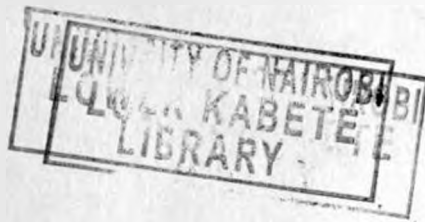


**THE IMPACT OF MOBILE BANKING ON TRANSACTION COSTS OF
MICROFINANCE INSTITUTIONS: A SURVEY OF MICROFINANCE
INSTITUTIONS IN NAIROBI**

BY
ISAAC KIGEN
D61/P/8647/2005



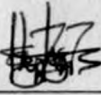
A MANAGEMENT RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS
ADMINISTRATION (MBA),
SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI

NOVEMBER 2011

DECLARATION

I the undersigned, declare that this project is my original work and that it has not been presented in any other university for academic credit.

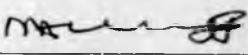
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Date 14/11/2011

Supervisor

This project has been submitted for examination with my approval as university supervisor.

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Date 16/11/2011

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DEDICATION

To my dear wife Joyce.

ACKNOWLEDGEMENTS

I would like to acknowledge the following for their valued input which led to the success of this project.

To Almighty God for the good health and the people He brought along to give invaluable support and help.

I sincerely thank my supervisor, Mr. Moses Anyangu for his guidance on this project due to his experience in academic research and microfinance experience.

My wife for her constant support and encouragement to see me complete this MBA.

Thank you all.

ABSTRACT

The aim of this research was to find the impact of the introduction of mobile banking on transaction costs of microfinance institutions in Nairobi.

An experimental research design was used. The sample was drawn from the members of the Association of Microfinance Institutions of Kenya (AMFI). The respondents were restricted to members who undertake microlending and related services to avoid members like CIC which is an insurance company and a corporate member. Once the sampling frame was drawn 15 microfinance institutions (MFIs) were randomly selected. Structured questionnaires were used to collect primary data which was mainly qualitative. Secondary data was collected from the mixmarket.org website which collects financial data from microfinance institutions globally. The data was analyzed using the Statistical Package for Social Sciences (SPSS) and Microsoft Excel.

The results revealed that many MFIs have realized increased volumes of transactions as a result of the introduction of mobile banking, however, there has not been any notable decrease in transaction costs for average MFIs.

The conclusion from this study is that there needs to be a concerted effort done in terms of analysis of business processes before the introduction of mobile banking in MFIs for transaction costs to reduce significantly.

Table of Contents

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENTS	iv
ABSTRACT	v
Table of Contents	vi
List of Tables	viii
List of Figures	ix
CHAPTER ONE: INTRODUCTION	1
1.1 Background	1
Microfinance	1
Microfinance in Kenya	1
Financial Innovation	2
Transaction costs	2
1.2 Research Problem	2
Research Gap	3
Research questions	3
Research Objective	4
Value of the study	4
Microfinance providers (MFPs)	4
Donors	4
Scholars	5
Microfinance Clients	5
CHAPTER TWO: LITERATURE REVIEW	6
2.1. MICROFINANCE	6
2.1.1 Introduction to Microfinance	6
2.1.2 Brief history of microfinance	6
2.1.3. Microfinance in Kenya	9
2.1.4 Typical MFI Operations	11
2.2 FINANCIAL INNOVATION	12
2.2.1 What is financial innovation?	12
2.2.2 Brief history of Technology-driven financial innovation	13
2.2.3 Mobile Banking	13
2.3 TRANSACTION COSTS AND MOBILE BANKING	15
2.3.1 Transaction Costs	15
2.3.2 Effect of m-banking on transaction costs of MFIs	15
CHAPTER THREE: RESEARCH METHODOLOGY	17
3.1 Research Design	17
3.2 Population	17

3.3 Sample Design	18
3.4 Data Collection	18
3.5 Data Analysis.....	18
CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION	20
4.1 Introduction.....	20
4.2 Questionnaire Analysis	20
4.3 Distribution of Respondents	21
4.4 Services offered by the MFI	22
4.5 Number of clients.....	23
4.6 Extent of mobile banking usage.....	23
a) Percentage of Clients using Mobile Banking Services	23
b) Distribution of services offered on mobile platforms.....	24
c) Comparison of the most popular service offered on the mobile banking Platform	25
4.7 Volume of transactions	26
4.8 Transaction costs (Quantitative analysis).	26
a) Expenses as a percentage of total assets	26
b) Efficiency.....	27
Personnel expenses	28
4.9 Statistical testing	29
Operating Expenses as a percentage of total assets	29
Efficiency: Operating Expenses as a percentage of total loan portfolio	30
Number of active clients	31
CHAPTER FIVE: SUMMARY CONCLUSIONS AND RECOMMENDATIONS	33
5.1 Summary of Findings.....	33
5.2 Conclusions.....	34
5.3 Recommendations.....	35
5.4 Limitations	35
5.5 Suggestions for further research	36
References.....	37
Appendices.....	41
Appendix 1: RESEARCH QUESTIONNAIRE.....	41
Appendix 2: Data for Quantitative Analysis.....	46
Appendix 3: AMFI Members.....	47
Secondary data source: The Microfinance Information Exchange organization.....	48

List of Tables

Table 1: Typical microcredit products.....	11
Table 2: Survey respondents.....	21
Table 3: Operating Expense/Total Assets.....	27
Table 4: Operating Expense/loan portfolio.....	28
Table 5: Personnel cost/loan portfolio.....	28
Table 6: Group statistics-Operating expenses as a percentage of assets.....	29
Table 7: T-test Analysis-Operating Expenses as a percentage of assets.....	30
Table 8: Group statistics-Operating expenses as a percentage of loan portfolio.....	30
Table 9: T-test analysis-Operating expenses as a percentage of loan portfolio.....	31
Table 10: Number of active clients.....	31
Table 11: Group statistics-number of active clients.....	32
Table 12: T-test analysis-Number of active clients.....	32

List of Figures

Figure 1: Usage of different financial service providers 10

Figure 2: Typical M-Banking Commercial structure..... 14

Figure 3: Experimental Model..... 17

Figure 4: Distribution by Size of MFI 22

Figure 5: Distribution of services offered by MFIs 22

Figure 6: Distribution by Number of clients..... 23

Figure 7: percentage of clients using m-banking..... 24

Figure 8: MFI services offered on mobile technology..... 25

Figure 9: Most popular m-banking service..... 25

Figure 10: Effect of m-banking of volume of transactions..... 26

Figure 11: Operating expenses as a percentage of total assets 27

Figure 12: Operating expenses as a percentage of loan portfolio..... 28

Figure 13: Personnel expenses as a percentage of the loan portfolio 29

CHAPTER ONE: INTRODUCTION

1.1 Background

Microfinance

Mutua, et al (1996) assert that microfinance has dispelled the notion that the poor are not bankable and has “spawned a variety of lending methodologies demonstrating that it is possible to provide cost-effective financial services to the poor”.

Dunford, (2006) asserts that microfinance indeed contributes to the development of the Millenium Development Goals (MDGs) adopted by the 192 member countries of the United Nations whose first goal is the eradication of poverty.

Inspite of the praise heaped on microfinance-where even the UN dubbed 2005 as the year of Microcredit and Muhhamad Yunus, the *Prophet* of microfinance was awarded a Nobel Peace prize in 2006- Microfinance institutions (MFIs) still charge relatively higher interest rates than other financial institutions like retail banks. The reason for this is not that microloans are riskier than retail bank loans but because the cost of processing micro loans are higher due to fixed costs (Helms & Reille (2004).

Microfinance in Kenya

Deposit taking microfinance institutions are regulated by the central bank facilitated by the enactment of the Microfinance Act, 2006 (Act No. 19 of 2006) which came into effect in 2008. The bank supervision report of 2009 (CBK, 2009) asserts that 33 business names had received the initial nod to apply for deposit-tasking status-currently only five institutions have been licensed to take deposits. They are Faulu Kenya DTM Limited, Kenya Women Finance Trust DTM Limited, SMEP DTM Limited, Remu DTM Limited and Uwezo DTM Limited.

While the exact number of practitioners undertaking credit only microfinance business in Kenya is largely unknown, the Association of Microfinance Institutions of Kenya (AMFI), which is a microfinance umbrella organization, had 46 registered member institutions as at 31st December 2010. Out of these, there are 5 commercial banks, 3 insurance companies and the Kenya Post Office Savings Bank (KPOSB). According to statistics from the organization, member institutions serve over 6.5 million clients with an outstanding loan portfolio of over 29 billion shillings.

The growing number of clients accessing microfinance products and services is an indication of the vast penetration of microfinance in rural and urban areas.

Financial Innovation

Innovation comes from the verb *innovate* which means to *introduce as or as if new* (Oxford dictionary). Therefore, financial innovation is the "act of creating and then popularizing new financial instruments as well as new financial technologies, institutions and markets..."

Tufano (2003) notes that innovation can be split into two categories, that is, product innovation or process innovation. Product innovations are developments of new financial instruments like savings products while process innovations are new means of distributing securities, processing transactions or pricing transactions. Use of technology to facilitate transactions falls under process innovations. Mobile banking (m-banking) is a wireless form of banking using cellular/mobile phones.

Transaction costs

Adams (1994) defines transaction costs as being the total explicit and implicit costs of participants in financial transactions. Both lenders and borrowers incur transaction costs. The bank supervision report (CBK, 2009) asserts that the cost of doing business for banking institutions ultimately affects the lending rates. However, the access through Innovation sub-group of the G20 Financial Inclusion expert group-ATISG (2010) report contents that technology innovations have the capacity to reduce costs, increase efficiency as well as reach the unreached or unbanked populations.

1.2 Research Problem

Technology use is an aspect of process innovation. Ombati (2007) points out the critical link between technology (internet banking, mobile banking and automated teller machines (ATMs)) and services quality in the banking industry in Kenya. Njenga (2007) contends that by extending computing and internet to the wireless frontier, organizations can harness benefits such as access to information and applications anywhere and anytime. However, he cautions that though there are examples of successful mobile IT deployments in Kenya, there exists a void in terms of a standard mobile deployment framework that other organizations wishing to establish mobile computing can do so with ease and confidence. He concludes by asserting that mobile IT is an invaluable tool to provision of value to organizations which results in organization improvement, transformation and redefinition.

Otieno (2008) agrees to the above researchers and adds that the successful implementation of mobile banking is crucial for provision of mobile banking (m-banking) services. He notes that major challenges in the implementation are security and trust issues, and legislation. He

asserts that there is a strong feeling that mobile banking systems are not secure and are unreliable.

In all the studies above the emphasis has been on value creation as a result of introduction of technology to banking processes and the inherent challenges.

Kumar, McKay, & Rotman (2010) contend that mobile banking has significant benefits to microfinance institutions. They assert that the first and most obvious benefit is improved customer service to existing clients. This is due to the fact that mobile banking provides customers with "flexibility in when and where they make loan payments and deposits, shorten group meetings, and decrease cases of theft and fraud". While there is talk of mobile phones being used to reach previously unreached populations, there is little evidence to demonstrate that this has actually happened. Finally, they allude to early evidence suggesting reduction in operational cost as a result of using mobile banking. They further add that this can translate into lower interest rates for customers.

Some studies conducted in Africa, Asia and Brazil by the Consultative Group to Assist the poorest (CGAP) have shown that mobile banking is cheaper than conventional banking but the gap is not significantly wide (Rosenberg, 2010).

To the best of my knowledge no research has been done to empirically test the relationship between transaction cost and mobile banking in Kenya.

The thrust of this study, therefore, is to establish if there exists a strong relationship between adoption of mobile banking as a form of technology-led financial innovation and transaction costs in Kenya.

Research Gap

The main objectives of microfinance providers (MFPs) are to provide access to finance for the poor, encourage savings, enhance outreach and lead to transformation from the informal to the banking services for the poor.

However, the research done in Kenya has not been conclusive to show "cause and effect" of financial innovation and the transaction costs (Bangens & Söderberg, 2008).

Research questions

The following are queries or statements whose answers the study will attempt to provide answers or explanations to the findings thereof.

1. Has mobile banking led to reduction in transaction costs for MFIs?
2. Have there been phenomenal increases in client recruitment since the adoption of the technologies?

The theoretical framework is based on the "Transaction Cost Innovation Theory" advanced by Hicks and Niehans (1983) which looks at the relationship between financial innovation as a dominant factor in reduction of transaction costs. It is further argued that financial innovation is as a result of the advancement in technology which caused the transaction cost to reduce (Li & Zeng, 2010).

Accordingly, the theoretical framework consists of overhead costs measured over time, t indicating the time before adoption and after adoption of mobile banking in selected microfinance institutions in Nairobi.

Research Objective

The objective of the study is to determine the relationship between transaction costs and introduction of mobile banking in the microfinance sector in Kenya.

Value of the study

This study seeks to prove if there is a relationship between transaction costs and mobile banking in microfinance institutions in Kenya. This in effect is important to many stakeholders including the following:

Microfinance providers (MFPs)

Microfinance providers seek to find means of reducing their operational costs, improve their operational efficiency and enhance outreach. This research has a bearing on these issues. If the MFPs can lower their transaction costs then they can effectively become self-sustaining.

Donors

Donor agencies like the World Bank (WB) and the Consultative Group to Assist the Poorest (CGAP) among others may obtain a model that they can use as an aid to their funding criteria. They may choose to support MFPs that use technology driven process innovation by providing capital or supporting institutional capacity. This augments their vision of providing financial access to previously unbanked and marginalized communities globally.

Scholars

Academicians would gain an insight into the relationship between adoption of technology-driven process innovation and transaction cost in Kenyan MFIs. This will have a direct bearing on the proving of theories that have been advanced in the past or even refute them.

Microfinance Clients

Clients of microfinance providers will benefit greatly if the relationship is proved, because they will start obtaining credit at lower rates. This will further spur increased activity and subsequently lead to economic growth.

CHAPTER TWO: LITERATURE REVIEW

2.1. MICROFINANCE

2.1.1 Introduction to Microfinance

Microfinance generally refers to the provision of financial services to the "poor"¹. However, in recent times the scope of microfinance has widened to include training and other social development issues like micro-insurance, healthcare and education among others. Robinson (2001) describes microfinance as "the provision of financial services to people who operate 'small enterprises' or 'micro enterprises' where goods are produced, recycled, repaired or sold; who provide services; who work for wages or commissions; who earn income from renting out small amounts of land and other groups at the local levels of developing countries..."

The term microfinance was first coined by Hans Dieter Seibel (2005) in 1990 to mean the provision of microcredit, microsavings and other microservices. In (IFAD, 2000) he alludes to microfinance as the part of "the financial sector which comprises formal and informal financial institutions...that provide small-size financial access to the poorer sections of the population". The scope of microfinance according to Seibel covers a wide array of MFIs, from indigenous rotating savings and credit associations (ROSCAs) to financial cooperatives and rural banks.

Woodworth & Woller (1999) allude to microfinance as arguably "the most innovative strategy to address the problems of global poverty" in the Journal of Microfinance. Indeed the United Nations declared 2005 as the year of microcredit (The Economic and Social Council, 1998). Moreover in 2006, the *prophet* of microfinance, Muhammad Yunus and his Grameen Bank were awarded the Nobel peace prize for "their efforts to create economic and social development from below" (Peace 2006, 2006).

2.1.2 Brief history of microfinance

There exists a misconception that microfinance originated about 35 years ago in Bangladesh. However, Seibel (2005) postulates that as early as the 17th century, there were informal intermediation between microsavings and microlending in Europe, particularly in Ireland and Germany. In Ireland, the life of microfinance was wrought with many events leading to its rise and subsequent doom in the 1950's. These events were depicted as a trajectory indicating

¹ The poor-in Kenya-are commonly defined as those who live below the poverty line or those who earn less than a dollar a day

the emergence, growth and finally the gradual decline. The genesis of these events was heralded by the behavior of the Irish self help groups pooling funds which led to financial innovation-that used peer monitoring as a way of enforcing payment. Initially, microfinance institutions in Ireland operated as charitable organizations but soon moved into financial intermediation between savers and borrowers after realizing that charity could not be sustained. In 1823, a law was passed allowing interest bearing deposits and loans to accrue interest. Thirteen years later, a loan fund board was incorporated for regulatory and supervisory purposes. These two events catapulted the growth of microfinance to such heights that attracted the ire of commercial banks who used their clout to force an interest cap. This ultimately led to the decline of microfinance in Ireland.

The case of microfinance in India predates that of Europe by 2 or 3 millennia (Schrader, 1997). Three types of financial services were witnessed, that is, money lending; rotating savings and credit associations (ROSCAs) or commonly referred to as *chit* funds; and merchant banking.

Chit funds operated in either the conventional fashion or an advanced one where bidding took place. In the conventional method, pooled or contributed finances were given to a member of the group according to a pre-determined sequence². As the chit funds grew in size the government moved to regulate them to avoid the risk of fraudulent activities (like pyramid schemes) (Siebel, 2005). Two major acts were enacted to deal with this. They were the Travancore Chit Act of 1945 and the Federal Chit funds Act of 1982.

Bhargava (1935) alludes that merchant banking, that is, financial intermediation involving lending, deposit taking and other financial services evolved from a guild of traders that later transformed into a merchant sub-caste (*vaisya*). Regulation was introduced and borrowers were charged based on risk, for instance, priests were charged 2% per month while farmers were charged 5% per month because of the perceived higher risk. More risky clients like sea farers and forest explorers were charged 10% and 20% per month .

Siebel (2005) asserts that in Africa little evidence exists to show prevalence of microfinance activities before the 19th century. The only African country south of Sahara where evidence of microfinance activities exists is in Nigeria. This was in the form of rotating savings and credit associations known locally by various names, for instance, *esusu* among the Yoruba.

² This method is much akin to the Kenyan "merry-go-rounds" or locally known as "chamas"

isusu among the Igbo, and *ham*, *adashi* and other terms as used by various indigenous communities in Nigeria (Strickland, 1934)

After the second world war microfinance bloomed in the developed countries because of proper regulation and effective supervision (Seibel, 2003). However, for majority of less developed or developing countries, microfinance did not reach the majority of those targeted. A number of reasons occasioned this. One of the main reasons was the “minimal scope of legal recognition, prudential regulation and effective supervision”. Robinson (2001) states that the ability of microfinance institutions to mobilize resources for lending was adversely affected by their exclusion from accepting deposits.

The political thinking at the time favoured subsidized lending. This was reinforced by the perception that poor people were neither able to save nor capable of paying commercial interest rates. The impact of this was very negative, with some government funded programs exhibiting default rates greater than 90% (Robinson, 2001)

Robinson (2001) also states that in most developing countries credit was advanced based on political objectives rather than sound management practices. In some cases the funds did not reach the intended target but ended up instead in the hands of the local elites. Encouraged by the below-market rate interest rates and the possibility of not paying back, these groups used the funds for consumption purposes or for lending at higher interest rates. Subsidized credit further led to the inability of Microfinance institutions to be self-sustaining since they could not compete with institutions whose interest rates did not cover all the costs.

In the course of 1970's, there was a fundamental paradigm shift that saw development of new lending methodologies that was suitable for the poor and also demonstrated that microfinance could be self-sustaining by charging interest rates that allowed full-cost recovery (Robinson, 2001).

In 1974 Prof. Muhammad Yunus lent \$27 to 42 women in Bangladesh (Yunus, 1998a p.16) while in 1975 SEWA was able to provide loans of \$ 1.5 to poor women in India (Schwiecker, 2004).

The 1980's saw a paradigm shift leading to methods of microcredit provision without ongoing subsidy which included both group lending and individual lending, new financial products suitable for the low-income borrowers and savers; viable interest rate spreads; innovative operational methods; specialized staff and training programmes; financing of the

portfolios from locally mobilized savings, commercial debt, investment among others (Robinson, 2001).

The group-based lending approach championed by Muhammad Yunus with his Grameen bank was advanced as a methodology using the group members to guarantee each other, that is, "mutual guarantee" or "trust bank". Indeed evidence from disparate regions shows that the group lending method works, for instance, Yunus asserts that the model has been tried successfully in New York and Zambia (TIME, 2009)

In addition more institutions began mobilizing voluntary savings from the poor. Bank Rakyat Indonesia (BRI) "developed the first large-scale sustainable micro-banking system operating without subsidy" (Robinson, 2001).

By the end of the decade both BRI and Grameen bank showed that microfinance institutions could reach over 1 million clients.

There was rapid increase in the number of institutions providing microcredit and microsavings. A survey of 206 MFIs in 1995 showed that the percentage of those established between 1980 and 1989 was 48% indicating that the 1980s was a period of swift growth in microfinance.

Today the thrust of microfinance has shifted from the provision of micro-loans but has moved to other important services, for instance, micro-insurance, education and healthcare.

2.1.3. Microfinance in Kenya

Microfinance falls under the financial sector in Kenya. Deposit taking microfinance institutions are regulated by the central bank of Kenya through the Microfinance Act of 2006 which became operational from 2nd May 2008. For the non deposit taking Microfinance institutions their regulations are yet to be put in place. The Ministry of Finance is in the process of discussing the best way forward for regulating the non deposit taking microfinance businesses (CBK, 2011).

The umbrella body of microfinance institutions (AMFI) lists 46 members in their latest newsletter (AMFI, 2010). Out of these, there are 5 commercial banks, 3 insurance companies and the Kenya Post Office Savings Bank (KPOSB). According to statistics from the organization, member institutions serve over 6.5 million clients with an outstanding loan portfolio of over 29 billion shillings.

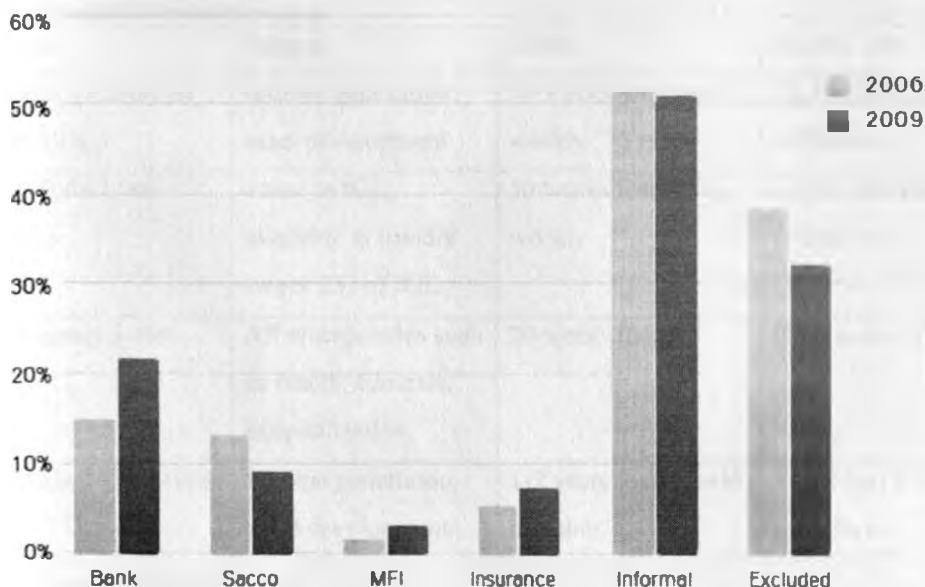
Though there has been a marked increase in the services of the microfinance sector, the increase is only marginal. The FinAccess National Survey (2009) shows an increase of only 1.7% from 1.7% in 2006 to 3.4% in 2009 of usage of credit facilities from MFIs in Kenya. This is in stark contrast to informal sources which are above 50%. The table below summarizes the findings.

AMFI's chief executive officer, Mr. Benjamin Nkungi, attributes the low impact of microfinance to the national economy due to the small loans that MFIs advance (micro and small), sizes of businesses they serve, the social nature of their operations and lack of reliable data at the national level of the financial activities of MFIs (AMFI, 2010).

The government however, through the central bank has supported the establishment of new institutions and new initiatives, and commenced creation of additional currency centres. For instance, the Central Bank of Kenya has approved 34 microfinance business names which is the first step in the licensing of microfinance institutions (CBK, 2010).

The figure below shows the rate of growth for various financial service providers between 2006 and 2009.

Figure 1: Usage of different financial service providers



Source: FinAccess National Survey 2009

2.1.4 Typical MFI Operations

MFIs' target populations that are shunned by the formal banking institutions which do not regard the tiny informal businesses as attractive investments. These clients borrow loans that are too small and it is difficult to obtain information from them that can be used for credit analysis. Furthermore, these clients do not have security for the loans they take (Bennett, 1994).

Therefore, MFIs have to provide some form of social intermediation in addition to financial intermediation. This mostly occurs through formation of *solidarity groups* that effectively deals with the problem of delinquency and hence acts as a replacement for collateral as a security for loans (Ledgerwood, 1999).

Loans are advanced either to the individuals in the group or to the group as a whole depending on the lending model of the institution, however, in each case the group uses peer pressure to ensure that loans are repaid.

Microloan cycles are typically shorter than formal banking institutions with terms ranging from 6 months to a year. Most of the MFIs require that these loans are repaid weekly. The weekly payments of interest plus principal make them appealing to this caliber of the population.

Table 1: Typical microcredit products

Product	Purpose	Terms	Interest rate
Income Generation Loan (IGL)	Income generation, asset development	50 weeks loan paid weekly	12.5% (flat) 24% (effective)
Mid-Term Loan (MTL)	Same as IGL, available at middle (week 25) of IGL	50 weeks loan paid weekly	12.5% (flat) 24% (effective)
Emergency Loan (EL)	All emergencies such as health, funerals, hospitalization	20 weeks loan	0% Interest free
Individual Loan (IL)	Income generation, asset development	1-2 years loan repaid monthly	11% (flat) 23% (effective)

Source www.microfinanceinfo.com

These loan portfolios require constant monitoring hence MFIs spend a lot of resources in client visits, to conduct interviews with potential borrowers, educate the borrowers in credit



discipline, travel to the villages every week to collect interest and distribute loans and control that the loans are being used for the given purpose. The transaction intense-nature of weekly payments is more expensive than what a formal bank branch would incur with a portfolio of loans to salaried employees.

To remain profitable MFIs must charge *full-cost* interest rates and fees. This makes the interest rates of MFIs higher than those of conventional banks.

Rhyne & Holt (1994) identify a number of principles that should be adopted to ensure *financially-viable* lending to microclients. One of these principles is to reduce unit costs by streamlining the operations of the MFI. They assert that MFIs need to “standardize the lending process, make applications very simple and approve on the basis of easily verifiable criteria, and decentralize loan approval...”

Helms & Reille(2004) intone that to help MFIs in developing countries improve their performance, “donor agencies’ development assistance should focus on promoting innovations, especially the streamlining and improvement of business processes and the application of technology to reduce costs”.

Li & Zeng (2010) highlight the link between financial innovation and reduction in transaction costs of financial institutions. They quote the work of Hicks and Niehans (1983) on the transaction cost innovation theory that asserts that financial innovation as a result of the advancement in technology causes transaction costs to reduce.

2.2 FINANCIAL INNOVATION

2.2.1 What is financial innovation?

The Oxford dictionary defines the verb “innovate” as “(to) introduce something new especially a product...” Miller (1986) in his renowned article alludes to innovation as being the “unanticipated, unforeseeable change” in time series data, though he cautions that their emergence is not attributed to pure chance or ‘artistic creative impulse’ but were always ideas waiting-like seeds under snow-for a conducive environment to promulgate them.

Tufano (2003) asserts that economists use the term “innovation” expansively to describe shocks to the economy, for instance, monetary policy innovations, as well as the responses to these shocks, for which he gives the example of Euro-deposits.

The term “financial innovation” broadly refers to “the act of creating and then popularizing new financial instruments as well as new financial technologies, institutions and markets”

Tufano (2003). These innovations can be divided into "product" and "process" innovations. Examples of product innovation include (new) derivative contracts, corporate securities or new forms of pooled investment products. Miller (1986) gives the following specific examples: negotiable certificates of deposits (CDs), Eurodollar accounts, Eurobonds, Sushi bonds, floating-rate bonds, puttable bonds, zero-coupon bonds, stripped bonds, options, financial futures, options on futures, options on indices, money market funds, cash management accounts, income warrants, collateralized mortgages, home equity loans, currency swaps, floor-ceiling swaps, and exchangeable bonds among others.

Process innovations are exemplified by new means of distributing securities, processing transactions or pricing transactions.

White (1997) asserts that the reason the US has been experiencing rapid innovation is due to improvements in two technologies, that is, data processing and telecommunications, that are at the heart of financial services.

2.2.2 Brief history of Technology-driven financial innovation

White (1997) posits that the modern-day technologies were heralded by innovations that were in existence even before the 20th century. The development of the telegraph in the mid-1800s soon propagated to its use in the transfer of funds and for the "dissemination of price information ("quotes") with respect to gold and securities that were traded on various exchanges, nationally (USA) and globally".

The invention of the telephone in 1876 was immediately followed by two bankers setting up commercial usage the following year (Brooks, 1975).

White (1997) claims that the electronic funds transfer (EFT) was established after the introduction of the Federal Reserve in 1913 (in the USA). Mishra (2008) points to the 1950s where the introduction of the credit cards was seen as a phenomenal technological financial innovation. The credit cards—seen as a convenient and relatively safe method of payments—created an efficient way of providing short term unsecured loans that "enable households to smooth their consumption over time".

Mobile banking is the latest form of financial innovation.

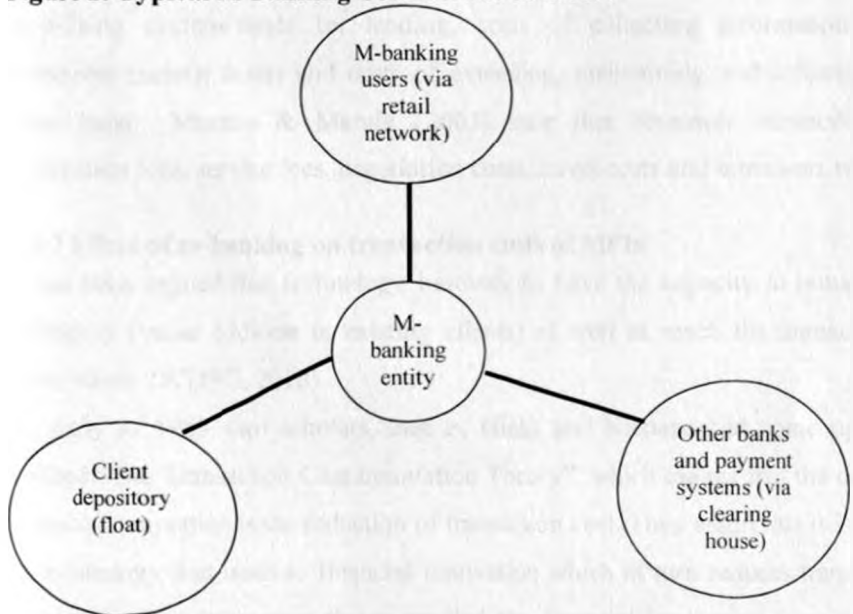
2.2.3 Mobile Banking

The term mobile banking normally shortened as m-banking generally refers to provision of financial services conducted through mobile networks and performed by mobile phones

(Bångens & Söderberg, 2008). There are many forms of m-banking that may or may not meet the threshold for banking in various country contexts in terms of legislation, however, the term m-banking alludes to any form of financial service provision for instance, mobile payments and funds transfer falls in the class of m-banking. Porteous (2006) recognises two categories of m-banking, that is, transformational and additive. Additive m-banking is where a bank introduces it to its existing clients as an extra channel of service provision hence the term “additive” while the transformational category relates to reaching out to previously unbanked populations.

Bångens & Söderberg (2008) identify three main models of m-banking, that is, bank-led, telco-led and a hybrid model. In the bank-led model, a traditional retail bank introduces m-banking as an extension of their services to their existing customers (explained above as additive). An example is typified by the initial introduction of Equity bank’s 24/7 mobile service where customers could access their account balances. In the telco-led model, a telecommunication company using its infrastructure sets up a mobile banking system on its own. Safaricom’s M-Pesa is an example while the hybrid model combines both, for example, in the case of M-Kesho where a retail bank (Equity bank) has partnered with Safaricom to provide access to banking services via the safaricom network. The figure below illustrates how main commercial stakeholders are organized in a generic M-banking structure.

Figure 2: Typical M-Banking Commercial structure



Source: (Bångens & Söderberg, 2008)

2.3 TRANSACTION COSTS AND MOBILE BANKING

2.3.1 Transaction Costs

The term "Transaction cost" was coined by Ronald Coase in his paper titled "The Nature of the Firm" in 1937 to refer to "the cost of using the price mechanism" or "the cost of carrying out a transaction by means of an exchange on the open market" (Coase, 1937).

Since then there have been vast literature not only on the definition of transaction cost but also on measurement with the most common being advanced by Collins and Fabozzi (Wang, 2003).

Who propose that the following schemes:

Transaction costs = fixed costs + variable costs;

Fixed costs = commissions + transfer fees + taxes;

Variable costs = execution costs + opportunity costs;

Execution costs = price impact + market timing costs;

Opportunity costs = desired results – actual returns – execution costs – fixed costs.

For banking institutions, Adams (1994) defines transaction costs as being the total explicit and implicit costs of participants in financial transactions. Transaction costs affect both lenders and borrowers.

Adams & Vogel (1986) aver that the transaction costs for lenders include the expenses of mobilizing savings/funds for lending, costs of collecting information about potential borrowers (search costs) and costs of extending, maintaining and collecting loans. On the other hand Masuko & Marufu (2003) state that borrower transaction costs include application fees, service fees, negotiation costs, travel costs and borrowers time.

2.3.2 Effect of m-banking on transaction costs of MFIs

It has been argued that technology innovations have the capacity to reduce costs, increase efficiency (value addition to existing clients) as well as reach the unreached or unbanked populations (ATISG, 2010).

As early as 1983, two scholars, that is, Hicks and Niehans had come up with what they dubbed "The Transaction Cost Innovation Theory" which claims that the dominant factor of financial innovation is the reduction of transaction cost. They assert that it is the advancement in technology that leads to financial innovation which in turn reduces transaction costs. The transaction cost innovation theory studied the financial innovation from the perspective of microscopic economic structure change (Li & Zeng, 2010).

Kumar et al (2010) give an example of a rural Green Bank in Philippines where in a bid to encourage use of m-banking service G-Cash, has agreed to reduce interest rate per month from 2.5% to 2.0% flat –rate and a reduction in its service charge from 3.0% to 2.5%. They categorize MFIs into those that operate in countries where mobile network operators exist and in those that do not exist. Kumar et al (2010) contend that even for those countries where Mobile Network Operators (MNO's) don't operate in. MFIs can still benefit by automating messages (for example, via short text messaging-sms) to clients notifying them of upcoming payments, disbursements or warn of late payments. This saves the MFI enormous costs due to the time saving that their loan officers would have had to incur as a result of either physically travelling to see their clients or costs incurred calling them.

Kumar et al (2010) further assert that MFIs in countries with existing MNOs can leverage the services offered by the MNOs to facilitate loan repayments and deposits. Hughes & Lonie (2007) elucidate the interesting entry of MPesa in Kenya into the financial scene. They point out that MPesa actually started as a pilot project to facilitate microfinance loan repayments with Faulu-Kenya (a licensed deposit taking MFI). The pilot ran for 6 months in 2005, and though Faulu did not proceed with Mpesa past the post-pilot stage-due to effects on group cohesion-MPesa went on to be the “world's most successful m-payments service” (Kumar, et al, 2010).

Today many MFIs use MPesa for loan repayments albeit with measures to ensure group cohesion is maintained. Some MFIs have opted to introduce MPesa loan repayments only for loanees using the individual-lending methodology.

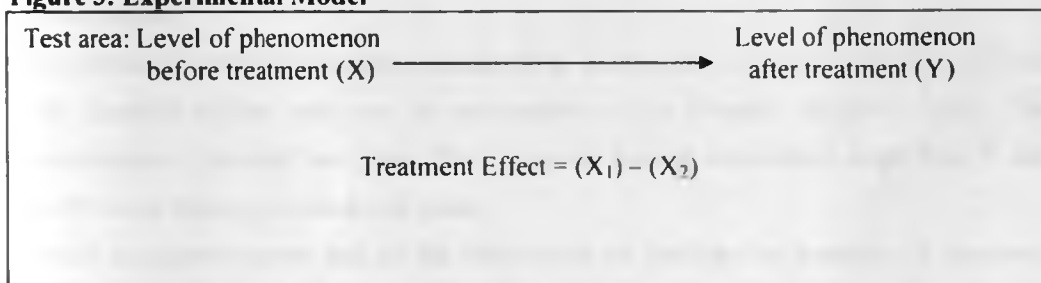
CHAPTER THREE: RESEARCH METHODOLOGY

This chapter discusses five main areas, that is, research design, population, sample design, data collection and analysis.

3.1 Research Design

The research was based on the Experimental Design method. In the experimental design, a variable being observed or measured is subjected to a “treatment” – that is, what is causing the effects being analyzed-and then the variable is measured/observed after the treatment (Kothari, 1990).

Figure 3: Experimental Model



The variable being observed in this study was the proxy for “transaction costs”. There are a number of components that add up to the “total” transaction costs. They include, travel costs, cost of monitoring loans, cost of collecting loan repayments, calling costs and opportunity costs (time taken, for example, while waiting in a queue to deposit payments or other activities that would have otherwise been used for more productive tasks). All these costs add up to the total direct costs and overheads of microfinance institutions.

The treatment in this case was the introduction of mobile banking interventions to conduct and monitor transactions. The study covered a 4-year period (2 years before the introduction of m-banking and 2 years covering the period during the use mobile banking).

3.2 Population

The Association of Microfinance Institutions of Kenya (AMFI), which is a microfinance umbrella organization, had 46 registered member institutions as at 31st December 2010. Out of these, there are 4 commercial banks, 1 insurance company and the Kenya Post Office Savings Bank (KPOSB).

There are only five MFIs licensed to take deposits. They are Faulu (Kenya), Kenya Women’s Finance Trust (KWFT), REMU DTM, Uwezo DTM and SMEP DTM. Most of the registered

MFIs have adopted-or are in the process of adopting-a form of m-banking, for instance, mobile payments-using MPesa. Most of them are centered around Nairobi.

3.3 Sample Design

The sample constituted 15 randomly selected MFIs that have adopted a form of m-banking, for instance, m-payments. This number represented 33% of the population as recorded by AMFI and is therefore, representative of the population. Sampling Technique: Simple random sampling was (SRS) used in selecting the MFIs.

3.4 Data Collection

The data collected was based on the variables denoting transaction costs, that is, direct costs and overheads.

Data collection method: Structured questionnaires were used to collect and record data from chief financial officers who are the respondents in the selected sample of MFIs. The questionnaires contained two parts. Part I was the general information while Part II had specific items relating to transaction costs.

Initially the questionnaires had all the information (as indicated in appendix I), however, after, consistent refusal by respondents to respond to the questions relating to specific transactions, the questionnaires were modified to ask qualitative questions. We then created a URL for the study using the surveymonkey.com website where the respondents could access, respond to the questions and click on the "submit" button. The responses were immediately visible to us. This proved extremely useful since it took less time and we monitored the inflow of responses in real time.

We then obtained financial data from the Microfinance Information eXchange (MIX) website (a site that collects information from MFIs globally).

3.5 Data Analysis

The data collected and tabulated was analyzed using the statistical package for social science (SPSS) and Microsoft Excel. Percentages were used in the study and the student t-test was used to test the hypotheses below with the assumption that there was a significant reduction in transaction costs as a result of introduction in mobile banking.

The experiment tested the following hypotheses:

H_0 : There is no significant difference between the means of transaction cost variable before and after introduction of mobile banking

H_1 : The mean of the transaction cost variable after the introduction of mobile banking is significantly less than the variable before ($X_1 > X_2$)

The computed value of the t-statistic was used to compare with the value read from the t-tables at 95% confidence level. If the computed value is less than 0.05 then it was concluded that introduction of mobile banking reduces costs significantly.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

The study was aimed at determining the effects of mobile banking on transaction costs of microfinance institutions in Kenya. The study considered a total of 15 microfinance institutions that have introduced a form of mobile banking. This is due to the fact that out of a population of 46 MFIs registered under AMFI, few of them had implemented mobile banking, therefore 15 is a representative sample. The selection of the participating institutions was done using simple random sampling (SRS) technique. The sampling frame was drawn from the members of the Association of Microfinance Institutions (AMFI) who offer micro-loans and micro-savings. This was done to exclude AMFI members that do not engage in microlending, for example CIC insurance company is a corporate member.

Online questionnaires were used because they were deemed easy to administrate (via email) and responses were immediately noted in real time.

4.2 Questionnaire Analysis

Out of the targeted selected MFI's only 73.3% responded. However, we experienced a limitation since most of those surveyed had just introduced mobile banking services in the last year and could not provide a proper statistical outcome. Only 3 of them had introduced mobile banking services two or more years ago. It is this group that we focused the quantitative analysis on because they provided a basis for event studies, that is, observation 2 years before and observation 2 years during the use of mobile banking services.

The following table shows the list of respondents (next page).

Table 2: Survey respondents

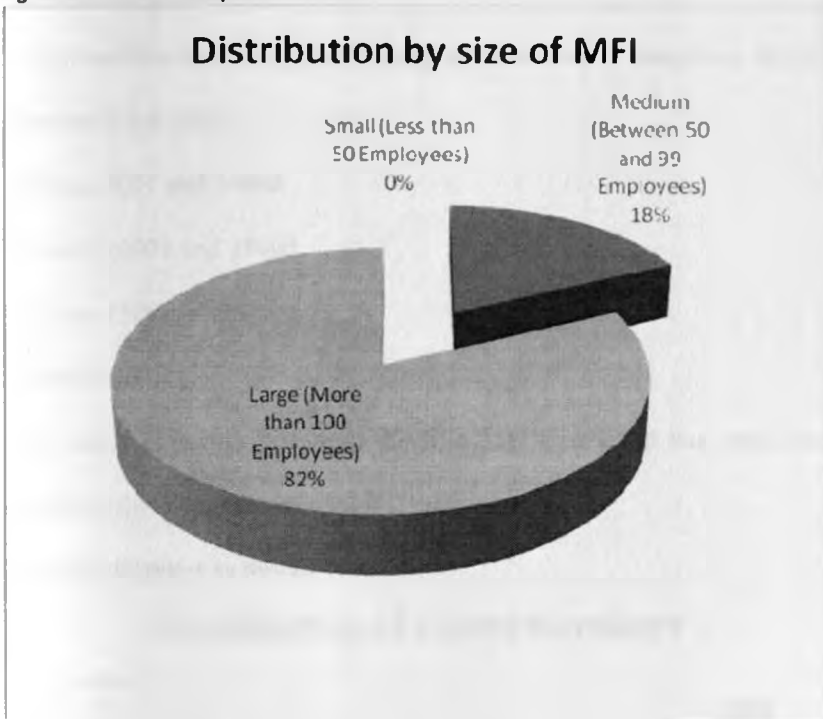
1.	Faulu Kenya DTM limited
2.	Micro-Africa
3.	Equity Bank Limited (Microfinance division)
4.	Small and Micro Enterprises Programme DTM
5.	Juhudi Kilimo LLC
6.	Jamii Bora Trust
7.	Co-operative bank (micro-lending division)
8.	Kenya women finance trust (KWFT)
9.	K-Rep bank Limited
10.	Opportunity Kenya Ltd
11.	KADET LTD

4.3 Distribution of Respondents

The respondents were grouped into three different categories, that is, Small (Less than 50 Employees); Medium (Between 50 and 99 Employees) and Large (More than 100 Employees).

We did not encounter any MFI that had less than 50 employees. Majority of the were those with more than 100 employees (82%) while the rest (18%) were medium MFI's, that is, those with between 50 and 99 employees.

Figure 4: Distribution by Size of MFI



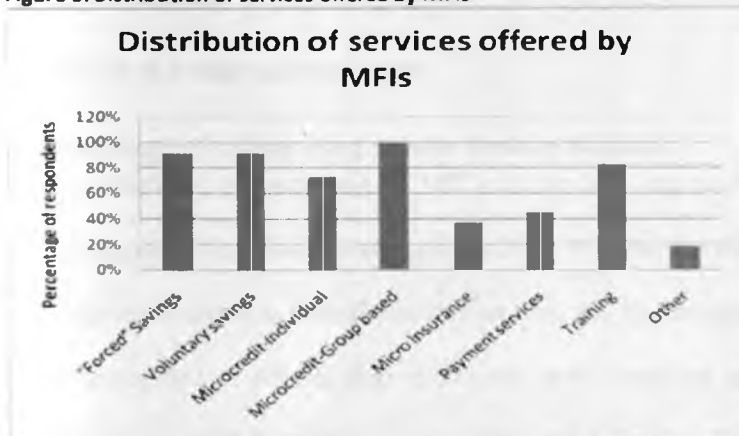
4.4 Services offered by the MFI

A total of 7 micro-services were identified with an option for “other” for exceptional cases.

There are “Forced” Savings; Voluntary savings; Microcredit-Individual; Microcredit-Group based; Micro Insurance; Payment services; Training; Other

The responses were as indicated in the chart below (next page).

Figure 5: Distribution of services offered by MFIs



4.5 Number of clients

We grouped the composition of number of clients into 5 categories, that is,

Between 1 and 5000

Between 5001 and 10000

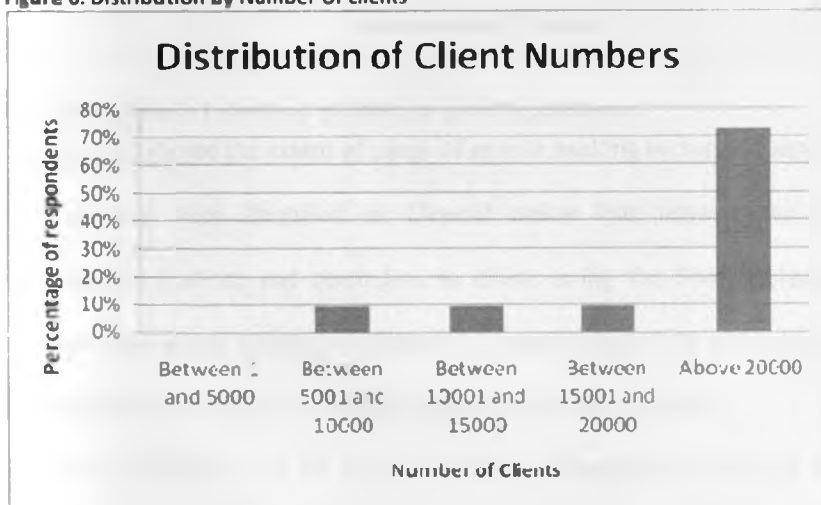
Between 10001 and 15000

Between 15001 and 20000

Above 20000

The responses shows that most of those MFI's surveyed had more than 20,000 clients as shown by the figure below.

Figure 6: Distribution by Number of clients



4.6 Extent of mobile banking usage

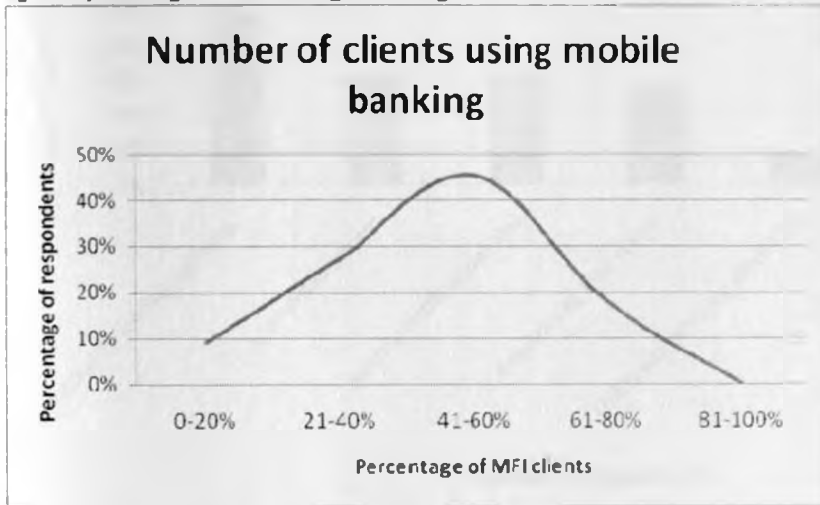
a) Percentage of Clients using Mobile Banking Services

The composition of percentage of MFI's clients who use mobile banking services were categorized into the following categories: 0-20% ; 21-40%; 41-60%; 61-80% and 81-100%.

The responses shows a normal distribution with the highest percentage, that is, 45.5% of them stating that 41-60% of their clients use mobile banking services. None of the MFI's surveyed indicated a 81-100% category. This is an indication that though mobile banking has been touted as the panacea for reaching the unreached, there may be some techno-phobia

associated with its introduction.

Figure 7: percentage of clients using m-banking



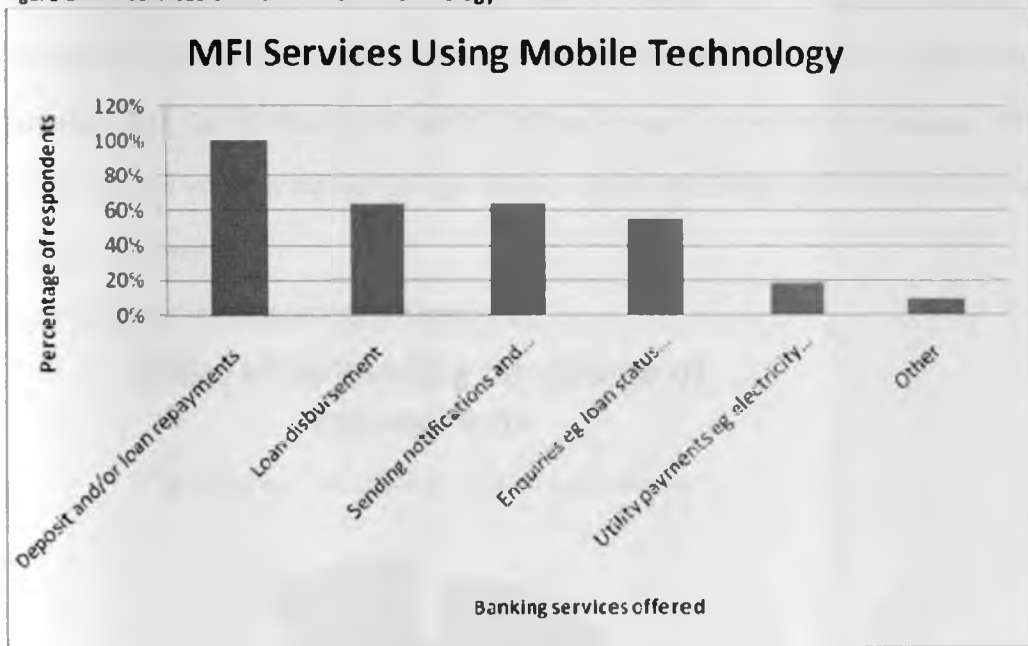
b) Distribution of services offered on mobile platforms

The study analyzed the extent of usage of mobile banking by type of service offered.

The services were identified as: Deposit and/or loan repayments; Loan disbursement; Sending notifications and reminders to clients using the SMS technology; Enquiries for example loan status balances, information request using SMS technology; Utility payments, for example, electricity bill payments from the savings accounts.

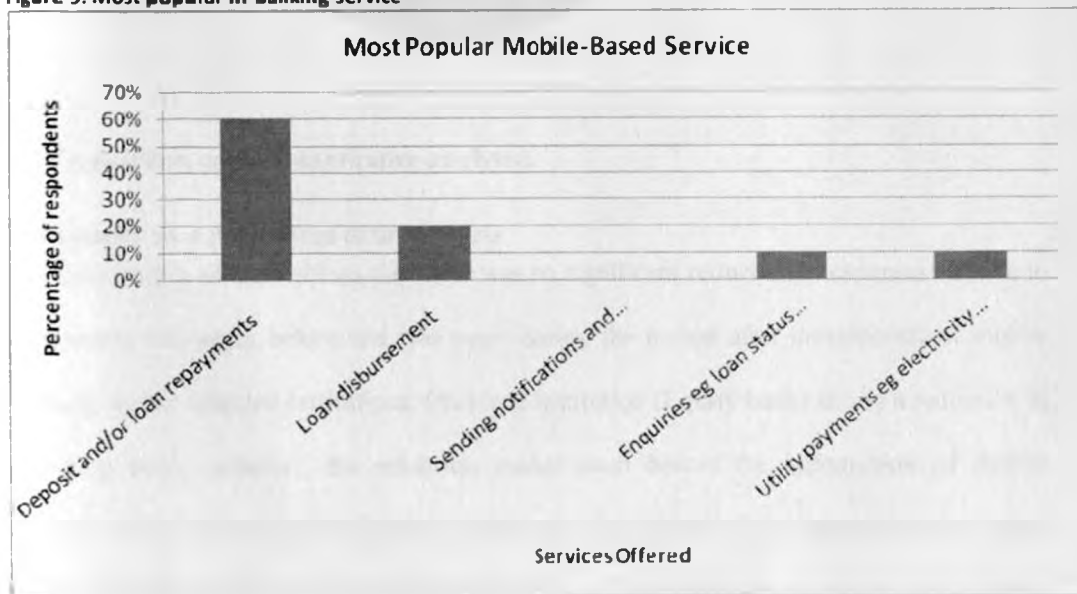
The results showed that all the respondents indicated that they use mobile banking for receiving deposits and loan repayments from their clients. A significant number (64%) intimated that they used the mobile technology platform for loan disbursements and sending reminders and notifications to clients using the short message service (SMS) technology while a very small percentage (18%) uses mobile banking for utility payments like electricity bill payments. This is shown in the chart below.

Figure 8: MFI services offered on mobile technology



c) Comparison of the most popular service offered on the mobile banking Platform

Figure 9: Most popular m-banking service

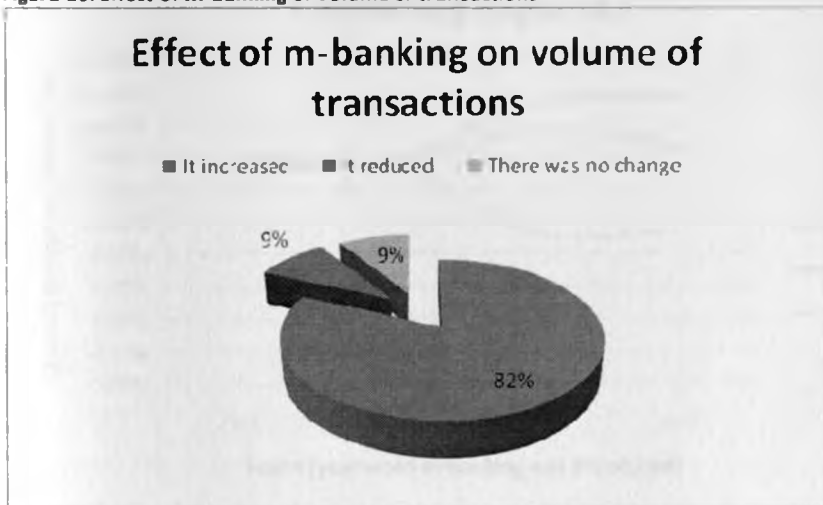


The most popular mobile banking service according to the respondents is the payment of deposits and loan repayments by clients (60%) while the least popular is using mobile the platform to send notifications and reminders to clients (0%).

4.7 Volume of transactions

The analysis shows that majority of respondents (82%) claim that the volume of transactions increased since the introduction of mobile banking services. A very small percentage (9%) asserts that the volumes did not change while a similar percentage state that the volumes actually decreased.

Figure 10: Effect of m-banking of volume of transactions



4.8 Transaction costs (Quantitative analysis).

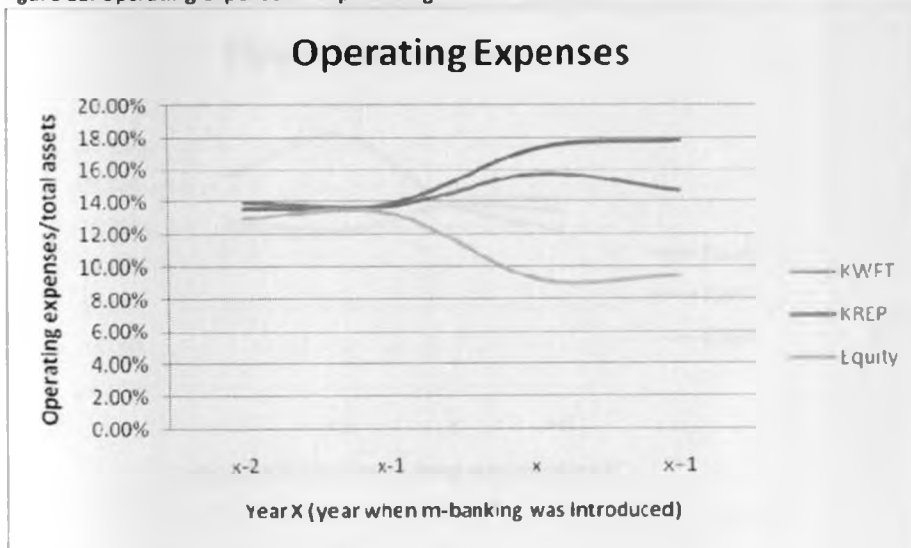
a) Expenses as a percentage of total assets

The quantitative analysis shows that there was no significant reduction in expenses relative to total assets two years before and two years during the period after introduction of mobile banking for the selected institutions. Only one institution (Equity bank) shows a reduction in operating costs, however, the reduction started even before the introduction of mobile banking. This is an indication that their operating costs reduced due to other activities and/or changes to their operations, for instance changing of their management information systems and increase in the client base and diversification of products.

Table 3: Operating Expense/Total Assets

MFI	Year			
	x-2	x-1	x	x+1
Equity	12.97%	13.30%	9.24%	9.42%
KWFT	13.95%	13.74%	15.69%	14.69%
K-REP	13.56%	13.83%	17.28%	17.78%

Figure 11: Operating expenses as a percentage of total assets



b) Efficiency

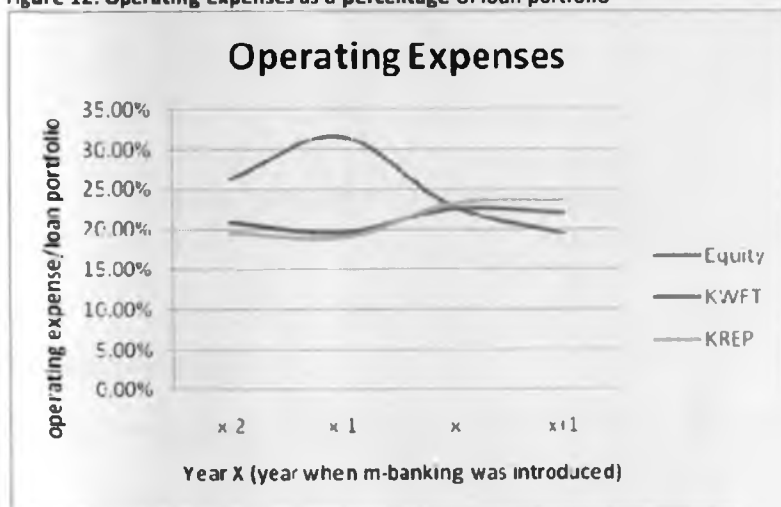
When we measured the operating expenses as a percentage of the loan portfolio to measure efficiency the results corroborates with the above findings where the average MFI (that is, excluding Equity bank which is microfinance bank) faced increasing expenses relative to the loan portfolio about two years before the introduction of mobile banking. These may be attributed to other factors that may be the basis for further research. However, there is the observation that the introduction of mobile banking stalled the increasing operating costs and thereby increasing cost efficiency. There is also the interesting observation that at the time of implementing mobile banking, all the institutions under quantitative analysis had the same efficiency rating.

The table and chart below indicates the observations.

Table 4: Operating Expense/loan portfolio

MFI	Year			
	x-2	x-1	x	x+1
Equity	26.22%	31.59%	22.74%	19.38%
KWFT	20.84%	19.58%	22.54%	22.05%
K-REP	19.58%	18.93%	23.11%	23.50%

Figure 12: Operating expenses as a percentage of loan portfolio



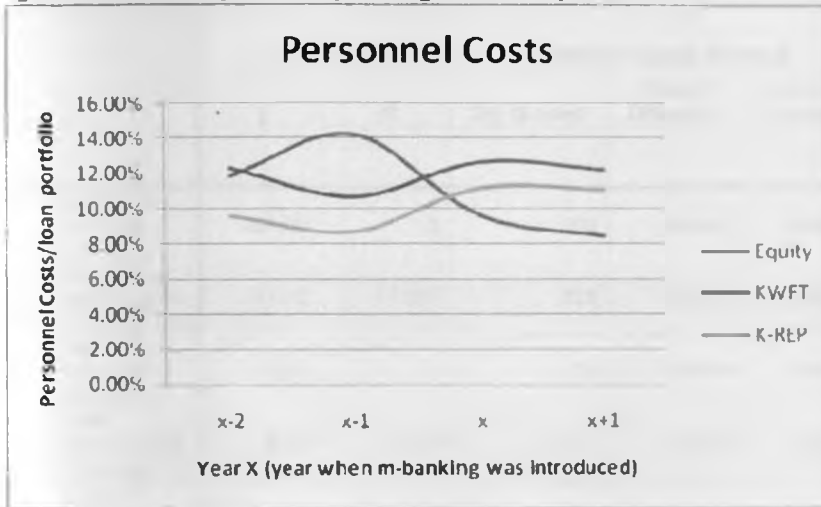
Personnel expenses

The personnel expenses as a percentage of the loan portfolio mirrors the above observation.

Table 5: Personnel cost/loan portfolio

MFI	Year			
	x-2	x-1	x	x+1
Equity	11.83%	14.18%	9.59%	8.45%
KWFT	12.30%	10.69%	12.64%	12.20%
K-REP	9.57%	8.68%	11.19%	11.07%

Figure 13: Personnel expenses as a percentage of the loan portfolio



4.9 Statistical testing

Testing for significance using the t-test was conducted to compare the percentage of mean variable as expressed in terms of either total assets or total loan portfolio two years before (X-2) and two years during the period after introduction of mobile banking (X+1).

Operating Expenses as a percentage of total assets

The outcome of the analysis to compare the means of transaction cost before and the period during done using SPSS is as displayed below.

Table 6: Group statistics-Operating expenses as a percentage of assets

	PRD	N	Mean	Std. Deviation	Std. Error Mean
EQUITY	Before	2	.131350	.0023335	.0016500
	During	2	.933000	.0127279	.0090000
KWFT	Before	2	.138450	.0014849	.0010500
	During	2	.151900	.0070711	.0050000
KREP	Before	2	.136950	.0019092	.0013500
	During	2	.175300	.0035355	.0025000

Table 7: T-test Analysis-Operating Expenses as a percentage of assets

		t-test for Equality of Means						
		t	df	Sig (2-tailed)	Mean Difference	Std Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
EQUITY	Equal variances assumed	-87.612	2	.000	-.801650	.0091500	-.8410193	-.7622807
	Equal variances not assumed	-87.612	1.067	.005	-.801650	.0091500	-.9019730	-.7013270
KWFT	Equal variances assumed	-2.633	2	.119	-.013450	.0051091	-.0354325	.0085325
	Equal variances not assumed	-2.633	1.088	.215	-.013450	.0051091	-.0671807	.0402807
KREP	Equal variances assumed	-13.498	2	.005	-.038350	.0028412	-.0505748	-.0261252
	Equal variances not assumed	-13.498	1.537	.014	-.038350	.0028412	-.0548728	-.0218272

The statistical analysis for EQUITY bank shows that there is a reduction in the mean of operating expense ratio. the difference is statistically significant. that is, a t-test p-value of $p=0.005$ which is less than 0.05. This denotes that their operating expenses as a percentage of total assets reduced significantly as a result of introducing mobile banking.

The statistical analysis for KWFT shows that the difference is however, not significant, though the difference is for an increase and not a reduction. That is, $p = 0.215$

The statistical analysis for K-REP shows a significant increase in transaction costs, that is, $p = 0.014$.

Efficiency: Operating Expenses as a percentage of total loan portfolio

The outcome of the analysis to compare the means of transaction cost before and the period during done using SPSS is as displayed below.

Table 8: Group statistics-Operating expenses as a percentage of loan portfolio

	PRD	N	Mean	Std Deviation	Std Error Mean
EQUITY	Before	2	.289050	.0379716	.0268500
	During	2	.210600	.0237588	.0168000
KWFT	Before	2	.202100	.0089095	.0063000
	During	2	.222950	.0034648	.0024500
KREP	Before	2	.192550	.0045962	.0032500
	During	2	.233050	.0027577	.0019500

Table 9: T-test analysis-Operating expenses as a percentage of loan portfolio

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
EQUITY	Equal variances assumed	2.477	2	.132	.078450	.0316727	-.0578268	.2147268
	Equal variances not assumed	2.477	1.679	.155	.078450	.0316727	-.0861162	.2430162
KWFT	Equal variances assumed	-3.084	2	.091	-.020850	.0067596	-.0499343	.0082343
	Equal variances not assumed	-3.084	1.296	.152	-.020850	.0067596	-.0718355	.0301355
KREP	Equal variances assumed	-10.686	2	.009	-.040500	.0037901	-.0568076	-.0241924
	Equal variances not assumed	-10.686	1.637	.017	-.040500	.0037901	-.0608078	-.0201922

The statistical test for Equity shows that the difference in reduction of the operating expenses as a percentage of the loan portfolio is not statistically significant. That is, $p = 0.155$

The *increase* in the operating costs for KWFT as a percentage of the loan portfolio is not statistically significant with a reading of $p = 0.152$.

The *increase* in the operating costs for K-REP as a percentage of the loan portfolio is, however, statistically significant at $p = 0.017$

Number of active clients

Nominally the number of active clients have continued to increase for Equity bank and KWFT for the four-year period of study. However, the numbers reduced for K-REP when they introduced mobile banking. The figures are shown in the table below.

Table 10: Number of active clients

MFI	No. of active clients			
	X - 2	X - 1	X	X + 1
Equity	110,112	239,541	392,822	542,249
KWFT	164,568	247,532	334,188	413,040
K-REP	114,301	153,961	58,578	56,534

Table 11: Group statistics-number of active clients

	PRD	N	Mean	Std. Deviation	Std. Error Mean
EQUITY	Before	2	174826.50	91520.124	64714.500
	During	2	467535.50	105660.845	74713.500
KWFT	Before	2	206050.00	58664.407	41482.000
	During	2	373614.00	55756.784	39426.000
KREP	Before	2	134131.00	28043.855	19830.000
	During	2	57556.00	1445.326	1022.000

Table 12: T-test analysis-Number of active clients

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
EQUITY	Equal variances assumed	-2.961	2	.098	-292709.00	98843.683	-717999.041	132581.041
	Equal variances not assumed	-2.961	1.960	.100	-292709.00	98843.683	-726406.299	140988.299
KWFT	Equal variances assumed	-2.928	2	.100	-167564.00	57229.064	-413800.790	78672.790
	Equal variances not assumed	-2.928	1.995	.100	-167564.00	57229.064	-414410.506	79282.506
KREP	Equal variances assumed	3.856	2	.061	76575.00	19856.318	-8859.843	162009.843
	Equal variances not assumed	3.856	1.005	.160	76575.00	19856.318	-172594.650	325744.650

The reason given by the respondent for K-REP's decline in active borrowers is attributed to the increase in lending rates (from 16% to 18%) and "upsurge in competitor euphoria".

The statistical analysis of the increase in average numbers two years before and the period during, however, is not statistically significant with $p = 0.1, 0.1$ and 0.16 for EQUITY, KWFT and K-REP respectively.

CHAPTER FIVE: SUMMARY CONCLUSIONS AND RECOMMENDATIONS

This chapter covers the summary of the findings, conclusions that can be drawn from the analyzed data, recommendations, limitations of the study, and areas that need further research.

5.1 Summary of Findings

The results show that most of the large MFIs (that is, those whose employees are more than 100 and have clients exceeding 20,000) have or are in the process of implementing mobile banking. A large proportion of the MFIs surveyed offer the following services (products): group-based lending (100%); voluntary and forced savings (91%), and offer training to their clients (82%). Financial services offered via the mobile banking platform include deposit and loan repayments (100%); loan disbursement (64%); sending notifications and reminders to clients through the short messaging (SMS) (64%) and making account inquiries (55%). A few of them offer utility payment facilities like electricity and water payments (18%).

Majority of the respondents (60%) claimed that the most popular financial service supported by the mobile banking platform is in receiving deposits and loan repayments. The others stated that loan disbursement (20%), sending notifications (10%), making enquiries (10%) and utility payments (10%) as the most popular mobile based financial service.

In spite of the hype created about mobile banking only 18% of the respondents stated that 61-80% of their clients were actively using the technology. 45.5% of the respondents claimed that 41-60% of their clients were using the technology while the rest claimed that the clients using mobile banking were less than 40%. However, a large majority (82%) of the respondents were of the opinion that the volume of transactions had increased. The respondents that met the threshold for quantitative analysis, that is, those that had introduced mobile banking early enough to allow for a 4-year gap shows mixed outcomes. Only one MFI

showed a reducing cost trend and increasing efficiency. For the other two there is a trend of increasing transaction costs around the period before the introduction though the rate of increase in transaction costs reduced immediately after introduction of financial services via the mobile banking platform.

We therefore, reject the null hypothesis and state that there has been a significant change in transaction costs albeit negatively for the average MFIs. For larger MFIs the transaction costs have significantly reduced due to increased volume of transactions.

5.2 Conclusions

The results of the study show that while the respondents lauded the introduction of adopting the mobile technology to conduct financial services it would take more concerted efforts to reduce transaction costs.

Though there have been nominal increases in the number of active clients (except for KREP) since the introduction of mobile banking, the increases have not been statistically significant.

The study outcome concurs with Mokoro, et al. (2010) who assert that microfinance institutions are faced with the onerous challenge of processing many small loans which contributes significantly to increase in transaction costs. Indeed, a number of studies have shown that the introduction of mobile banking has been made as an extension of services to existing clients and to increase the client base and not necessarily to reduce costs.

The analysis also agrees with Kumar, et al (2010) who assert that "the cost savings per transaction or customer will be relatively low, and so the economic justification for this new channel rests on high volumes of transactions". They add that MFIs should do a thorough cost-benefit analysis to understand their cost drivers and evaluate whether mobile banking would reduce those costs.

The very nature of microfinance is such that loan officers still need to meet the groups (as advanced by Prof. Muhammad Yunus' group-lending model) in spite of the fact that mobile

platforms have been introduced to replace the previous cash collections by loans officers. This implies that the MFIs still have to incur the cost of sending the loan officers to meet the clients in their group meetings as this is integral in mitigating default.

This cannot be put better than a response from the chief financial officer of an MFI who stated:

"We still need loan officers to meet with the groups so as to keep up the group peer pressure and ensure the groups remain intact. There has not been any less travel or any less personnel costs. Microfinance business unfortunately is a very 'hi-touch' business, one needs to be on the ground. One cannot leave it to technology entirely unless you are planning to fail. The kind of client is encouraged by presence of the loan officers."

The implementation period for most of the surveyed MFIs occurred at a time when the country was reeling from the effects of post election violence and this may have affected the outcome.

5.3 Recommendations

MFIs that hope to reduce their transaction costs by introducing technological innovations should first look at their processes. This may lead to radical re-design or re-engineering of their business processes, for instance, in loan processing. This means the streamlining of loan processing and monitoring systems such that the process takes fewer days and does not incur a lot of administrative overhead while maintaining the due diligence ethos. A proper management information system (MIS) needs to be implemented to complement the mobile banking platform.

Therefore, MFIs particularly the small institutions should not rush to implement mobile banking solutions without understanding the expected outcomes. Caution must be taken even in light of donors "pushing" grants for adoption of mobile banking technologies.

5.4 Limitations

There were a number of limitations in the study. First, most MFIs are currently in the process of implementing mobile banking technologies. This limited the scope of the number of MFIs



to research on. Those who have implemented are using the technology to a limited extent, that is, not harnessing the full potential of the technology.

Second, most MFIs are cagey about giving out information particularly information of a financial nature. Some respondents were wary of answering fearing that we could be fronting for a competitor while others had a strict official policy that barred them from responding to the financial questions.

Finally, we were faced with budgetary constraints that hindered us from doing thorough in-depth interviews for all the respondents.

5.5 Suggestions for further research

Further research should be conducted to measure other variables that may have affected the outcome. The research should be repeated after a number years to confirm or refute the findings in this study. The time lag would lead to a more statistically sound outcome since the MFIs implementing mobile banking now will be the respondents and as such create a large pool to draw a sample from.

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Appendices

Appendix 1: RESEARCH QUESTIONNAIRE

Mobile Banking and Transaction costs in Microfinance Institutions (MFIs)

Researcher: Mr. Isaac Kigen, an MBA student at the University of Nairobi (UON)

Confidentiality/Non Non-Disclosure Assurance

The data and/or information collected shall be treated with utmost confidence and shall not be shared without your prior permission.

Directions in responding to the Questionnaire:

- Please check all boxes that apply in each question.
- References to “you” or “your” refer to your Business or Organization.
- “Personal Data/Information” means information that you or your organization collected or stored regarding specific individuals e.g. employees, customers etc and may include information such as identifying number, home address or telephone number, physical characteristics, ethnicity or cultural affiliations, medical information, income, etc.
- Please feel free to use additional paper if necessary for your comments.

Correspondence/Inquiries Inquiries:

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PART A: BACKGROUND DETAILS

A1. Individual Name (Optional) _____

A2. Name of MFI _____

A3. What is your Job Title? _____

A4. Please indicate the size of your MFI

- Small (Less than 50 Employees)
- Medium (Between 50 and 99 Employees)
- Large (More than 100 Employees)

A5. Please indicate the services that offered by your MFI. Tick all that apply

- "Forced" Savings
- Voluntary savings
- Microcredit-Individual
- Microcredit-Group based
- Micro Insurance
- Payment services
- Training
- Other
Please explain _____

A6. How many clients do you have?

- Between 1 and 5000
- Between 5001 and 10000
- Between 10001 and 15000
- Between 15001 and 20000
- Above 20000

PART B: MOBILE PHONE USAGE

B1. Is your MFI offering services through mobile technology?

- Yes
- No
- I am not sure

Please jump to question C5 if your response is "No".

B2. In which year did you start using mobile technology for banking services? _____

B3. In your opinion what percentage of your clients use mobile phones for banking services?

- 0-20%
- 21-40%
- 41-60%
- 61-80%
- 81-100%

B4. Which services do you offer using the mobile technology? (Tick all that apply)

- Deposit and/or loan repayments
- Loan disbursement
- Sending notifications and reminders to clients using the SMS technology
- Enquiries eg loan status balances, information request using SMS technology
- Utility payments eg electricity payments from the savings accounts
- Other

Please explain

B5. Which is the most popular mobile-based service?

- Deposit and/or loan repayments
- Loan disbursement
- Sending notifications and reminders to clients using the SMS technology
- Enquiries eg loan status balances, information request using SMS technology
- Utility payments eg electricity payments from the savings accounts
- Other

State it _____

PART C: TRANSACTION COST

C1. Did the volume of transactions shift after the introduction of mobile banking?

- Yes
- No
- Not Sure

Please comment on the shift

C2. Please complete the table below indicating the figures for the listed costs 2 years before and 2 years beginning the year indicated in question B2 (Year X).

COST	BEFORE(SHS '000)		DURING(SHS '000)	
	Yr.(x-2)	Yr.(x-1)	Yr.(x)	Yr.(x+1)
Total overheads (operating Expenses)				
Loan Loss provision				
Personnel Expenses				
Financial Expenses				

C3. Please complete the table below indicating the assets and loan portfolio 2 years before and 2 years beginning the year indicated in question B2 (Year X).

COST	BEFORE(SHS '000)		DURING(SHS '000)	
	Yr.(x-2)	Yr.(x-1)	Yr.(x)	Yr.(x+1)
Total assets				
Total Loan Portfolio				

C4. Please indicate the number of active clients, branches and the percentage default rate 2 years before and 2 years beginning the year indicated in question B2 (Year X).

COST	BEFORE		DURING	
	Yr.(x-2)	Yr.(x-1)	Yr.(x)	Yr.(x+1)
Number of active clients				
Default Rate (%)				

The section below should be filled by respondents who selected "No" in question B1.

C5. Fill the following table indicating the information requested in the first column for the years indicated.

COST	2006	2007	2008	2009
Total overheads (operating Expenses)				
Loan Loss provision				
Personnel Expenses				
Financial Expenses				
Total assets				
Total Loan Portfolio				
Number of active clients				
Number of branches outside Nairobi				
Default Rate (%)				

Thank you sincerely for your time and effort!

Appendix 2: Data for Quantitative Analysis

Total overheads (operating Expenses) (Ksh)	X-2	X-1	x	X+1
Equity Bank Limited	1,177,932,000	2,135,417,000	3,483,000,000	5,924,000,000
Kenya women finance trust	636,885,639	1,030,525,566	1,902,237,000	2,476,124,000
K-Rep bank Limited	610,349,000	847,644,000	1,315,232,000	1,361,604,000
Loan Loss Rate				
Equity Bank Limited	1.19%	1.29%	0.54%	1.65%
Kenya women finance trust	0.96%	0.00%	0.19%	0.94%
K-Rep bank Limited	1.61%	-0.02%	2.73%	0.00%
Personnel Expenses (Ksh)				
Equity Bank Limited	531,505,000	958,653,000	1,469,000,000	2,584,000,000
Kenya women finance trust	375,922,808	562,570,333	1,066,322,000	1,369,979,000
K-Rep bank Limited	298,410,000	388,601,000	636,676,000	641,468,000
Financial Expenses (Ksh)				
Equity Bank Limited	82,327,000	126,647,000	495,000,000	1,217,000,000
Kenya women finance trust	138,442,643	236,895,520	553,187,000	916,960,000
K-Rep bank Limited	161,783,000	248,093,000	386,995,000	297,546,000
Total assets (ksh)				
Equity	11,456,543,000	20,024,484,000	53,076,000,000	77,135,000,000
KWFT	5,499,243,336	9,497,034,000	14,749,566,000	18,958,394,000
K-REP	5,220,245,000	7,038,808,000	8,184,063,000	7,136,327,000
No. of active clients				
Equity	110,112	239,541	392,822	542,249
KWFT	164,568	247,532	334,188	413,040
K-REP	114,301	153,961	58,578	56,534

Appendix 3: AMFI Members

(As of 31st May 2011)

AAR Credit Services
ADOK TIMO
Agakhan First Microfinance Agency
Barclays Bank of Kenya Ltd
Biashara Factors Limited
BIMAS
Blue Limited
Canyon Rural Credit Limited
Chartis Insurance
CIC Insurance
Co-operative Bank House
ECLOF Kenya
Elite Microfinance
Equity Bank
Faulu Kenya DTM Limited
Fusion Capital Ltd
Greenland Fedha Limited
Jamii Bora Bank
Jitegemea Credit Scheme
Jitegemea Trust Limited
Juhudi Kilimo Company Limited
K-rep Bank Ltd
K-rep Development Agency
KADET
Kenya Entrepreneur Empowerment Foundation (KEEF)
Kenya Post Office Savings Bank
Kenya Women Finance Trust
Kenya Women Holding
Kilimo Faida
Mega Microfinance Limited
MESPT
Micro Africa Limited
Microensure Advisory Services
Molyn Credit Limited
Muramati SACCO Society Ltd
Oikocredit
One Africa Capital Limited
Opportunity International
Pamoja Women Development Programme (PAWDEP)
Rafiki Deposit Taking Microfinance Ltd
Remu DTM Limited
Renewable Energy Technology Assistance Programme
(RETAP)

Rupia Limited
Select Management Services Limited
SISDO
SMEP DTM Limited
Swiss Contact
Taifa Option Microfinance
U & I Microfinance Limited
Uwezo DTM Limited
Yehu Microfinance Trust
Youth Initiatives - Kenya (YIKE)

Secondary data source: The Microfinance Information Exchange organization

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