch per 1000 km^2, number of bank ATM per 1000km^2, average size of loan to GDP per capita, number of deposits per 1000 people, average size of deposits to GDP per capita and total deposits as a percentage of GDP (Kempson et al., 2004).

Ownership of accounts: Accounts are the key measure of financial inclusion because essentially all the formal financial activity is tied to accounts. In developed countries, 89 percent of adults report that they have an account at a formal financial institution, while the share is only 24 percent in low-income countries. Globally, 50 percent of the adult population, more than 2.5 billion people, do not have a formal account. In many countries in Africa, the Middle East, and Southeast Asia, less than 1 in 5 adults has a bank account. Account penetration varies considerably not only among countries, but also across individuals within the same country (Demirgüç-Kunt and Klapper 2012).

Payments

Non cash methods of payment are becoming more important, but they still lag behind cash methods in terms of penetration. Debit and credit cards account for a large part of non-cash retail transactions. Only a small fraction of adults are using mobile payments (Abuga & Manyange, 2015).

Savings

Globally, 36 percent of adults report that they saved or set aside money in the previous year. In high-income countries, this ratio is 58 percent, while in low-income countries, it is only 30 percent. Similar to account ownership, the propensity to save differs across and within countries. Worldwide, 22 percent of adults report they saved at a bank, credit union, or microfinance institution (MFI) in 2011(Klapper & Demirguc-Kunt, 2012). The share varies from 45 percent in high-income countries to 11 percent in low-income countries. Many other people, including some who own a formal account, rely on different methods of saving. Community-based savings methods, such as savings clubs, are widely used around the world as an alternative or complement to saving at a formal financial institution. In Sub-Saharan Africa, 19 percent of adults reported they have used savings clubs and same methods in 2011 (Klapper & Demirguc-Kunt, 2012).

Credit

Most are borrowed by adults in developing countries through informal sources, such as family and friends. Globally, 9 percent of adults report they originated a new loan from financial institutions.

Figure 2.2 shows some of the major barriers to financial inclusion.

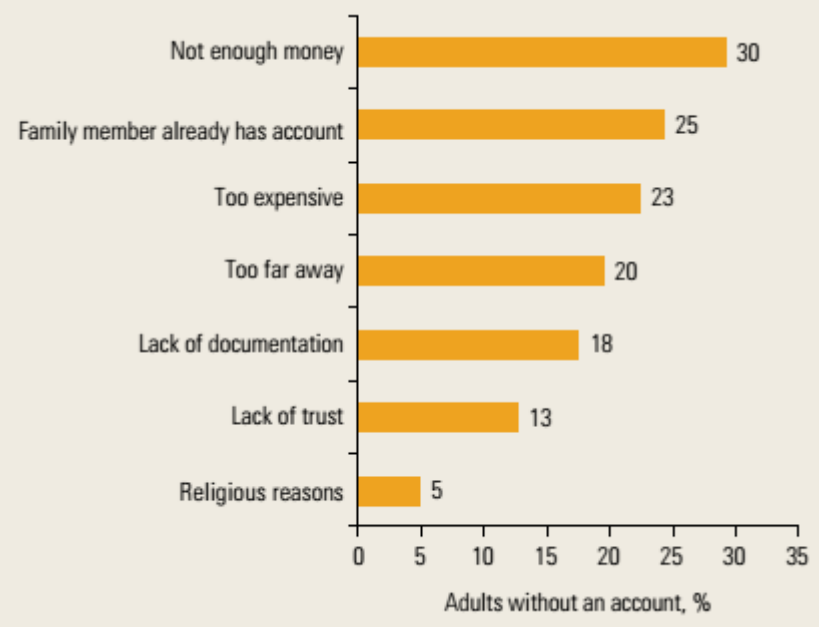

Figure 2. 2Major barriers to financial inclusion

Source: (World Bank, 2010)

In a report World Bank (2010) the reason for individuals not to own an account in a formal account is the lack of enough money, bank accounts are being too expensive, excessive distance of banks, lack of the necessary documentation, lack of trust in banks, and religious reasons and in Africa economies distance, cost, documentation, and lack of money are usual reasons.

2.1.3 Financial inclusion for development

More than half of the world's adult population does not have a bank account at a formal financial institution, meaning a financial institution such as a bank or a mobile network provider regulated and licensed by the state. In sub-Saharan Africa about a third of the adult population has an account in a formal financial institution (Demirguc-Kunt, Klapper, Singer, & Van Oudheusden, 2014).

Failure to access financial services can exclude people with need for capital (Johnston & Murdoch, 2008). Most inclusive financial systems can facilitate the poor to smooth the flow of their finances

and insure themselves against economic vulnerability owing to illness, accidents, theft and unemployment. It could allow them to save and acquire, build their assets, and make investments that can improve their livelihoods (World Bank, 2012). It can also increase people's credit-risk profiles, which can decrease the prices they must pay for financial services, decreasing personal stress, and facilitating them to gain access to lower-cost sources of credit (Caskey, 2002). Hence, improving access to financial services is much important for development, because it can facilitate economic growth and help to reduce income inequality.

According to a report published by the World Bank, the most common barrier is to not have enough money for it to be necessary to open an account. The second most common barrier was not having enough money to uphold the minimum balance and afford the costs often associated with having a bank account and the third that the distance to the bank was too long (Demirguc-Kunt, Klapper, & Randall, 2013). Women, youth, the poor and rural residents experience the largest barriers to access (World Bank, 2014). Being financially included is strongly related to income level in developing countries and the richest 20% is twice as likely to have an account at a formal financial institution as the poorest 20% (Demirguc-Kunt et al., 2014). Research has shown that financial inclusion has had developmental benefits such as reducing poverty (World Bank, 2014), and it is considered to be a tool to achieve some of the new Sustainable Development Goals (SDG's). The first SDG, "end poverty in all its form everywhere" explicitly mentions equal rights to economic resources and access to basic services in one of the targets: "By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance" (United Nations, 2015). The poor and vulnerable people mentioned in the quote are

often not part of the formal economy as wage earners. Instead they are often "self-employed" farmers, pastoralists or small-scale entrepreneurs. This means that both consumption and production are intertwined in these livelihoods and it is believed that access to a wide range of financial services is important to manage the financial needs that arise. Research based on financial diaries suggests that poor families make great use of informal financial services and are constantly borrowing and saving in informal ways (Cull, Demirgüç-Kunt, & Lyman, 2012).

Another target under the first sustainable development goals deals with building the resilience of the poor to reduce their vulnerability to economic, social and environmental shocks. This is also an area where access to financial services is believed to have the potential of making a difference. The strongest evidence for this has come from management of savings. Having saved money is believed to help families and individuals to manage irregular incomes, balance their consumption, accumulate capital and manage shocks. A study from Kenya showed that even simple forms of safe savings, like keeping money in a box with a lock, could increase an individual's investments in health as well as reduce the vulnerability of an household in case of health shocks (Dupas et al., 2012).

2.1.4 Level of financial inclusion in Rwanda

In total, 5.2 Million (89%) of adults in Rwanda were financially included in both formal and informal financial products/services. Formal inclusion increased from 42% in 2012 to 68% of adults in 2016, implying about 4 million adults owned an account. About 26% of adults in Rwanda are banked (around 1.5 million individuals) and 52% used debit cards, loans from banks and a high uptake of mobile banking to access at least once a month. While 65% of adults in Rwanda have/use other formal (non-bank) financial products/services (around 3.9 million individuals). The major

driver for banking is usage of mobile money services and the growing penetration of Umurenge SACCOs.

A total of 0.7 million (11%) adults in Rwanda do not use any financial products or services (neither formal nor informal) to manage their financial lives, i.e. they are financially excluded. Traditionally vulnerable groups such as the poor, those residing in remote rural areas, women, and vulnerable age groups (17-18 and older than 60 years) are more likely to be financially excluded.

Table 2. 1Average time spent to access financial service in Rwanda

Destination	Kigali city Minutes	Southern province Minutes	Western province Minutes	Northern Province Minutes	Eastern province Minutes	Adult population Minutes
Umurenge SACCO	28	46	49	49	48	46
MFIs	30	54	57	59	56	53
Bank Branch	31	55	58	59	56	53
ATM	32	55	59	60	57	53
Bank Agent	28	53	56	55	52	50
Mobile money	18	35	33	34	28	31

Adopted from (FinScope, 2016)

The Table 2.1 illustrates that bank and mobile money agents are easily accessible and could be accessed within 28 minutes. This offers an opportunity for financial service providers to serve these areas. Mobile money agents are the most accessible points than any other point nationally. Bank agents are also somewhat accessible, especially in Kigali City as it takes 28 minutes on average to reach the nearest bank agent (Villasenor, Wst, & Lewis, 2015). Mobile money and bank

agents are part of the digital finance eco-system as they reduce the need for cash transactions as far as possible. Figure 2.3 shows the number of financial service outlets within Rwanda.

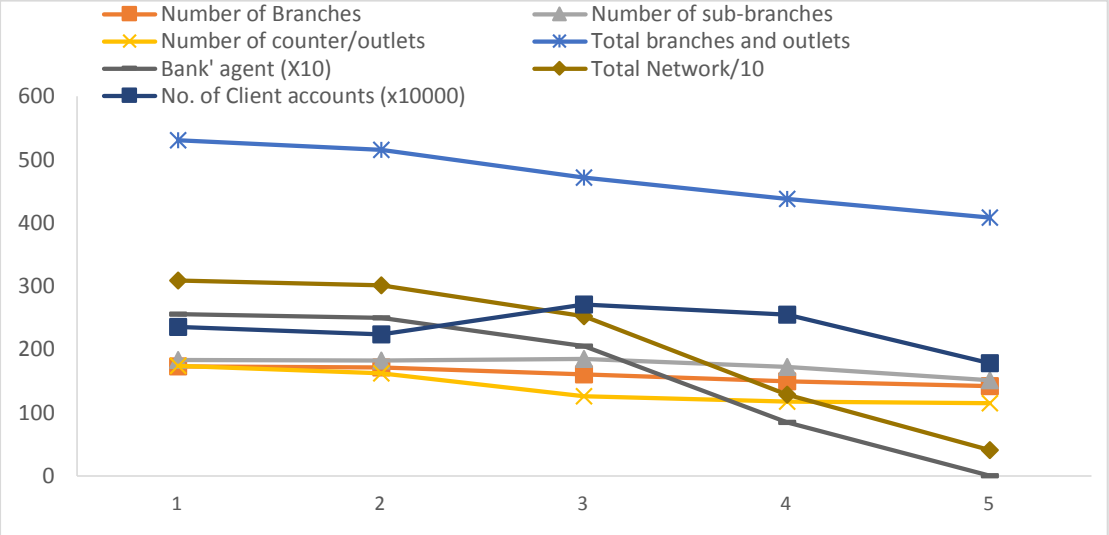

Figure 2. 3the number of financial service outlets within Rwanda.

Source: Compiled from (FinScope, 2016)

Figure 2.3 shows the trend in increment of branches, outlets and agents over time. The biggest increase is noted for bank agents, from zero in 2011 to 2 555 bank agents in a space of four years. Such developments are crucial in rolling out the use of DFS (FinScope, 2016). Figure 2. Shows the percentage means of accessing bank financial services and products across the provinces.

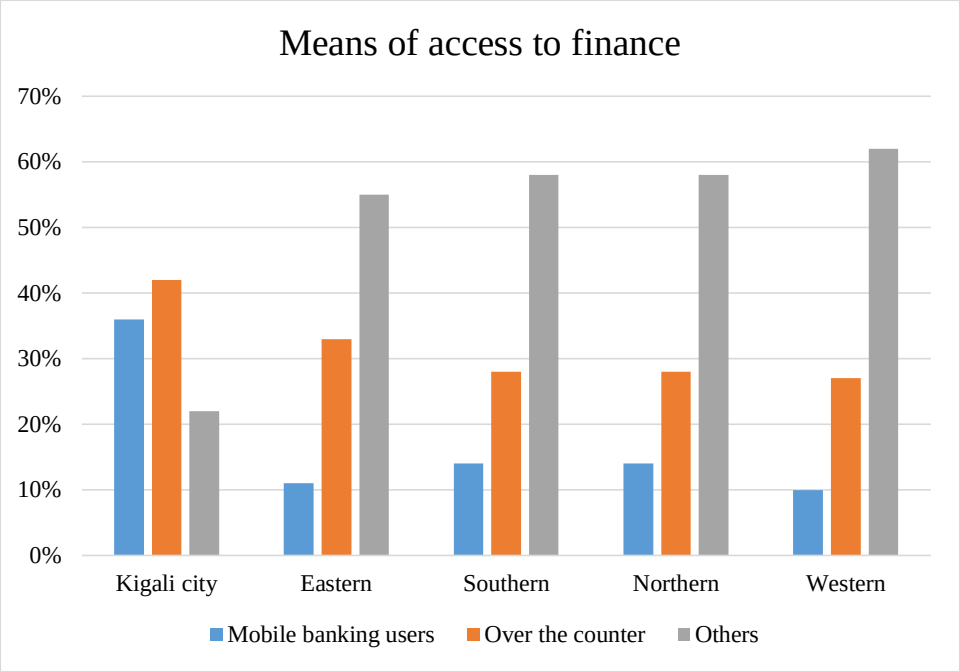

Figure 2. 4 means of accessing bank financial services and products across the provinces

Source: Compiled from (FinScope, 2016)

Kigali City has the highest use of digital services in the country with 36% followed by the Northern and Southern province at 14% while Western and Eastern provinces have the lowest percentage of mobile banking usage (FinScope, 2016).

2.1.4 Gender and use of mobile banking for financial inclusion

With regards to gender, males are more active users of digital finance (17%) compared to females (14%). More males use both mobile technologies and On the counter transactions compared to females (Villasenor et al., 2015). The study of Ashenafi and Mutsonziwa, Kingstone (2016) found that more females are excluded from financial services and this leads to their exclusion from social and economic activities. Financial exclusion of females means that their potential contribution to economic growth is lost.

2.1.5 Employment status and use of mobile banking for financial inclusion

FinScope (2016) found that who earn a living through salaries from government used mobile banking at a level of 97% and private companies at (77%). The rest of the other types of employment category scored below 70% in Rwanda. This was associated to the lack of emphasis by other institutions in making electronic payments to recipients (specifically the private sector) – individual and money from farming, mostly use OTC transactions.

2.1.6 Mobile Banking concept

Mobile Banking is simply defined as carrying out banking transactions via mobile devices such as cell phones or personal digital assistant(s) (PDAs). The offered services may include transaction facilities such as checking account balances, transferring funds and accessing other banking products and services from anywhere, at any time as well as other related services that cater primarily for financial information and communication needs revolving around bank activities(Zhijun, 2007). According to Donner and Tellez (2008), mobile banking refers to a system which enables people to conduct financial transactions using a mobile device against a bank account accessible from that device. Since, Compared to traditional banking, with the mobile banking system, an account holder can conduct banking transactions without visiting a bank branch, thus it increases the efficiency of the individual account holder by saving time as well as eliminating space shortcomings (Bångens & Söderberg, 2008).

The uses for mobile financial services are also diverse and expanding. Figure 2.4 shows mobile use across the world.

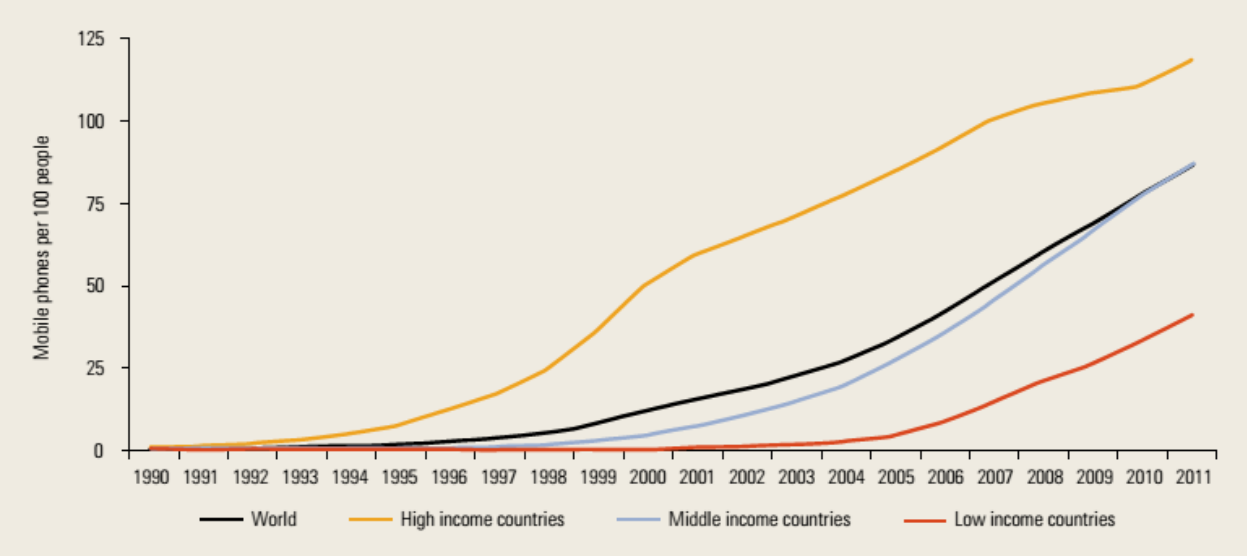

Figure 2. 5 Mobile phone usage globally

Source: *(Jack and Suri 2011, Mendes et al. 2007).*

The number of mobile phones has increased globally and though low-income countries lagged behind in the first decade, from 2004 the rise became significant. The use of mobile phones has transformed from making calls to sending and receiving money. They can confess individuals to deposit, send, and draw out funds using their mobile phones, as well as pay for goods and services (Jack and Suri 2011, Mendes et al. 2007), with the most common services being domestic and international remittances (Jenkins 2008). Given the extending applications, varied models and contexts, it was mentioned at the first mobile money summit in 2008 that no-one knows what the mobile financial ecosystem will look like in five years (Jenkins 2008). Likewise, Donner and Tellez (2008) have said that the norms and expected behaviors surrounding mobile financial services will derive over time and distinguish from place to place.

2.1.7 Mobile banking in Rwanda

Mobile phone insight determines the potential size of the mobile money market. Although mobile money can be also accessed by those without mobile phones through the use of agents, *Suri and Jack* (2009) found that not having a mobile phone is a major forecaster of not using mobile money. In this sense, M-PESA had a clear advantage; in Kenya, in 2007 when M-PESA was launched, 30 percent of the population had a mobile phone, above 20 percent in Tanzania at the time mobile money services were first introduced. In 2012, the mobile insight rate had increased to 74 percent of the population in Kenya, well above the penetration elsewhere in East Africa.

Figure 2.6 shows the ranking of Rwanda within the East African Member states.

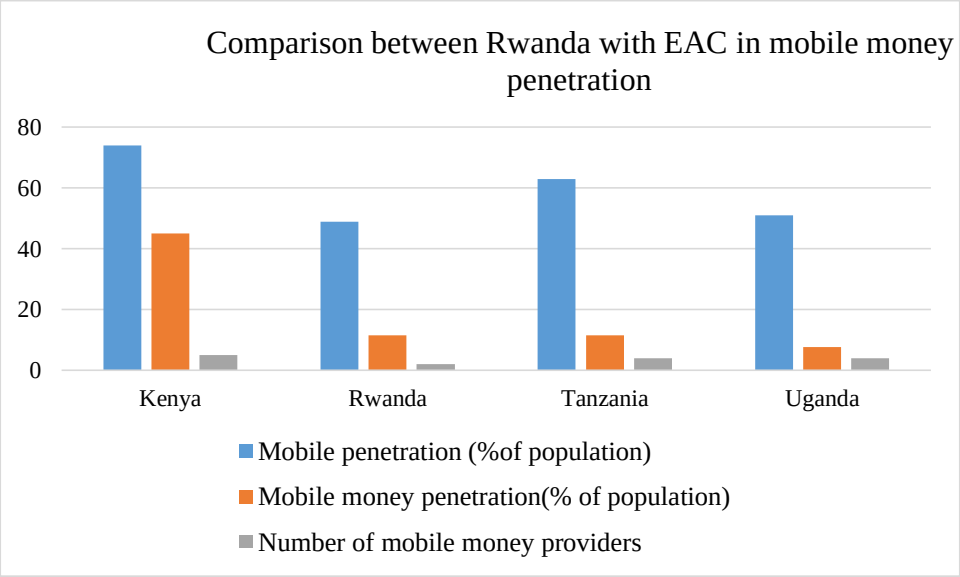

Figure 2. 6Comparison between Rwanda with EAC in mobile money penetration

Source: (GSMA, 2012)

Rwanda comes last than Kenya and Tanzania in terms of mobile money penetration, despite its relatively high mobile phone penetration.

MTN- Rwanda was accepted to launch their mobile money services in February 2010, while Tigo started in May 2011, more than a year later. However, Tigo Cash's growth has been particularly fast, as today it is estimated that both MTN and Tigo have almost 600,000 registered mobile money users each. All these telecommunication operators provide pricing structures for the core product (deposit, transfer, withdrawal). Deposits are free, transfers are charged at a flat fee (or a small number of bands of flat fees), withdrawals at a much larger number of band-based fees, and withdrawals are generally much more expensive than transfers. In terms of prices levels, MTN Rwanda is expensive for larger transactions, and Tigo Rwanda is the expensive for small transfers. In other words, it's another factor explaining the slow penetration rate in Rwanda.

(Argent et al., 2013).

The overall growth of mobile penetration are marked as impressive with two years after authorizing the registered users had reached around 1.2 million in 2012 (11.5 percent of the population) (*Argent et al*., 2013). Many banks such as Banque Populaire du Rwanda, Bank of Kigali, Equity Bank, Kenya Commercial Bank, ECOBANK, Fina Bank, Cogebanque and URWEGO Opportunity Bank have all established mobile banking services for their clients by incorporating mobile money banking systems (Abuga & Manyange, 2015).

2.1.7 Mobile Phones and Financial Inclusion

Mbiti and Weil(2011) found that the high availability of financial services in Kenya helped M-PESA increase its customer base and increase the number of active users. They found that males, urban residents, banked individuals, high income individuals, the better educated, and those employed in the non-farm sector were more likely to use M-PESA. Individuals with bank accounts

used M-PESA almost three times as much as those without bank accounts. Moreover, 35 percent of banked individuals used M-PESA to save, while only 19 percent of the unbanked did.

Aker et al. (2011) found that the privacy that mobile money contribute in respect of when cash transfers are received results in a greater variety of the range of goods purchased by the recipients, leading to less asset depletion and more variety in crop growth by beneficiaries. In addition, mobile money has been used as a means for performing online selling and buying and this has enabled people without access to have credit cards to buy, sell and transact online using social-network sites in the Philippines (Alampay 2008).

Figure 2.7 maps the impact of Mobile banking on financial inclusion.

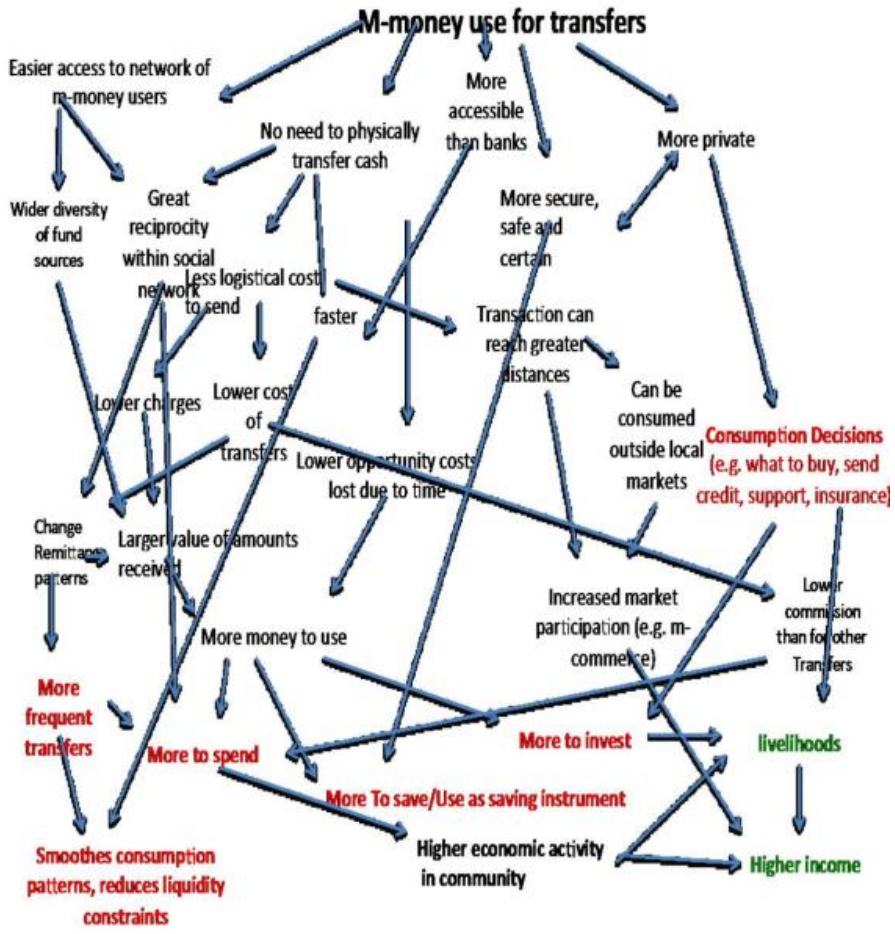

Figure 2. 7Mapping mobile banking to financial inclusion

Source: Adrianaivo and Kpodar (2012)

The ability of mobile money for example to reach out to outside networks beyond the boundaries of a family households cross greater distances and improve the access to credit and the volume of insurance transactions (*Jack et al.* 2013). Through the provision of frequently shared remittances in large amounts families can recover from shocks (Jack and Suri 2014). Furthermore, the adoption of mobile money can increase the frequency of mobile transfers, reduce the use of informal saving arrangements, and lead to increased demand for banking services (*Mbiti and Weil* 2011).

Some qualitative studies have reflected on the influence of mobile money services, especially in East Africa. For instance, *Morawczynski and Pickens* (2009) found that M-PESA users in Kenya were using the service as an interim storage device to collect lump sums of money for unexpected consumption shocks (such as funeral costs), thereby altering existing savings patterns. There is more detailed proof for this in *Ghosh* (2012), who found that low-income rural populations in Uganda were using their m-money wallets as interim storage devices in three different ways: i) as a kind of transaction account, where people used their m-money wallets for short-term savings; ii) as a progressive savings account, where people either built up a reserve before paying it, or decreasing an incoming remittance over time; and iii) for targeted savings, where people built up a lump sum in their wallets with a particular goal in mind.

Figure 2.8 shows the relationship between mobile banking and financial inclusion specifically sending and receiving money which measures the use of financial services.

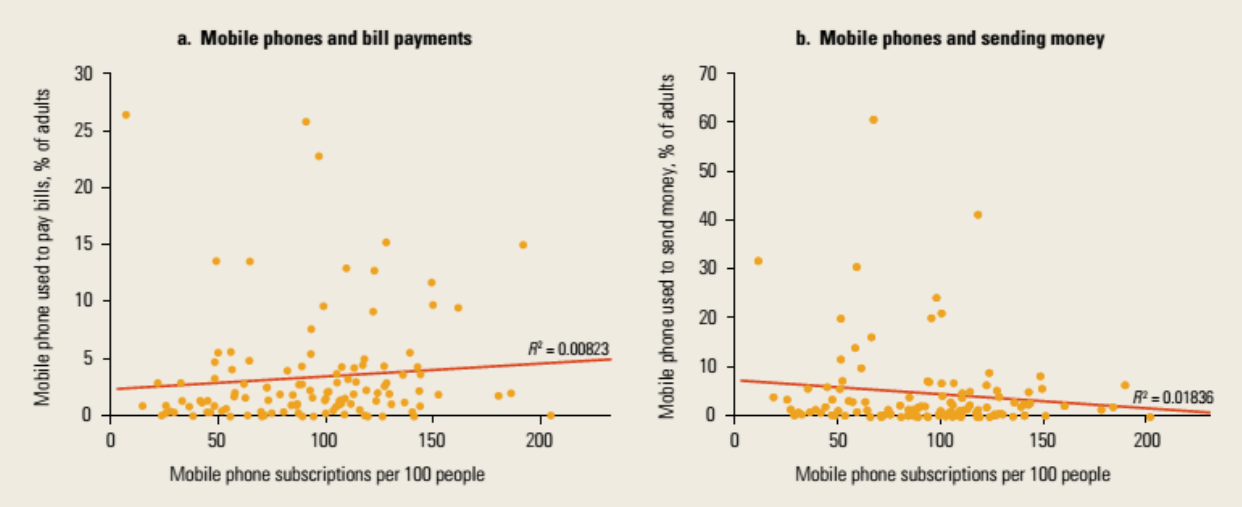

Figure 2. 8Relating Mobile banking to use

Source: Mbiti and Weil (2011)

The correlation between owning a mobile phone and using it for payment is insignificant. This observation shows that there is no agreement on the use of mobile banking on financial inclusion.

However, *Morawczynski and Pickens* (2009), furthermore, found that the income of their sample increased from 5% to 30% since the initial adoption of the service. Finally, they observed that M-Pesa was promoting rural women in Kenya, by making the process of asking cash from their husbands much easy. In fact, when their husbands refused to send money (There will a reflection of the gender power imbalance), these rural women were able to reach out to other contacts with much easier. In the same territory, and in a very nuanced article, *Donovan* (2012) questioned the effect of M-Pesa on human freedom and provided a complex answer: while the use of M-Pesa has helped many Kenyans achieve their goals, it lays bare the rise of a potentially dominant article that might enable new forms of control, obligation, and "unfreedom".

The review of various related studies shows the impact of the financial inclusion which will perform as a win-win condition for both unserved populations and banks. Financial inclusion is currently restricted to ensure the access to saving accounts; however, it has international broader perception (*Shashank*, 2014). Financial inclusion could have various levels, depending on the level of clients' involvement with financial products and services such as access to credit. Having a current account/savings account on its own cannot be considered as a precise indicator of financial inclusion (*Leeladhar*, 2006). Technology framework can help the banks to extend their services to under fortunate people, the poor in particular, and at the same time can help them meet their business objectives (Shashank, 2014; NBC, 2016).

The costs, distances and bureaucracy are the major obstacle to households' access to proper financial services such as bank accounts and borrowing for income-generating activities (World Bank [WB], 2014). Not only do these factors contribute to banking market failures but also provide

policy makers with procedures on financial policies towards poverty decrease. The market failures and inadequate polices stops the poor from gaining access to financial services such as bank account deposit and borrowings etc. Modern information and communication technology (ICT) is very likely to direct these market failures, allowing the poor to have access to financial services that they need.

Progressively rigorous literature on the evaluation of factors helping the financial inclusion in the developing countries has been paying more awareness to the effects of modern ICT such as mobile phones (see, for example, *Mihasonirina & Kangni*, 2011; *William, & Tavneet*, 2011; *Ahmed et al*., 2012; *Mihasonirina & Kangni*, 2012; *Maria & Frida*, 2014; *Shashank*, 2014). Their results suggest that mobile phones help the access to financial services such as bank account deposit and borrowings, then improving economic growth. The modern ICT can serve as a tool to develop a policy which helps the developing countries extend the financial services in rural communities and can help banks reduce their operation costs as well as transaction costs, increase customer reach ability and improve business risk management (Shashank, 2014).

Beyond to reducing costs, mobile phones also allow customers to interact more directly with their bank, checking balances and introducing transactions from wherever they are. Moreover, using mobile phones as a tool to gain access to device offers the customers a level of immediacy, accessibility and control that other channel cannot provide.

Mihasonirina and Kangni (2011) used GMM approach to quantify the outcomes of mobile phones on economic growth with a sample of African countries from 1988 to 2007. They found that mobile phones improve financial inclusion in terms of borrowing and thus stimulate economic growth. With the same method, the study by *Maria and Frida* (2014) comes up with the same conclusion of the financial-inclusion-increasing effects of mobile phones. In a similar fashion, *Andrianaivo*

and Kpodar (2012) assesses whether mobile phone roll out, in terms of mobile saturation rate as well as the cost of mobile local calls, raises economic growth in a sample of African countries from 1988 to 2007 through promoting better financial inclusion measured by the number of deposits or loans per head. Using the GMM estimator method to address endogeneity issues, the authors found that mobile phone development contributes importantly to economic growth in African countries through enhancing greater financial inclusion. Furthermore, the effects of mobile phones may also have very close relationship with regulatory environment. *Peter* (2015) analyzed the regulatory influences on mobile money and financial inclusion in African countries like Kenya, Nigeria, Tanzania and Uganda. The author argued that Countries which conduct financial improvements will ultimately be the ones that initiate innovation in mobile financial services and build inclusive, secure, and efficient financial sectors.

2.2 The conceptual Framework

Usage of Mobile Banking **Financial Inclusion**

INDEPENDENT VARIABLE **DEPENDENT VARIABLE**

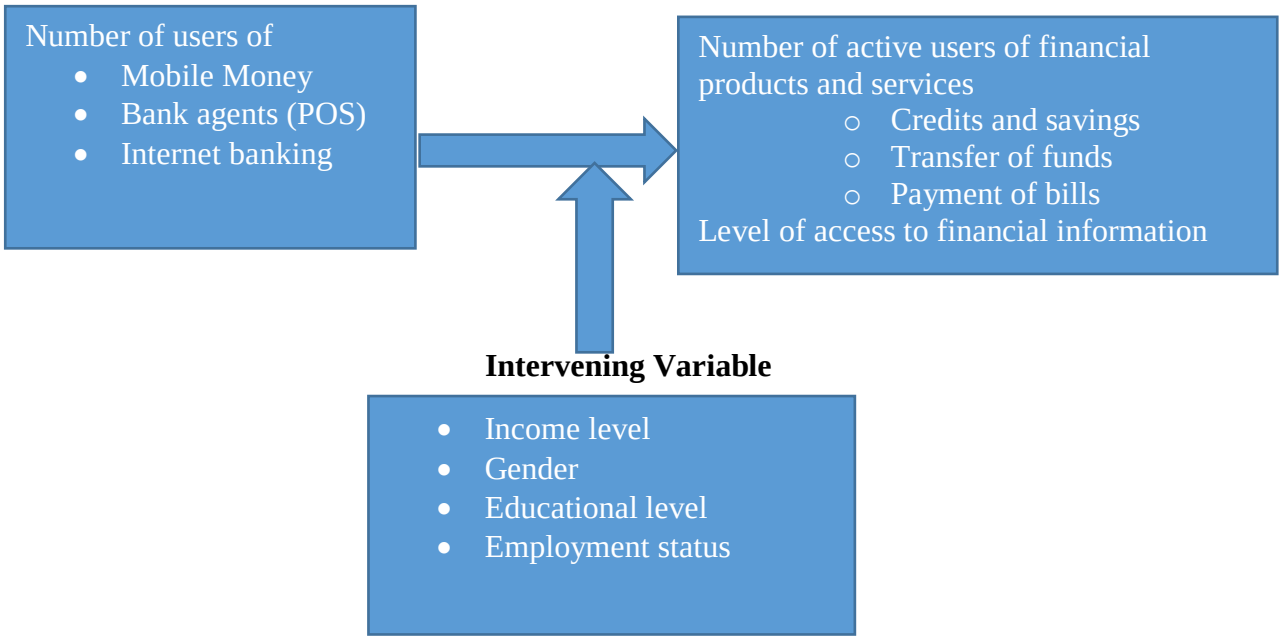

Figure 2. 9Conceptual Framework

Source: Research (2018)

2.3 Theoretical review

2.3.1 Adoption models: TAM, Extended TAM and DIT

The Technology Acceptance Model (TAM) (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989) has been widely used and adopted to understand user acceptance of IT/IS. TAM was adapted from the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) which is a general theory of human behaviour. TAM is specific to IT/IS usage (Mathieson et al., 2001) and valid in predicting the individual's acceptance of various corporate IT systems (Adams, Nelson, & Todd, 1992; Chin & Todd, 1995; Doll, Hendrickson, & Deng, 1998; Segars & Grover, 1993).

"The Technology Acceptance Model (TAM) is an information systems (System consisting of the network of all communication channels used within an organization) theory that models how users come to accept and use a technology" (Mazha, 2006). TAM focuses on IS use based on social psychology theory, and has valid and reliable instruments (Luarn & Lin, 2004).

Access to finance for the poor and vulnerable groups in rural areas is characterized by uneven distribution of banks whose main focus is the urban clients. The rural have several factors that determine their acceptance to a technology in this case mobile banking. According to Davis (1989), belief, attitude and action purpose determine adoption. The users of Mobile banking will adopt any related technology if they perceive it useful and ease of use. If the degree to which the users perceive that their performance will greatly be enhanced is high and the technologies will be free of physical and mental efforts, adoption will be most likely (Chung & Kwon, 2009). This perception affect behavior in that the user is motivated to go through the stages of adoption. Riquelme and Rios (2010) and various other authors suggest that there are other possible factors that might affect mobile banking adoption such as perceived risk or uncertainity (Chung and Kwon, 2009; Donner and Tellez, 2008; Luo *et al*, 2010; Luakkanen, 2005), social norms (Pederson and Ling, 2002; Riquelme and Rios, 2010), financial cost (Yang, 2005), demographic factors (Amin, *et al*., 2006; Laforet and Li, 2005; Lee and Lee, 2007; Polatoglu and Ekin, 2001).

2.3.2 Productivity Gains and Reduction in Transaction Costs

ICT improve firms' production by allowing firms to adopt flexible structures and locations. The increased geographic diffusion is a source of productivity gains as it also allows firms to exploit comparative advantages and save on operational costs for the business. In additional productivity gains also come from better management, through better intra-firm communication, and better flexibility, owing to the removal of physical restrictions on organizational communication

(*Jenkins*, 2008). Voice applications decrease unproductive traveling time and improve logistics, leading to faster and more efficient decision making. They also empower small and medium-size enterprises, through increased flexibility & adaptability in both operational and financial engineering (*Lewin & Sweet*, 2005). Indirect social returns also come from use of mobile telecommunications innovations and further improve market functioning and increases trade.

Investments in Mobile telecommunications have contributed towards focus to reduce costs because better communication systems lower transaction costs (Datta & Agarwal, 2004, and Waverman, Meschi, & Fuss, 2005). By reducing the cost of retrieving & passing financial information through the GSM mobile handset, improve information flows, increase arbitrage abilities, and facilitate price discovery. They allow better functioning markets and regulation of supply and demand. Therefore it increases information regarding prices (of commodities, for example), job opportunities, and markets (Sarma and Pias, 2004). Moreover, good communication networks substitute for costly physical transport and therefore widen networks (of buyers and suppliers) and markets.

Jenkins (2008) show that reduced transaction costs from highly innovated ICT favor trade because it gives developing countries opportunities to tap into global markets and remittances and increase financial inclusion landscape. The development of e-commerce fostered by ICT development increases efficiency and opens markets for developing countries. Businesses, such as handicrafts or ecotourism, reach global audiences, marketplaces become digital, and transactions are automated. Trade in services such as back office support or data entry and software management also benefit from new

2.4 Empirical Review

The impact of financial liberalization on selected financial sector development indicators in Kenya was investigated by Musau (2002). The findings showed that financial liberalization increased the penetration level of financial services with Microfinance institutions promotions for financial inclusion being pivotal. Laha (2011) sought to identify the broad determinants of financial inclusion in some selected districts of west Bengal, India. Empirical results using Bivariate Probit model showed that asset level of the household, as determined by the operated land holding, significantly enhances the probability of becoming a bank customers and the existence of information asymmetry in financial services acts as an obstacle to the process of financial inclusion.

Sharma (2008), through cross country empirical study examined a close relationship between financial inclusion and development in Pakistan. Further, the study found a positive relation between financial inclusion and different socio-economic variables like income, inequality, literacy, physical infrastructures. *Kathuria, Uppal et al Mamta* (2009) assess the influence of mobile penetration on economic growth across Indian states. They estimated a structural model with three equations for Indian states from 2000 to 2008. They specifically examined the links through which mobile phones affect the growth and the constraints, if any, that limit their effect. They found that Indian states with higher mobile penetration rates can be predictable to grow faster, and that there is a critical mass, at a penetration rate of 25 percent, beyond which the impact of mobile phones on growth is enlarged by network effects. Telecommunication networks, more than any other infrastructure, are subject to network effects: the growth impact is larger when a significant threshold network size is attained.

Lee, Levendis, and Gutierrez (2009) are among the rare studies that have focused on the effects of mobile phones on economic growth in sub-Saharan Africa. They corrected the potential endogeneity between economic development and telephone expansion by using the generalized method of moments. They also considered varying degrees of substitutability between mobile phones and landlines. They found indeed that the marginal impact of mobile telecommunication services is even greater where landline phones are not common. The frequency through which telecommunications inspire growth, financial inclusion, for instance, are not investigated. In additional, their regressions may be subject to statistical inadequacies because of the externalities like government involvement.

Hasan, Schmiedel and Song (2009) in their study to provide a combined and integrated view of the importance and significance of retail payments for bank performance using country level retail payment service data across 27 EU markets found out that countries with more developed retail payment services, banks perform better, in terms of both their accounting ratios and their profit and cost efficiency. They further found that the relationship is stronger in countries with higher levels of retail payment transaction equipment, like ATMs correspondence (Agency) banking and POS terminals.

Sarma and Pais (2010) examined the relationship between financial inclusion and expansion by empirically identifying country exact factors that are associated with the level of financial inclusion. They found that levels of human development and financial inclusion in a country move closely with each other. Among socio-economic and infrastructure related factors, income, inequality, literacy, urbanization and physical infrastructure for connectivity and information were significant. The health of the banking sector did not seem to have definite effect on financial inclusion whereas ownership pattern did seem to matter.

Sarma and Pias (2011) led a study of the system of equations that endogenize economic development and telecom penetration, while extending the analysis to mobile phones. They accept separate estimations for fixed lines, and mobile phones to disaggregate their effects in 63 developing economies between 1990 and 2001. They found that the resistance of aggregate national output with respect to main telephone lines is smaller than that of mobiles and that, in developing nations, cellular services contribute extensively to national output.

Achieng (2011) studied the strategic responses of Kenya Commercial Bank to mobile money transfer in Kenya and discovered that the money transfer service industry could be described as emerging, rapidly increasing or a high velocity market in Kenya and any developing country. The study showed that with the strategic positioning of the mobile telecommunications providers and the need for banking institutions to partner and integrate with the Mobile money transfer provides in order to remain relevant and share in the huge potential offered to mobile subscribers.

Singh and Kodan (2012) analyzed the relationship between financial inclusion and development to identify factors associated with financial inclusion. With the help of Regression, he found that per capital NSDP and urbanization were significant explorers of financial inclusion while the literacy, employment and sex-ratio were not statistically significant explorers/predictors of the financial inclusion.

Waihenya (2012) conducted a study of the effect of agency banking on Financial Inclusion in Kenya. Secondary data was used for this study since it is easily accessible, cheaper and accurate for this case due to the regulations around submissions by Central Bank of Kenya. Secondary data from existing theories and researchers done on mobile money transfer and financial inclusion from finance books, journals, periodicals and internet was also relied upon. The study concluded that agency banking has the effect of increased financial inclusion in the country significantly. The

research found that the levels of financial inclusion are low and that there is notable gap not bridged by formal banking framework. It further notes that agency banking is facing a lot of challenges from the increasing mobile penetration in the country and mobile money transactions increasing at the same rate.

The study of *Mutsune* (2014) investigates financial inclusion through mobile banking in Kenya. The Research examines Kenya's highly successful money transfer model, M-pesa, in an effort to explore the nature and role of financial inclusiveness in motivating economic activity. The study focused on exploring a framework that can be used to estimate how financial inclusion in Kenya through mobile banking has compressed economic dynamism. The ideas presented are an innovative investigation that blends economic thinking and with aspects of natural science with the aim of developing a framework that can be applied to appropriate data. The study recommends flexibility in this new form of technology application by policy makers. Due to increasing velocity of transactions in Kenya, and the increasing assumption of banking services by mobile service providers, the monetary regularities should go back to the drawing board to recalibrate rules on money supply and banking services respectively. The study suggests a close attention to policy concerns in future studies.

2.5 Research Gap

The studies on financial inclusion and mobile banking are vast with many addressing how mobile technology affects performance of organizations. The studies have taken several forms for example Musau (2002) investigated on financial liberalization on selected sectors in Kenya, Laha (2011) sought to identify the broad determinants of financial inclusion in some selected districts of west Bengal, India while Sharma (2008), through cross country empirical study examined a close relationship between financial inclusion and development in Pakistan.

The weakness of these studies was that they never related how financial inclusion could be attained through mobile banking.

Kathuria, Uppal et al Mamta (2009) assess the influence of mobile penetration on economic growth across Indian states without focusing on financial inclusion. The study of *Lee, Levendis, and Gutierrez* (2009) are among the rare studies that have focused on the effects of mobile phones on economic growth in sub-Saharan Africa.

The current study therefore contributes to bridge this gap by investigating on the relationship between mobile banking and financial inclusion. The studies so far presented were never carried out in Rwanda moreover there is hardly none that has been conducted in Rwanda on the same. This created a gap that affected decision making on how to design and implement mobile banking technologies for financial inclusion. To this end the current study was conducted.

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Introduction

This chapter presents the research design, study population, research instruments, research procedure, methods of data analysis and ethical considerations

3.1 Research Design

A Research designing encompasses the method and procedures engaged to execute scientific exploration. The design defines identify and sub type similar investigate interrogative, hypotheses, separate and dependent variables (Robson, 1993). This study used a correlation design in which prediction (dependent variable) was modeled by criteria (independent variable) to ascertain a relationship.

3.2 Target Population

Population is a totality of persons or items from which samples are taken for measurement (Lawrence, 1990). The total population of financial providers in Karongi District is approximately 17 serving made up of approximately 128 mobile money agents, 37 bank agents, 148 bank staff and 321 customers. In total 634 as a target for the study.

3.3. Sample Design:

Sampling is essential part of information. And samples are collected to realize an understanding of a population because it is typically not feasible to observe all of the population. The aim is to collect samples that provide an accurate illustration of the population. Limitations on time and money dictate that the sampling effort must be effective. Further samples are needed to describe the nature of highly variable populations than less variable populations.

3.3.1. Sample Size

Yemen's formula was used to estimate the sample size as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where n = is sample size,

N= target population

e= level of Precision or marginal error

N= 634 participants, e = 5%=0.05

Hence the sample size (n) is $\frac{634}{1+1634(0.05)^2} = 246$ respondents

Basing on the above formula, a sample size of 246 respondents was included in the study.

3.3.2 Sampling techniques

The sample was included as indicated in Table 3.1

Table 3. 1Sampling techniques

Strata	**N**	**n**	**Sampling**
Client	321	125	Random sampling
Staff	148	57	Random sampling
Agents	165	64	Random sampling
Total	634	246	

Source: Primary data, 2018

The respondents were included from all the 17 financial service providers. The total number of people in the category indicated in Table 3.1 was acquired and proportions calculated appropriately

with the strata. Then with the list acquired, a shuffle was conducted and the first 125 clients, 57 staff and 64 agents selected.

3.4 Data Collection Methods

Data was collected using questionnaires, interview guides, observation and secondary data.

3.4.1 Questionnaire

This is a type of data collection whereby prepared a set of questions were given to respondents who are in the same nature. A questionnaire is an instrument for data collection consisting of a set of questions and which is sent out by mail in the hope that the recipients would fill it and return it back. In this study, self-administered questionnaires were distributed to the respondents in order to permit free and fair responses from the respondents by taking into considerations their positions, knowledge and working departments.

3.5. Data analysis Procedure

Crawshaw and Chambers (2002) define data processing as concerned with classifying responses into meaningful categories called codes. It consists of editing, coding, and tabulation. After processing the data analysis commenced. The responses obtained from the questions were processed and edited using Ms.excel for an easy interpretation. Editing was done to ensure completeness, accuracy, uniformity and legitimacy in questionnaire. The cleaned data was then entered into SPSS version 22 for analysis. Multiple regression, frequencies, percentages, mode and standard deviation was performed.

3.6 Reliability and validity of the research

Reliability of the tools was ensured through reliability analysis using SPSS with alpha of Cronbech above 0.7 considered reliable.

Table 3. 2Case Processing Summary

		N	%
Cases	Valid	245	99.6
	Excluded[a]	1	.4
	Total	246	100.0

a. Listwise deletion based on all variables in the procedure.

Table 3. 3Reliability Statistics

Cronbach's Alpha	N of Items
.875	23

Source: Primary data, 2018

According to Tables 3.2 and 3.3, the reliability coefficient of 0.875 was produced and comparing to the normal of alpha = 0.7, the reliability coefficient produced was high implying the 23 items of the questionnaire were all reliable for use in this study.

3.7 Ethical consideration

All material used in the study was referenced and used with the agreed level of fair use. Also responses of the participants were kept confidential and used for academic purposes. This were ensured by anonymity of responses.

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION

4.0 Introduction

This chapter presents the findings and presents it under the demographic statistics and the objectives of the study.

4.1 Demographic statistics

The demographic characteristics included gender of respondents, educational level, employment status and income level of the respondents.

4.1.1 Gender of respondents

Table 4.1 shows the gender of the respondents

Table 4. 1Gender of respondents

		Frequency	Percent
Valid	Male	154	62.6
	Female	92	37.4
	Total	246	100.0

Source: Primary data, 2018

There were 154 (62.6%) male and 92(37.4%) female respondents. This implies that the majority of them were male.

4.1.2 Employment Status

Table 4.2 shows the employment status of the respondents by their frequency and percentages.

Table 4. 2Employment status

Employment status	N	%
Employed	75	30.5%
Self-employed	45	18.3%
unemployed	126	51.2%

Source: Primary data, 2018

According to Table 4.2 75(30.5%) of the respondents were employed, 45(18.3%) self-employed and 126(51.2%) unemployed. The finding implies that majority of the respondents were unemployed.

4.1.3 Education Level

Table 4.3 shows the education level of the respondents by their frequency and percentage.

Table 4. 3Education level

What is your educational level		N	%
Education level	No Education	123	50.0%
	Informal education	0	0.0%
	Primary	37	15.0%
	Secondary	33	13.4%
	Tertiary	21	8.5%
	University	32	13.0%

Source: Primary data, 2018

According to Table 4.3, 123 (50%) of the respondents had no education at all, 37(15%) had completed primary education, 33(13.4%) had completed secondary, 21(8.5%) had reached Tertiary and 32(13%) had University education. From the findings, majority of the respondents had no education at all.

4.1.4 Income level

The income level of the respondent was measured by their earnings for the past six months in Rwanda Francs (Frw) as shown in Table 4.4.

Table 4. 4Income level

	0-1000 frw		1001-10000 frw		10001-50000		50001-120000		above 120000	
	N	%	N	%	N	%	N	%	N	%
Income level	35	14.2%	67	27.2%	24	9.8%	30	12.2%	90	36.6%

Source: Primary data, 2018

Table 4.4 shows that 35(14.2%) had income level of up to 1000 frw, 67(27.2%) earned between 1001 – 10000 frw, 24(9.8%) earned between 10001 – 50000 frw, 30(12.2%) earned between 50001 – 120000 frw and the remaining 90(36.6%) earned above 120000 frw. According to the findings, the majority of the respondents earned below 10,000 frw implying low income earners were the majority.

4.2 The extent the use of technology adoption in banking services affects financial inclusion in Karongi District

To establish the extend of the use of mobile banking technology, the number of users of the different Mobile Banking Methods, and Frequency of use of the technology was estimated and presented in Table 4.5.

4.2.1 Type of Banking Technology used

Table 4. 5Users of Banking Method available

Which of the following banking methods do you use		N	%
Banking method	Mobile Money	196	79.7%
	Bank Agents	74	30.1%
	Internet banking	27	11.0%
	Teller	80	32.5%
	ATM	20	8.1%
	Others	71	28.9%

Source: Primary data, 2018

According to Table 4.5, 196(79.7%) used mobile Money as a banking method, 74(30.1%) used bank agents, 27(11%) used internet banking, 80(32.5%) accessed money by visiting the bank through tellers, 20(8.1%) used Auto Teller Machine (ATM) while the remaining 71(28.5%) did not use any of these. The 71(28.9%) could be keeping their money in no accounts while the majority used Mobile Money. Figure 4.1 shows the illustrations of the percentages.

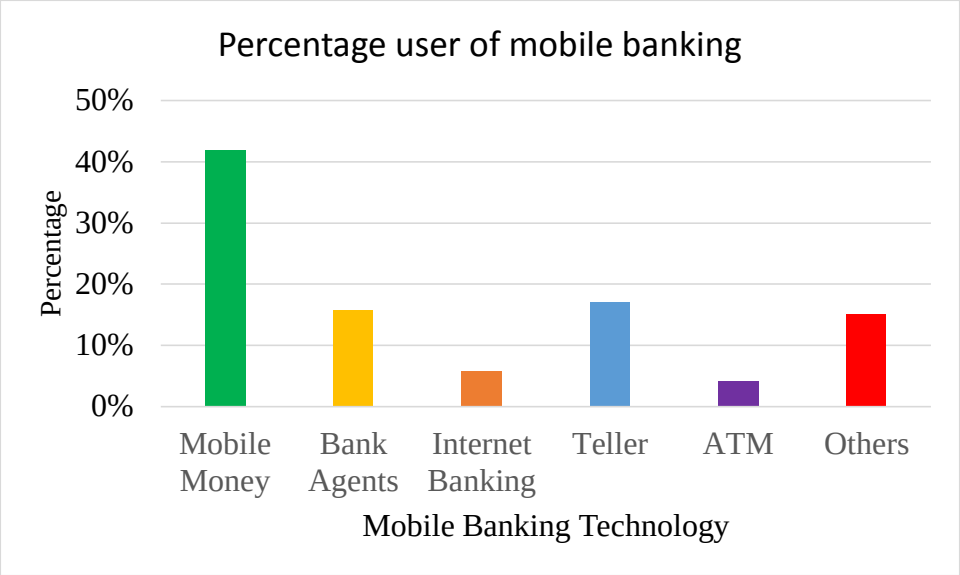

Figure 4. 1Percentage of users of Mobile Banking

Source: Primary data, 2018

According to Figure 4.1 the largest number were those with Mobile Money followed by those who used tellers. Those who used Tellers shows that they had to visit their banks in order to access their funds. The 28.9% of the respondents were the unbanked while those who used Agents was also significantly. Table 4.6 shows the number of mobile bank users.

Table 4. 6 Number of Mobile Bank Users

Mobile Banking Technology	Number	Percentage
Mobile Money	103	42%
Bank Agents	39	16%
Internet Banking	14	6%
Teller	42	17%
ATM	10	4%
Others	37	15%
Total	246	100%

Source: Primary data, 2018

4.2.2 Frequency of the use of Mobile banking

Table 4. 7Frequency of use of banking method

frequency of use	Never		Once a while		Everyday		anytime	
	N	%	N	%	N	%	N	%
Mobile Money	18	7.3%	206	83.7%	11	4.5%	11	4.5%
Bank Agents	134	54.7%	59	24.1%	34	13.9%	18	7.3%
Internet banking	219	89.0%	0	0.0%	22	8.9%	5	2.0%
Teller	111	45.1%	50	20.3%	53	21.5%	32	13.0%
ATM	45	18.3%	16	6.5%	102	41.5%	83	33.7%

Source: Primary data, 2018

According to Table 4.7, 18(7.3%) of the respondents had never used Mobile Money, 134 (54.7%) never used Bank Agents, 219(89%) never used internet banking, 111(45.1%) never used teller and 45(18.3%) ATM. Figure 4.2 shows the banking method used anytime.

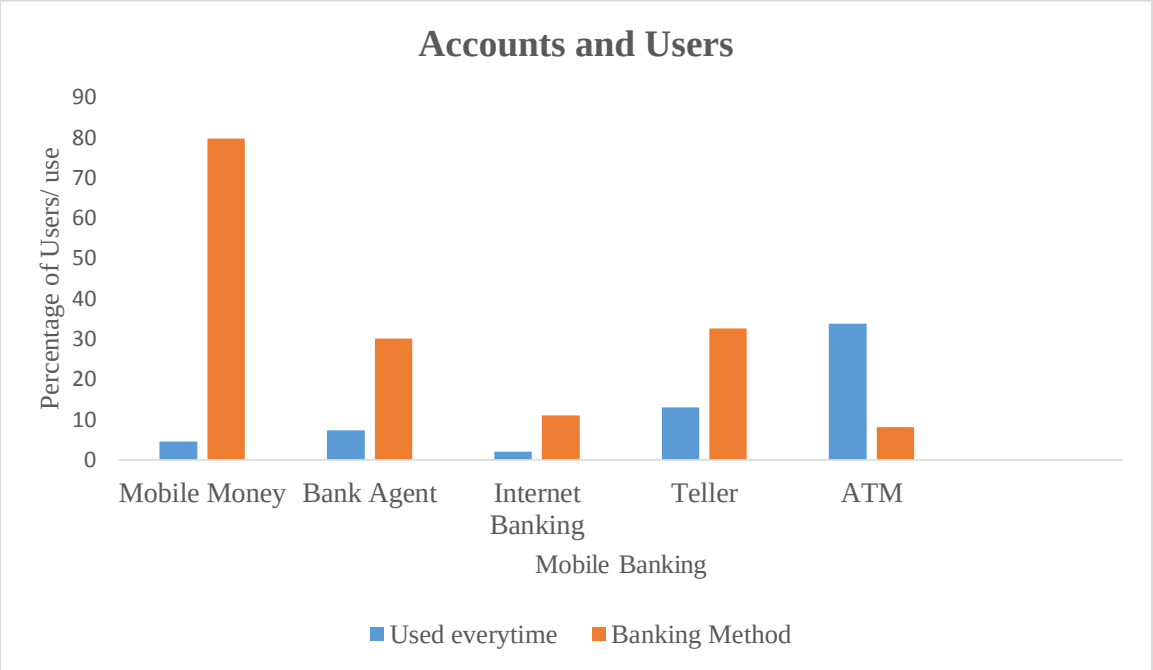

Figure 4. 2Number of users and frequency of use of Mobile Banking

Source: Primary data, 2018

According to Figure 4.2, mobile Money accounts were about 80% but less than 5% of the accounts were used, and for Bank Agents, about 30% had account but less than 8% used it, of those who accessed finances through the teller, less than 15% used the accounts while a high number of those using ATM suggests many of the respondents used their friends or another person's card to access funds.

4.2. Level of Financial Inclusion

4.2.1 Number of active users of financial products and services

Table 4.8 shows the number of active users of the financial products and services. The investigated products and services included payment of bills, credits and savings and transfer of funds.

Table 4. 8Financial products and services available

		N	Percent
Financial products and services[a]	Payment of bills	91	37.1%
	Credits and savings	78	31.5%
	Transfer of funds	78	31.5%
Total		246	100.0%

a. Dichotomy group tabulated at value 1.

Source: Primary data

The banks provided bill payment services to the clients and according to the findings, all the respondents paid their bills through the financial service providers. A total of 91 (37.1 %%) of all the respondents utilized saving and credit services provided, another 78 (31.5%) utilized funds transfer services.

4.2.2 Access to financial Information

Table 4. 9Access to financial Information

	Never		Once a while		Everyday		anytime		Total		
	N	%	N	%	N	%	N	%	N	Mean	St.Dev
Receive SMS	34	13.8%	212	86.2%	0	0.0%	0	0.0%	246	.86	.35
Receives financial Statements	103	41.9%	143	58.1%	0	0.0%	0	0.0%	246	.58	.49
Bank provides financial literacy	225	91.5%	21	8.5%	0	0.0%	0	0.0%	246	.09	.28
I can access my account balance	103	41.9%	6	2.4%	0	0.0%	137	55.7%	246	1.70	1.47
I can access bank information	106	43.1%	9	3.7%	9	3.7%	122	49.6%	246	1.60	1.45
I receive financial information	103	41.9%	0	0.0%	5	2.0%	138	56.1%	246	1.72	1.47
Total in 246	**112**		**65**		**2**		**66**		**246**		
Average										**1.09**	**1.92**

Source: Primary data

According to Table 4.9, 34(13.8%) never received SMS from their financial providers, 103(41.9%) never received financial statements, 225 (91.5%) never got any financial literacy by their financial providers, 103(41.9%) cannot access account balance, 106(43.1%) were not able to access bank information and 103(41.9%) never received any financial information. The finding shows that a mean average of 1.09 and standard deviation of 1.92 implying that majority respondent never.

The total score for each response shows that 112 respondents responded never to access to financial information, 65 said they received it once in a while, two received it every day and 66 were in position to receive it anytime they wanted. The majority again are those who never had access to financial information.

4.3 The relationship between mobile banking and financial inclusion of the rural population in Karongi district.

Table 4. 10Correlation mobile banking and financial inclusion

		Credits and savings	Transfer of funds	payment of bills
Mobile Money	Pearson Correlation	.836**	.836**	.225**
	Sig. (2-tailed)	.000	.000	.000
	N	246	246	246
Bank Agents	Pearson Correlation	.105	.105	-.145*
	Sig. (2-tailed)	.100	.100	.023
	N	246	246	246
Internet banking	Pearson Correlation	.175**	.175**	.086
	Sig. (2-tailed)	.006	.006	.178
	N	246	246	246
Teller	Pearson Correlation	.346**	.346**	.171**
	Sig. (2-tailed)	.000	.000	.007
	N	246	246	246
ATM	Pearson Correlation	.148*	.137*	.073
	Sig. (2-tailed)	.020	.020	.254
	N	246	246	246
Others	Pearson Correlation	-.783**	-.733**	-.386**
	Sig. (2-tailed)	.000	.000	.000
	N	246	246	246

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Primary data, 2018

The correlation between Mobile Banking and financial Inclusion shown in Table 4.10 indicates that a positive (r = 0.836) and statistically significant (p = 0.000) relationship existed between mobile money banking and credits and savings and similarly with transfer of funds respectively. The relationship was strong implying for every increase in mobile money banking there was a significant increase in consumption of credit and savings bank products. A positive but weak (r =

0.225) and significant (p =0.000) relationship existed between mobile money banking and payment of bills. Also implying more respondents in the study used mobile money to pay their bills.

The relationship between Bank Agents and Credits and savings as well as transfer was not statistically significant however it was negative (r = -0.145) and statistically significant (p = 0.023) with payment of bills. This implies that Bank Agent Banking reduced the payment of bills. This could be possible because of location factors of these Agents. In some areas they were concentrated in town centers and not wide spread. In fact in one area, they operated inside the bank to help reduce the queuing.

Internet banking related positively (r = 1.75) and significantly (p =0.006) with both credits and savings and transfer of funds respectively. This implies that the few who were able to use the service used it for the two purposes than to pay bills. Internet banking has been found to influence the growth of online shopping as well as money transfers across international accounts (Reynolds, 2000).

The use of tellers positively (r = 0.346) and significantly (p =0.000) related with both credits and savings and transfer of funds respectively and also positively (r = 0.171) and significantly (p = 0.007) with payment of bills. This shows that it affected all the three bank services implying that the respondents visited their banks to access the products and services for most of their transactions. This finding proves that there is still dominance of Traditional banking methods in Karongi District a finding that has been found to as a major factor in the financial exclusion of the rural poor (Kempson et al., 2004; Mago, 2014).

The relationship between ATM and credit and savings was positive (0.148) and significant (p = 0.000), with transfer of funds was also positive (r = 0.137) and significant (p = 0.020) implying

that those who had access to ATM, were able to ask for credits or save and also to get money that they transferred to others. ATM was not used for payment of bills.

The relationship between other ways of banking other than those provided by the banks or financial institutions showed a very strong but negative (r = 0.783) and (r = 0.733) and statistically significant (p = 0.000) relationship respectively with credit and savings and transfer of funds. A similar negative and significant relationship was shown with payment of bills (r = 0.386, p = 0.000). The finding shows that the more the respondents didn't involve in formal banking practices the less they accessed credits, savings or transferred money. They also reduced on the payment of bills. This finding is in consistence with that of Mago (2014) in which Zimbabweans kept their money in pots or pillows because they did not understand the concept of giving their money to be kept by another institution.

4.4 The extent to which income level influence the relationship between mobile banking and financial inclusion of the rural population in Karongi District.

4.4.1 Income level and Mobile Banking

Table 4. 11Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.695[a]	.483	.481	2.36290

a. Predictors: (Constant), Income level

Source: Primary data, 2018

According to Table 4.10, the regression coefficient r = 0.695 was produced implying that the relationship was positive. The modal coefficient presented in Table 4.18 summarizes the significance of the relationship.

Table 4. 12Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.063	.358		.176	.860
	Income level	1.489	.099	.695	15.082	.000

a. Dependent Variable: mobile banking

Source: Primary data, 2018

According to Table 4.11, the intercept (B = 1.489) and sig. = 0.000 implying the intercept is positive and statistically significant.

4.4.2 Relationship between Income Level and Financial Inclusion

Table 4. 13Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.481[a]	.232	.228	.82290

a. Predictors: (Constant), Income level

Source: Primary data, 2018

The model for the relationship between income level and financial inclusion shows that r = 0.481 implying that income level of an individual positively increases with financial inclusion. The coefficients in table 4. 13 summarizes the significance of the findings.

Table 4. 14Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.575	.125		12.632	.000
	Income level	.294	.034	.481	8.574	.000

a. Dependent Variable: Financial inclusion

Source: Primary data, 2018

Accordingly, the intercept (B = 0.294) and sig. (0.000) in the relationship between financial inclusion and income level. The study contradicts that of (Mago, 2014) who found that income level of the respondents did not affect their financial inclusion.

4.5 The extent the personal factors (Gender, educational level, Age) affect the relationship between mobile banking and financial inclusion of the rural population in Karongi District

4.5.1 Correlation between mobile banking and Access to financial Information

Table 4. 15Correlation between mobile banking and Access to financial Information

	Access to financial Information		
	Pearson Correlation	Sig. (2-tailed)	N
Mobile Money	.586**	.000	246
Bank Agents	.124	.051	246
Internet banking	.320**	.000	246
Teller	.295**	.000	246
ATM	.271**	.000	246
Others	-.635**	.000	246
Access to financial Information	1		246

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Primary data, 2018

According to Table 4.14, the correlation between mobile money and access to financial information was positive (r = 0.586) and statistically significant (p = 0.000) implying that more use of mobile money banking led to more access to financial information. the finding is line with that of Adrianaivo and Kpodar (2012) in which more users of Mobile Money services received periodic financial information sent to them from their financial provider than those of others banking methods.

Internet banking (r = 0.320, p = 0.000), Teller (r = 0.295, p = 0.000), and ATM (r = 0.271, p = 0.000) all showed positive relationships with access to financial information though the relationship was weak. The relationship between other banking method and access to

financial information was negative (r = 0.635, p = 0.000) implying that unbanked have no access to financial information. This is in line with the study of Caskey (2002) in which the unbanked where financially excluded and never received any financial information and were characterized by poor financial decisions.

4.5.2 Relationship between Personal factors and Financial Inclusion

The relationship between personal factors and financial Inclusion is presented in Table 4.11

Table 4. 16Personal factors and financial inclusion

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.447[a]	.200	.190	.84294

a. Predictors: (Constant), Education level, Employment status, What is your gender

Source: Primary data, 2018

According to Table 4.15, the regression coefficient r = 0.447 was found indicating that a positive relationship existed between personal factors and financial inclusion.

The coefficient of regression for each predictors are indicated in Table 4.16.

Table 4. 17Coefficients of regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.731	.240		15.538	.000
	What is your gender	-.017	.112	-.009	-.148	.882
	Employment status	-.474	.061	-.446	-7.716	.000
	Education level	-.044	.029	-.089	-1.531	.127

a. Dependent Variable: Financial inclusion

Source: Primary data, 2018

According to the model table, the relationship was statistically significant (sig. = 0.000) for the constant and only employment status significantly affected financial inclusion.

This finding is in line with the study of Adrianaivo and Kpodar (2012) who found that people who earned a living through employment or those who had some form of consistent income used bank services regularly. Gender was found to significantly influence inclusion into financial services in that women were not considered financial contributors in most families and therefore men had a right to earn for the family (Ashenafi & Mutsonziwa, Kingstone, 2016). This accounted for their inclusion into financial services.

4.5.3 Relationship between Personal Factors and Mobile Banking

The relationship between personal factors and mobile banking was investigated and presented as in Table 4.17.

Table 4. 18Model Summary for relationship between personal factors and mobile banking

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.496[a]	.246	.237	2.86672

a. Predictors: (Constant), Education level, Employment status, What is your gender

Source: Primary data, 2018

The regression coefficient r = 0.496 was found in the relationship between Personal Factors and Mobile Banking implying that personal factors had a positive effect on mobile banking. The finding is consistent with that of Mbiti and Weil (2011) carried out in Kenya were more men used M-pesa services than the females. Educational levels too affected the level of usage of the technology in the study.

Table 4. 19Model Summary for coefficient of regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9.802	.817		11.994	.000
	What is your gender	-.386	.381	-.057	-1.013	.312
	Employment status	-1.855	.210	-.498	-8.853	.000
	Education level	-.076	.098	-.044	-.776	.438

a. Dependent Variable: mobile banking

Source: Primary data, 2018

Likewise the relationship between mobile banking and personal factors was only significant for employment status and not gender and educational level. The finding contradicts that of Mbiti and Weil (2011) carried out in Kenya were more men used M-pesa services than the females.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION

5.0 Introduction

This chapter presents the summary from the findings and presents the conclusion from the findings and recommendations for different stakeholders and areas of further studies.

5.1 Demographic statistics

The demographic characteristics included gender of respondents, educational level, employment status and income level of the respondents. There were 154 (62.6%) male and 92(37.4%) female respondents, out of the total sample with 75(30.5%) employed, 45(18.3%) self-employed and 126(51.2%) unemployed. A total of 123 (50%) of the respondents had no education at all, 37(15%) had completed primary education, 33(13.4%) had completed secondary, 21(8.5%) had reached Tertiary and 32(13%) had University education. With 35(14.2%) earning an income of up to 1000 frw, 67(27.2%) earned between 1001 – 10000 frw, 24(9.8%) earned between 10001 – 50000 frw, 30(12.2%) earned between 50001 – 120000 frw and the remaining 90(36.6%) earned above 120000 frw.

5.2 Summary

5.2.1 The number of users of financial services and products included through the use of mobile banking technologies such as mobile money, Bank agents (POS) and internet banking in Karongi District.

It was found that 196(79.7%) used mobile Money as a banking method, 74(30.1%) used bank agents, 27(11%) used internet banking, 80(32.5%) accessed money by visiting the bank through tellers, 20(8.1%) used AutoTeller Machine (ATM) while the remaining 71(28.5%) did not use any

of these with 18(7.3%) of the respondents never using Mobile Money, 134 (54.7%) never using Bank Agents, 219(89%) never using internet banking, 111(45.1%) never using teller and 45(18.3%) never using ATM. About 80% had mobile money account but only less than 5% used the accounts and of the 30% who owned an account with a bank agent, only 8% used the account

5.2.2 Number of active users of financial products and services

The banks provided bill payment services to the clients and according to the findings, all the respondents paid their bills through the financial service providers. A total of 91 (37.1 %%) of all the respondents utilized saving and credit services provided, another 78 (31.5%) utilized funds transfer services.

5.2.3 The level of access to financial information provided by banks in Karongi District

It was found that 34(13.8%) never received SMS from their financial providers, 103(41.9%) never received financial statements, 225 (91.5%) never got any financial literacy by their financial providers, 103(41.9%) cannot access account balance, 106(43.1%) were not able to access bank information and 103(41.9%) never received any financial information.

5.3 The relationship between mobile banking and financial inclusion of the rural population in Karongi district.

5.3.1 Mobile Banking and financial Inclusion

The correlation between Mobile Banking and financial Inclusion indicated that a positive ($r = 0.836$) and statistically significant ($p = 0.000$) relationship existed between mobile money banking and credits and savings and similarly with transfer of funds respectively. The relationship was strong implying for every increase in mobile money banking there was a significant increase in

consumption of credit and savings bank products. A positive but weak (r = 0.225) and significant (p =0.000) relationship existed between mobile money banking and payment of bills. Also implying more respondents in the study used mobile money to pay their bills.

5.3.2 Bank Agents and Credits and savings

The relationship between Bank Agents and Credits and savings as well as transfer was not statistically significant however it was negative (r = -0.145) and statistically significant (p = 0.023) with payment of bills. This implies that Bank Agent Banking reduced the payment of bills. This could be possible because of location factors of these Agents. In some areas they were concentrated in town centers and not wide spread. In fact, in one area, they operated inside the bank to help reduce the queuing.

5.3.3 Internet banking and credits and savings, and transfer of funds

Internet banking related positively (r = 1.75) and significantly (p =0.006) with both credits and savings and transfer of funds respectively. This implies that the few who were able to use the service used it for the two purposes than to pay bills.

5.3.4 Use of tellers and credits and savings, and transfer of funds

The use of tellers positively (r = 0.346) and significantly (p =0.000) related with both credits and savings and transfer of funds respectively and also positively (r = 0.171) and significantly (p = 0.007) with payment of bills. This shows that it affected all the three bank services implying that the respondents visited their banks to access the products and services for most of their transactions.

5.3.5 ATM and credit and savings

The relationship between ATM and credit and savings was positive (0.148) and significant (p = 0.000), with transfer of funds was also positive (r = 0.137) and significant (p = 0.020) implying that those who had access to ATM, were able to ask for credits or save and also to get money that they transferred to others. ATM was not used for payment of bills.

5.3.6 Other ways of banking other and credit and savings, and transfer of funds

The relationship between other ways of banking other than those provided by the banks or financial institutions showed a very strong but negative (r = 0.783) and (r = 0.733) and statistically significant (p = 0.000) relationship respectively with credit and savings and transfer of funds. A similar negative and significant relationship was shown with payment of bills (r = 0.386, p = 0.000).

5.4 Effect of Mobile banking and access to financial Information

The correlation between mobile money and access to financial information was positive (r = 0.586) and statistically significant (p = 0.000) implying that more use of mobile money banking led to more access to financial information. Internet banking (r = 0.320, p = 0.000), Teller (r = 0.295, p = 0.000), and ATM (r = 0.271, p = 0.000) all showed positive relationships with access to financial information though the relationship was weak. The relationship between other banking method and access to financial information was negative (r = 0.635, p = 0.000) implying that unbanked have no access to financial information.

5.5 Personal factors and mobile banking and financial inclusion

A positive relationship existed between personal factors and financial inclusion and between Personal Factors and Mobile Banking implying that personal factors had a positive effect on

mobile banking and financial inclusion. The most significant personal factor common to both was employment status.

5.6 Income level and mobile banking and financial inclusion

The regression produced for the relationship between income level and mobile banking and financial inclusion was also positive and statistically significant

5.5 Conclusion

The majority of the respondents were male, unemployed, uneducated and earned above 120000 frw. Mobile Money, agent, ATM banking technologies were adopted though majority adopted mobile banking. There are others who never used any of these technologies though they earned some sort of income. The adoption of the technologies was high however their usage was not directly proportional as majority never used their accounts.

The banks provided bill payment services to the clients through which paid of bills were to be made but also saving and credit services as well as funds transfer services were provided by the banks. However financial service providers did not provide the users with information such as SMS, financial statements, financial literacy account balance, bank information and any financial information.

Mobil banking, internet banking, use of tellers, and ATM positively affects financial inclusion in that it increases access to credit and saving through mobile money as well as funds transfer. To a small extend their use increases the payment of bills. There are those who are not financially included and found other means of keeping their funds. These did not access credit and saving or transferred funds or pay bills. Therefore, overall there was sufficient evidence to conclude that mobile banking positively affects financial inclusion through the various technologies.

Mobile banking and financial inclusion is significantly affected by employment level and income level in a positive way.

5.8 Recommendations

The following recommendation are worth forwarding in this study.

(i) to the financial providers

Financial access is a fundament component in the development of an economy both at the national and household level. In this study it was found that there are endeavors to diversify financial products and services so as to give a variety to the clients. This is commendable and it is worth pointing that products that are customized to the rural must be more appropriate to them. Over generalization of clients products that may only favor the urban over the rural.

When designing technology, adoption as well as use must be given consideration. Cooperating with major utility service providers as well as educating the user would greatly improve the use of technology for financial inclusion.

Because the rural had wall banks majorly, the access to information was possible only by visiting the banks. This is very hectic to the clients who have to travel long distances and leave their daily activities. Such cost discourages the users and thereby excluding them. Therefore, by designing technologies that are appropriate and compatible with rural challenges would be an innovative step towards increasing financial inclusion.

(ii) To the ministry of finance, commerce and development partners

There is high level of unemployment and unstable income generation in the rural areas of Karongi. Such conditions make it unattractive for financial providers to invest heavily in the rural financial

sector. Working therefore to improve financial conditions of the rural through employment and mechanized farming and linking to markets would increase their income and therefore warrant their use of mobile technologies.

A regulation on the charges on mobile money has been achieved however the cost is still high for the rural whose earnings are too meagre. Lowering these costs would encourage more usage of these accounts and hence more financial inclusion.

5.9 Suggested further studies

(i) The effect of sensitization of the rural on financial inclusion

(ii) The relationship between financial inclusion and economic development of Rwanda

(iii) Effect of cost of transaction of mobile money on financial inclusion of the rural in Rwanda

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APPENDICES

Questionnaire:

Clients, Agents and staff

1	**What is your gender** **Male [ ]** **Female [ ]**				
2	**What is the level of your education**				
	No formal education [ ] Informal education [ ] Primary [ ] Secondary [ ] Tertiary [ ] University [ ]				
3	**What is your employment status**				
	Employed [ ] Self-employed [ ] Unemployed [ ] others [ ]				
4	**In the last six months how much have you earned on a month**				
	0 -1000 frw [ ] 1001 – 10000 frw [ ] 10001 – 50000 frw [ ] 50001 – 120000 frw [ ] 120001 + frw [ ]				
5	**Which of the following banking methods do you use**				
a	Mobile Money	[ ]			
b	Bank Agents	[ ]			
c	Internet banking	[ ]			
d	Teller	[ ]			
e	ATM	[ ]			
f	Others	[ ]	788601629		
6	**How frequently do you use these banking methods**				
		Never	**once in a while**	**everyday**	**anytime**
a	Mobile Money	[ ]	[ ]	[ ]	[ ]
b	Bank Agents	[ ]	[ ]	[ ]	[ ]
c	Internet banking	[ ]	[ ]	[ ]	[ ]
d	Teller	[ ]	[ ]	[ ]	[ ]
e	ATM	[ ]	[ ]	[ ]	[ ]
f	Others	[ ]	[ ]	[ ]	[ ]
7	**Which of the following financial products and services do you use** (tick any that applies)				
a	Credits and savings [ ]				
b	Transfer of funds	[ ]			
c	payment of bills	[ ]			
8	**How do you use these products and services**				
a	I have a personal account with a bank	[ ]			

b	I have mobile money account	[ ]			
c	I Use someone's account	[ ]			
d	Others (specify)	[ ]			
9	**How frequently do you**	**Never**	**once in a while**	**everyday**	**anytime**
a	get credit	**[ ]**	**[ ]**	**[ ]**	**[ ]**
b	save to your account	**[ ]**	**[ ]**	**[ ]**	**[ ]**
c	transfer funds to another person	**[ ]**	**[ ]**	**[ ]**	**[ ]**
d	pay your bills	**[ ]**	**[ ]**	**[ ]**	**[ ]**
10	**Access to financial information**	**Never**	**once in a while**	**everyday**	**anytime**
a	I can access my account balance	**[ ]**	**[ ]**	**[ ]**	**[ ]**
b	I can access bank information	[ ]	[ ]	[ ]	[ ]
c	I receive financial information	[ ]	[ ]	[ ]	[ ]

Budget

Personnel cost	**Request (Rwf)**
Dinner	32,000
Telephone	25,000
Direct cost	**57000**
Equipment	55,000
Transport	60000
Materials& internet	30500
Other materials	10000
Printing	160,000
Total Direct Costs	242,000
Total Project Cost	**372,500**

Timeline

Activity	**Month**	**Year**
Prepare the research proposal	January-March	2018
Submitting proposal	April	2018
Presentation of proposal		
Complete fieldwork	May	2018
Complete data collection		
Complete analysis		
Complete final research	June	2018
Submission of final research copy		

MAP OF KARONGI DISTRICT