



ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

INSTITUTE OF AGRICULTURE AND DEVELOPMENT STUDIES

**THE DEVELOPMENT OF MOBILE AND AGENT BANKING
SERVICE IN ETHIOPIA: THE M-BIRR EXPERIENCE OF ADDIS,
AMHARA AND OROMIYA MICROFINANCE INSTITUTIONS**

By

Mesfin Tefera

ID MAEC 0012/2004

Advisor

Dagnew Eshete (Ph.D)

March 2014

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Advisor
Dagnev Eshete (Ph.D)

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EXAMINERS APPROVAL SHEET

As member of the Board of Examiners of the MA Thesis Open Defense Examination, We certify that we have read, evaluated the Thesis prepared by Mesfin Tefera Alemayehu and examined the candidate. We recommended that the Thesis be accepted as fulfilling the Thesis requirement for the Degree of Master in Agricultural Economics.

_____	_____	_____
Chairperson	Signature	Date
_____	_____	_____
Internal Examiner	Signature	Date
_____	_____	_____
External Examiner	Signature	Date
_____	_____	_____
Thesis Advisor	Signature	Date

DEDICATION

I dedicate this Thesis manuscript to my mother W/ro Birke Gelaye who has special place in my life forever.

CONTENTS

	Page
ACKNOWLEDGEMENT	v
ABBREVIATIONS	vi
LIST OF TABLES	vii
ABSTRACT	viii
1 CHARPET: INTRODUCTION	1
1.1. BACKGROUND OF THE STUDY	1
1.2. STATEMENT OF THE PROBLEM	4
1.3. SIGNIFICANCE OF THE STUDY	5
1.4. OBJECTIVES OF THE STUDY	5
1.4.1. Research Questions	5
1.5. SCOPE AND LIMITATIONS OF THE STUDY	6
1.6. ORGANIZATION OF THE REPORT	7
2. CHAPTER TWO: REVIEW OF RELEVANT LITERATURE	8
2.1. INTRODUCTION	8
2.2. THE DEVELOPMENT OF MICROFINANCE INSTITUTIONS	10
2.3. MOBILE MONEY DEVELOPMENT AND REGULATION	10
2.4. MOBILE MONEY DEVELOPMENT AND REGULATION IN EAST AFRICA	11
2.5. REGULATION AND DEVELOPMENT OF MOBILE MONEY IN ETHIOPIA	12
2.6. THE M-BIRR MOBILE MONEY SERVICE	13
3 CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY	18
3.1. STUDY AREAS	18
3.2. TYPE AND SOURCES OF DATA	18
3.3. SAMPLE DESIGN AND SAMPLING TECHNIQUES	18
3.4. DATA COLLECTION METHODS	19
3.5. METHODS OF DATA ANALYSIS	20
3.5.1. Descriptive Statistics	20
3.5.2. Agent/MFI commission revenue model	21
3.5.3. Likert Scale	28

4.	CHAPTER FOUR: RESULTS AND DISCUSSION	29
4.1.	RESULTS	29
4.1.1.	Viability of the M-BIRR MMS Business model for agents	29
4.1.1.1	Amount of agent revenue from the M-BIRR mobile money service	30
4.1.1.2	Role related factors such	32
4.1.1.3	Exogenous variables	32
4.1.1.4	Time specific factors	33
4.1.1.5	Other factors	34
4.1.1.6	Descriptive Statistics	36
4.1.1.7	Findings from key Informants	37
4.1.2.	Viability of the M-BIRR MMS Business model for MFIs	38
4.1.2.1	Amount of MFIs' Revenue	39
4.1.2.2	Role related factors	40
4.1.2.3	Exogenous variables	41
4.1.2.4	Time specific factors	41
4.1.2.5	Other factors	42
4.1.2.6	Descriptive Statistics	44
4.1.2.7	Findings from key informants	45
4.2.	DISCUSSION	48
4.2.1.	Viability of the M-BIRR MMS Business Model	49
4.2.2.	Amount of agent/MFI revenue	49
4.2.3.	Role-related factors	49
4.2.4.	Exogenous factors	50
4.2.5.	Time-specific factors	50
4.2.6.	Other factors	51
5	CHAPTER FIVE: CONCLUSIONS AND POLICY IMPLICATIONS	53
5.1.	CONCLUSIONS	53
5.2.	POLICY IMPLICATIONS	56
	REFERENCES	59
	APENDICES	61

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ABBREVIATIONS

ACSI	Amhara Credit and Saving Institution
ADCSI	Addis Credit and Saving Institution
DECSI	Dedebit Credit and Saving Institution
FtFt	Face-to-face Transaction
ICT	Information Communication Technology
M-BIRR	Mobile Birr
MM	Mobile Money
MMS	Mobile Money Service
MNO	Mobile Network Operator
nFtFt	Non Face-to-face Transaction
NBE	National Bank of Ethiopia
OCSSCO	Oromiya Credit and Saving Institution
OMO	Omo Microfinance
PIN	Personal Identification Number
SNNP	Southern Nations Nationalities and People
TP	Technology Provider
TSP	Technology Service Provider
EAC	East African Countries
ATM	Automatic Teller Machine

TABLES

	Page
Table 1: Agents' Commission	23
Table 2: Agents' FtF/nFtF commissions and number of transactions	24
Table 3: MFIs' Commission	32
Table 4: MFIs FtF/nFtF commissions and number of transactions	32
Table 5: M-BIRR MMS Subscribers	41
Table 6: Deposits Mobilized by M-BIRR	41
Table 7: ACSI Agents'/Cashiers' transactions	61
Table 8: ADCSI Agents'/Cashiers' transactions	61
Table 9: OCSSCO Agents'/Cashiers' transactions	61
Table 10: Number of Agents and Branches	62
Table 11: Agents'/Cashiers' FtF and nFtF transactions	62
Table 12: Agents'/MFIs number of transactions by transaction type	62
Table 13: Agent/MFI commissions by transaction type	63
Table 14: Agents'/Cashiers' FtF and nFtF Transactions by transaction type	63
Table 15: Agents'/MFIs M-BIRR Mobile Money Transactions	63

ABSTRACT

The aim of the study is to assess the development status of Mobile and Agent Banking services in Ethiopia by taking the experience of three selected microfinance institutions (MFIs), such as: Addis Credit and Saving Institution (ADCSI), Oromiya Credit and Saving Share Company (OCSSCO) and Amhara Credit and Saving Institution (ACSI) and 12 sample agents participating in the development of the M-BIRR Mobile Money Service (MMS) provision as a case study. The study identified and examined the MMS regulatory framework in Ethiopia.

The significance of 24 factors for MFIs and 29 factors for agents that determine the viability of the M-BIRR MMS business model for both the agents and the MFIs were categorized and assessed under 5 variables in the study. Qualitative and quantitative primary data from the 12 sample agents, the 3 sample MFIs and 12 sample key informants were collected and used in the study. Relevant secondary data were also collected and analyzed by employing descriptive statistical tools and by using an agent/MFI revenue model developed on the basis of secondary data.

According to the results of the study, among the five variables, the amount of revenue is the highest significant factor whereas role related factors are least significant in determining the viability of the M-BIRR MMS business model for both the MFIs and the agents. Time specific factors are considered as having highest significance for the sample agents where as it has a higher significance for the MFIs. Exogenous factors and other variables both have higher significance in determining the viability of the M-BIRR MMS for both the MFIs and the agents according to the results of the study. According to the results of the study the M-BIRR MMS business model faces regulatory challenges. Some key informants from the NBE and the MFIs argue that the technology provider is assuming the role of financial institutions which they claim is beyond its expected role according to the NBE regulation directive.

The M-BIRR MMS business model suffers from the provision stated under Article 6.2 of the NBE Mobile and Agent Banking Services directive that deals with the relationship of financial institutions with third parties, including technology service providers and telecom companies. In the M-BIRR business model, the TP entered in to a revenue sharing agreement with the MFIs that limits the MFIs' and Agents' commissions from the service for 18 months on all FtFts following customers' subscriptions while allowing the TP to be entitled to all commission earnings from nFtFts indefinitely. In the M-BIRR business model, it is the TP who has a contractual relationship with the MNO. However, the existing directive requires financial institutions (not TSPs) to enter into written agreement or contract with Telecom Companies for the provision of mobile and agent banking services. In the existing system, the M-BIRR data center is located in the premises of Ethiotelcom with other related infrastructures which are used for the provision of mobile and agent banking service located in the premises of the TP, which is against the NBE's requirements.. In addition, the directive obliged TSPs to be completely deprived of access to database and datacenter unless authorized by financial institutions only for specific period and for purposes related to system support and/or maintenance services. This, however, is not found to be the case in the current M-BIRR scenario according to the findings of the study.

There NBE directive also does not cater for 'Business Customers'. Even though it does not literally mention the term 'Business Customer', it refers to it when the directive stipulates that agents can only register 'natural' customers, i.e. not 'business customers'. The limits stipulated by the directives are adequate for individual customers but inadequate for Business customers.

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

Some pioneering firms, especially in Europe, had introduced early mobile payment services where only 8 percent of the world's population had mobile phone subscriptions. (Mas and Rotman 2008). Low-income countries in particular had very few users of either Internet or mobile. When it came to banking and the poor, all eyes were on the emergence of a range of microfinance institutions (MFIs) that relied on personal contact with clients. In many countries, the number of bank branches has increased in absolute and even per capita terms over a decade since early 2000 (DFID, 2009). And MFIs have continued to grow serving close to 100 million active loan customers at the end of 2008 (Gonzalez 2008). The unexpected success story of the past decade has been the speed and extent to which mobile telephony usage has spread. More than 80 percent of the world's population is now within mobile coverage. In 2009, the GSM Association (the GSMA) reported more than 4 billion mobile subscriptions globally, with 80 percent of new connections in emerging markets and mostly by lower income consumers. Branchless banking has emerged as a promising new approach to accelerate financial inclusion. By changing the costs and risks of distributing financial services, channels outside the branch have enabled large commercial banks and new entrants like mobile network operators (MNOs) to contemplate reaching large numbers of unserved people (DFID, 2009). In recent years, no example of branchless banking has done more to stoke enthusiasm than M-PESA, the mobile payment service offered by Safaricom, Kenya's largest MNO. Since its commercial launch in March 2007, more than 7 million people—approximately one in four adult Kenyans—have signed up. Largely (though not only) due to M-PESA, the proportion of Kenyans considered to be formally financially included has almost doubled to 41 percent in just three years (FSD Kenya 2009). M-PESA sometimes overshadows the success of a different approach to branchless banking found in Brazil that relies not on mobile phones but on point-of-sale (POS) devices deployed at agents (DFID, 2009).

In 2006, the Council of Ministers of the East African Community (EAC) identified the creation of a regional enabling legal and regulatory environment as a critical enabling factor for the effective implementation of e-Government and e-commerce strategies at national and regional levels. Under its mandate to offer technical assistance to developing countries in the area of legal and regulatory reform related to information and communication technology (ICT), the United Nations Conference on Trade and Development (UNCTAD) has since been assisting EAC in building a harmonized framework for cyberlaws across the five Partner States. As a result, EAC Legal Framework for Cyber Laws Phase I – covering electronic transactions, electronic signatures and authentication, cyber crime as well as data protection and privacy – was adopted in 2010 by EAC Council of Ministers on Transport, Communications, and Meteorology. It is being implemented at national level. Phase II of the Framework is expected to be examined and adopted in 2012, covering intellectual property rights, competition, e-taxation and information security. Adoption of harmonized cyberlaw frameworks and transposition of such frameworks into national laws are essential to ensure an adequate legal response to challenges and opportunities raised by the increasing adoption of information and communication technologies (ICTs). The rapid spread of mobile phone services in money transactions, which are a potentially great contributor to the region's economic development and establishment of the common market has added urgency to the need for an effective and robust legal and regulatory framework. EAC has been ahead of other parts of the world in electronic money transfers, with M-PESA which started operating in Kenya in 2007, having taken the lead in terms of innovation for providing more inclusive access to finance to a large part of the population who hitherto had been without a bank account. Mobile commerce at large is gaining importance in many developing countries. From the perspective of small businesses, mobile solutions can be applied to facilitate money transfers as well as merchant, bill and salary payments. More sophisticated financial services, such as credit, savings and insurance schemes, are also likely to expand in the coming years. Their successful implementation will require that mobile network operators enter into effective partnerships with banks, micro-finance institutions, insurance companies or other organizations. It will also require that consumers and business users be able to trust the systems on offer (UNCTAD, 2012).

The introduction and development of Mobile and Agent Banking Service in Ethiopia is a very recent phenomenon. The National Bank of Ethiopia (NBE) issued “Regulation of Mobile and Agent Banking” directive for the first time on 31st of December 2012. The directive addressed the definition of relevant terms and conditions, modes of business conduct, limits on mobile banking transactions, application processes and procedures for financial institutions, system technology, customer due diligence, agent management, customer protection and reporting requirements with its effective date 1st January 2013. (NBE, 2012)

Following the issuance of the ‘Mobile and Agent Banking Services Regulation’ directive by the National Bank of Ethiopia (NBE) on December 31st 2012 and the start of the M-BIRR MMS pilot by the MFIs in collaboration with one technology provider (TP), M-BIRR ICT Services PLC, various issues had been raised by different people (including the TP, the financial regulator- the NBE, Mobile Money Agents, the MFIs, Banks and the M-BIRR customers) who are directly and indirectly involved in the M-BIRR MMS provision. The researcher was directly involved in the M-BIRR MMS provision as a Business Development Manager with the TP. With his direct engagement in the M-BIRR MMS and day to day interactions with the various people directly and indirectly involved in the M-BIRR MMS provision, the researcher had an opportunity to learn the various issues raised by those people involved. The contributions of microfinance institutions in the introduction and promotion of Mobile and Agent Banking Services; the regulatory challenges of Mobile and Agent Banking Services and the viability of the M-BIRR MMS Business Model for MFIs and Agents in Ethiopia were the most frequent issues frequently raised and shared by most of the people involved in the M-BIRR MMS provision. This motivated the researcher to be interested to conduct the study in order to address the issues.

Relevant quantitative and qualitative data from both primary and secondary sources were used in the study. In addition to standard descriptive statistical tools, a revenue model was used for data analysis purpose.

The scope of the study is limited to the three selected MFIs, since they are the only financial institutions in Ethiopia who have yet tested and completed the M-BIRR mobile money service pilot phases.

The 6 selected branches of the three MFIs and the 12 sample agents were the main subjects of the study since they are the only MMS outlets exist in the selected MFIs.

The study focused on the M-BIRR MMS pilot period transactions' data, reports, experiences, and findings of individuals and organizations directly and indirectly involved in the M-BIRR MMS provision and Mobile and Agent Banking activities, practices and regulations in Ethiopia.

The aim of the study is to assess the development status of Mobile and Agent Banking services in Ethiopia by taking the experience of three selected microfinance institutions (MFIs) such as Addis Credit and Saving Institution (ADCSI), Oromiya Credit and Saving Share Company (OCSSCO) and Amhara Credit and Saving Institution (ACSI) and agents participating in the development of the M-BIRR Mobile Money Service (MMS) provision as a case study.

1.2. Statement of the Problem

The revenue sharing scheme of the M-BIRR MMS business model has been questioned on its viability for the MFIs and agents as well as its success in the long run.

The roles of financial institutions, agents, mobile network operators and mobile money technology providers in the provision of Mobile and Agent Banking Services in Ethiopia created confusions by the MFIs, agents, the technology provider and the mobile network operator. The National Bank of Ethiopia's Mobile and Agent Banking Services Regulation directives lacks clarity in defining the roles and responsibilities of the different parties involved in the provision of mobile and agent banking services in Ethiopia. The directive puts a maximum limit of 25,000 Birr on subscribers' maximum account balances and a maximum daily account balance limit of Birr 6,000. This is also questioned by the agents and MFIs in its viability. The development of MMS in Ethiopia is hindered by lack of relevant technical know-how, well-developed telecom infrastructures, adequate supply of the required technology, lack of clearly defined regulation, lack of integration between MFIs, lack of inter-MFIs clearing and settlement systems, absence of public awareness about the service, lack of well-developed network of branches and agents and clear information regarding the viability of (the M-BIRR) MMS for agents and MFIs.

1.3. Significance of the Study

The results of the study can be important inputs to the regulation of MMS in Ethiopia, and it would be a useful guide to financial institutions as well as to potential agents who wish to start a MMS. It will also be an important reference and a starting point for other fellow researchers interested to conduct further studies in the area since it is the first of its kind in the country's context given the growing level of demand.

1.4. Objective of the Study

The main objective of the study is to assess the development status of Mobile and Agent Banking services in Ethiopia by taking the experiences of the three selected microfinance institutions (Addis, Oromia and Amhara) and agents participating in the development of the M-BIRR MMS provision as a case study.

The Specific Objectives of the study are:

- i. To examine the development status of microfinance institutions and their contributions in the introduction and promotion of Mobile and Agent Banking Services in Ethiopia;
- ii. To examine the Mobile and Agent Banking Services regulation (regulatory framework) in Ethiopia (which includes setting of conceptual definitions of new terminologies).
- iii. To assess the viability of the M-BIRR MMS Business Model for Microfinance Institutions in Ethiopia from the experience of Addis, Amhara and Oromiya Microfinance Institutions.
- iv. To assess the viability of the M-BIRR MMS Business Model for Agents in Ethiopia from the experience of Agents affiliated to Addis, Amhara and Oromiya Microfinance Institutions.

1.4.1. Research Questions

The study attempts to answer the following research questions.

- i. What are the contributions of MFIs in the introduction and development of Mobile and Agent Banking Services in Ethiopia?

- ii. What are the regulatory challenges and limitations with regard to Mobile and Agent Banking Services in Ethiopia?
- iii. Whether the M-BIRR Mobile Money Service business model is viable for the MFIs and agents or not?

1.5. Scope and Limitations of the Study

The scope of the study covers the assessment of the three MFIs' who are currently providing the M-BIRR MMS for the development of MMS in Ethiopia as a case study due to the lack of other financial institutions (including MFIs and Banks) and technology providers who are authorized (by the financial regulator, the NBE) to provide a MMS in Ethiopia. Currently there are only five MFIs' in Ethiopia authorized by the NBE to provide MMS.

Besides, the scope of the study includes examining the NBE Mobile and Agent Banking Directive with respect to assessing the regulatory framework of MMS provision in Ethiopia. The scope of the study also covers the assessment of the viability of the M-BIRR MMS to MFIs and Agents in Ethiopia for the following reasons; first, due to the very reason that M-BIRR ICT Services PLC is the only technology provider existing in the Ethiopian market that started to test the technology and business model through the M-BIRR MMS in partnership with five MFIs'. Secondly, starting a Mobile and Agent Banking Service in Ethiopia is constrained by the existing regulatory and policy situations of the country since the very nature of the service involves the telecom and financial sectors, which are very sensitive and closed for foreign investors who might afford the huge amounts of financial and technological investments required for starting a MMS.

The scope of the study is also limited to the three selected MFIs, their very few branches and agents since the three MFIs' are the only financial institutions in Ethiopia who have yet completed their MMS pilot phases.

The scope of the study is also limited to the M-BIRR MMS pilot period transactions' data, reports, experiences, and findings of individuals and organizations directly and indirectly involved in the M-BIRR MMS and Mobile and Agent Banking activities, practices and

regulations in Ethiopia. The study is constrained by lack of previous research works conducted in the local context and depend largely on relevant literatures; other country's research outputs, MMS & technology providers' experiences and regulatory frameworks as well as the M-BIRR MMS pilot experience.

1.6. Organization of the Report

The remaining sections of the thesis are organized as follows. Chapter two deals with review of literature relevant to the study including the development of MFIs' in the wider context; the development of MFIs' in Ethiopia; mobile money development and regulation in the wider context, mobile money development and regulation in East African countries; mobile money development and regulation in Ethiopia; and the development of the M-BIRR mobile money service in Ethiopia. Chapter three deal with the research methodology used in the study. It has five main sections, including: the study areas, type and sources of data used, sample design and sampling techniques, data collection methods and methods of data analysis. This chapter also introduces the agent/MFI revenue model developed based on secondary data obtained on the M-BIRR MMS experience of the three sample MFIs' and twelve sample agents and used in the study. In chapter four, the results of the study, including the viability of the M-BIRR MMS for agents and MFIs in Ethiopia is presented; followed by a detailed discussion of the study findings. Chapter five comprises three sections, such as: conclusions, limitations of the study and policy implications. The final section of the report presents lists of references used in the study, followed by appendices, which include: definition of variables and sample questionnaires used in the study.

CHAPTER TWO

REVIEW OF RELEVANT LITERATURE

2.1. Introduction

Some pioneering firms, especially in Europe, had introduced early mobile payment services where only 8 percent of the world's population had mobile phone subscriptions. (Mas and Rotman 2008). Low-income countries in particular had very few users of either Internet or mobile. When it came to banking and the poor, all eyes were on the emergence of a range of microfinance institutions (MFIs) that relied on personal contact with clients. In many countries, the number of bank branches has increased in absolute and even per capita terms over a decade since early 2000 (DFID, 2009). And MFIs have continued to grow—by some measures serving close to 100 million active loan customers at the end of 2008 (Gonzalez 2008). The unexpected success story of the past decade has been the speed and extent to which mobile telephony usage has spread. More than 80 percent of the world's population is now within mobile coverage. In 2009, the GSM Association (the GSMA) reported more than 4 billion mobile subscriptions globally, with 80 percent of new connections in emerging markets and mostly by lower income consumers. Branchless banking has emerged as a promising new approach to accelerate financial inclusion. By changing the costs and risks of distributing financial services, channels outside the branch have enabled large commercial banks and new entrants like mobile network operators (MNOs) to contemplate reaching large numbers of unserved people (DFID, 2009). In recent years, no example of branchless banking has done more to stoke enthusiasm than M-PESA, the mobile payment service offered by Safaricom, Kenya's largest MNO. Since its commercial launch in March 2007, more than 7 million people—approximately one in four adult Kenyans—have signed up. Largely (though not only) due to M-PESA, the proportion of Kenyans considered to be formally financially included has almost doubled to 41 percent in just three years (FSD Kenya 2009). M-PESA sometimes overshadows the success of a different approach to branchless banking found in Brazil that relies not on mobile phones but on point-of-sale (POS) devices deployed at agents (DFID, 2009).

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The introduction and development of Mobile and Agent Banking Service in Ethiopia is a very recent phenomenon. The National Bank of Ethiopia (NBE) issued “Regulation of Mobile and Agent Banking” directive for the first time on 31st of December 2012. The directive addressed the definition of relevant terms and conditions, modes of business conduct, limits on mobile banking transactions, application processes and procedures for financial institutions, system technology, customer due diligence, agent management, customer protection and reporting requirements with its effective date 1st January 2013. (NBE, 2012).

2.2. The Development of Microfinance Institutions

Lack of access to credit financing is assumed to be one of the major bottlenecks for poor people living in developing countries to escape from poverty. In recent global development of financial services, MFIs are seen as a good choice to fulfil the needs of poor people living in developing countries than the conventional banks. (UNCTAD, 2011)

The development of MFIs in Ethiopia is a recent phenomenon which involves the government, the private sector and local and international NGOs in its rapid expansion

Out of the existing 31 MFIs licensed by the National Bank of Ethiopia, the 5 MFIs affiliated to the government control more than 85% of the market (91% and 84% of the industry’s loan portfolio and number of active borrowers respectively. (MTTIR,2011).

2.3. Mobile Money Development and Regulation

Banking through mobile phones has been common in developed countries for years. But the real potential of “m-banking” may be to make basic financial services more accessible to millions of poor people across the world. (CGAP, 2011).

According to a study conducted by CGAP in 2009 on the Scenarios for Branchless Banking in 2020, there are almost 4 billion unbanked people worldwide. This represents more than two-thirds of the population of the world’s low and middle income countries. According to another study by Mckinsey in 2011, more than a billion people in emerging and developing markets have cell phones but no bank accounts. Many low-income people store and transfer money using informal networks, but these have high transaction costs and are

prone to theft. Mobile money is beginning to fill this gap by offering financial services over mobile phones, from simple person-to-person transfers to more complex banking services. To date, there have been more than 100 mobile-money deployments in emerging markets; at least 84 of them originated in the past three years. Only a handful of these deployments have reached a sustainable scale; some notable examples include M-Pesa in Kenya, MTN Uganda, Vodacom Tanzania, FNB in South Africa, and GCASH and Smart Money in the Philippines. Even these players have not gained much traction for financial services beyond simple transfers and payments.

2.4. Mobile Money Development and Regulation in East African Countries (EACs)

Mobile Money is one of the recent development trends in EACs by offering new possibilities in making financial services more inclusive and accessible for poor people living in the region. It refers to money stored using SIM cards and accessed by mobile phones. Money transfer, payments, and other financial services are among a range of MMSs provided by mobile money platforms. (UNCTAD/DTL/STICT, 2012)

A study conducted by UN on Mobile Money for Business Development in EACS in 2011 revealed the existence of 15 Mobile Money Platforms and more than 77 million mobile subscribers and more than 58 million mobile money users in EACs.

The different players engaged in the provision of MMS in the developing world include: MNOs, financial institutions (MFIs and banks), regulatory institutions, cash-in/cash-out agents (people, automatic teller machines /ATMs, financial institutions' branches), merchants and retailers who accept mobile money payments, businesses that utilize MMS to deliver their services, mobile phone manufacturers, mobile money technology providers and users of the service. (UNCTAD, 2011)

According to the comparative study of EACS MMS conducted by the UN, the experiences of the region show that countries face challenges in regulating of MMS and in addressing issues that arise in mobile money operations.

2.5. The Regulation and Development of Mobile Money Service in Ethiopia

The mobile sector in Ethiopia is growing fast. In June 2006, the number of subscribers in EACs has reached 866,700, more than double the total of 410,630 recorded in 2005. The current number of mobile subscribers tops 18 million. (*Ethiotelecom, 2011*). This shows that there is a huge potential for MMSs in Ethiopia in helping to address the financial needs of millions of unbanked poor.

The National Bank of Ethiopia (NBE) issued “Regulation of Mobile and Agent Banking” directive for the first time on 31st of December 2012. The directive addressed the definition of relevant terms and conditions, modes of business conduct, limits on mobile banking transactions, application processes and procedures for financial institutions, system technology, customer due diligence, agent management, customer protection and reporting requirements with its effective date 1st January 2013. (NBE, 2012).

Prior to the issuance of the NBE’s directive, a few MMS technology providers including M-BIRR ICT Services PLC entered to the market in Ethiopia; and had been discussing and negotiating with different financial institutions, including banks, MFIs and other actors in the sector.

According to the directive financial institution, for the purpose of provision of mobile and agent banking service, shall engage with Technology Service Providers (TSPs) in any of available modalities including acquisition of Technology Platform from TSPs or using the Technology Platform of TSPs either through leasing or revenue sharing arrangement (be it on fixed transaction based payment, percentage of revenue based modality or any other related modality);

Financial institutions that prefer to engage with Technology Service Providers (TSPs) on the basis of leasing or revenue sharing arrangement as stated above shall fulfill the following requirements:

Financial Institutions, with the objective of gradually owning the mobile and agent banking technology platform/system and related hardware and software infrastructure, shall engage with Technology Service Providers (TSPs) on the basis of revenue sharing or leasing

arrangement only for a predefined and specific time period acceptable to the National Bank of Ethiopia. To this end, Technology Service Providers (TSPs) shall not continue doing business with financial institutions on the basis of revenue sharing or leasing modality perpetually/indefinitely. Rather, they should terminate such relation by the end of the contract/agreement period during which the ownership of technology and platform/system and related hardware and software infrastructure under the contract/agreement be fully transferred to the financial institutions.

Financial Institutions shall be entirely responsible to have access to and manage the database and where applicable datacenter of the mobile and agent banking service technology. To this end, Technology Service Providers (TSPs) shall be completely deprived of access to database and datacenter unless authorized by financial institutions only for specific period and for purposes related to system support and/or maintenance services;

Financial Institutions, not Technology Service Providers, shall enter into written agreement or contract with Telecom Companies for the provision of mobile and agent banking services;

The data center and related infrastructures which are used for the provision of mobile and agent banking service shall be in-house in the premises of financial institutions that they have acquired, leased or have entered special agreements for related purposes. (NBE, 2012)

2.6. The M-BIRR Mobile Money Service

Introduction and success of mobile banking depends on three key determinants: policy and regulation, profitable/sustainable business case for all actors, and client uptake. Primarily, policy and regulation sets the foundation stone of the mobile banking model.

There are two types of mobile banking models: bank based model and nonbank based model. Both models use retail network of agents to deliver their services to customers. The former uses licensed financial institutions, such as, banks and MFIs to recruit agents and to create legal relationship with customers. The later has no direct contractual relationship with any licensed financial institution either to recruit agents or to deal with customers contractually. (Rasheda, 2011).

M-BIRR is a national MMS provided by Addis, Amhara, Oromiya, Dedebit and OMO MFIs and their Agents in collaboration with their technology provider – M-BIRR ICT Services PLC. The M-BIRR MMS Business Model is a bank based and a revenue sharing model. It uses MFIs for contracting retail agents and to hold customers’ accounts. In the M-BIRR model the technology provider, M-BIRR ICT Services PLC, has a contractual relationship with the MFIs and the mobile network operator (MNO), Ethio telecom. The MFIs contract retail agents and customers.

All actors involved in the M-BIRR MMS chain such as the technology provider, the MNO, the MFIs and retail agents receive a certain portion of the revenues collected from subscribers as service fees. The revenue collected from customers in the form of service charges is first split in to two; and then, shared with the technology provider and either with the MFI or the agent who initially registered the subscriber. The commissions for all non-face to face transactions are limited to 18 months following the registration of a given subscriber. For all non-face to face transactions after 18 months of subscription, all transaction fees goes to the technology provider. Neither the MFI nor the agent gets any commission; even though, the technology provider has an obligation to pay Ethio telecom as per the agreement made between the two.

The M-BIRR Service includes: money deposit, money withdrawal, domestic money transfer to both registered and non-registered users, Mobile airtime Top-up (Ethio telecom credit), checking account balances, other administrative services (PIN change, language change, and statement), loan repayment, bulk disbursement and payment of goods.

Following the authorization given by the NBE, the MFIs started piloting the M-BIRR MMS late in February 2012 with a common brand name called “M-BIRR” before it actually issued the Mobile and Agent Banking Directive.

The objective of the M-BIRR pilot was to validate the MMS concept, the business model, operational processes, the technology, and to give feedback to the NBE’s directive in light of the pilot experiences on the ground.

The M-BIRR Mobile Money Service allows users to transfer money to other user's account using their mobile phone. When a Subscriber registers to the service, an account is created with the local MFI.

Once money has been deposited on his/her account, it is very convenient for the Subscriber to transfer money anywhere within Ethiopia. Of course the recipient must either be a Subscriber or simply have a mobile phone. It is much faster and more convenient than going to a bank: If a Subscriber lives in Addis Abeba, and wants to send money to his family back in Jimma, it's as easy as sending a text: typing some numbers on a mobile phone, and within a few seconds, the recipient gets a message in his/her mobile. He/she then goes to his local Agent (shop, petrol station, butcher, etc.) and collects the money right away.

In the M-BIRR MMS business model the mobile money accounts are non-interest bearing accounts. Accounts can only be accessed through the M-BIRR ICT system (Mobile phone or Back-office console). Transaction fees are applied to customers for most transactions (not to Agents & Branches). Access to the service through *818# is free (access to the service is available even if the subscriber has no balance on his phone). For every 1 Birr on subscriber's M-BIRR wallet, there is an equivalent 1 Birr on their MFI M-BIRR account.

To access the system, at least one dedicated mobile handset and SIM should be attributed to each M-BIRR account. This mobile number will be associated to the subscriber's M-BIRR account, when he/she is registered on the M-BIRR system.

Once registered on the MFI M-BIRR System, subscriber can access the M-BIRR service by dialing*818# and hit send, like a normal phone call. To select the operation, with a very simple method of navigation, the user shall type in the number of the menu he/she wishes to access, and hit the 'Send' button to receive the next screen, with more options. Some models of mobile will require subscribers' to select a reply option in order to enable typing the number of the menu item you wish to access. All transactions and accesses to the system by the Branch and the agent are free of charge.

All M-BIRR Mobile customers' accounts have debit and balance limits set by the National Bank of Ethiopia. A maximum daily debit limit of 6,000birr and a maximum account balance of 25,000birr. (NBE, 2012).

In the M-BIRR MMS business model the MFI branches responsible to the management of mobile money accounts; the selection, registration, training, monitoring and support of agents; customer registration, training and support; complaint handling; and provision of 'Face to Face' services to Subscribers and Agents including: money deposit, money withdrawal, mobile top-ups and providing customer support.

According to the National Bank of Ethiopia Mobile and Agent Banking Directive, any person engaged in a valid and lawful business or commercial activity with in Ethiopia can be an agent of a financial institution. In making agency arrangement, the financial institution shall enter into a written contract with the agent for the provision on its behalf any of the mobile and agent banking services specified in the directive. The agent shall fulfil at least the following minimum requirements set by the NBE directive.

1. Must be at least 18 months in legally registered and valid business operating in Ethiopia
2. Must have an existing well established business entity with appropriate physical infrastructure and human resources to be able to provide services with the necessary degree of efficiency and security
3. Must provide a police certificate proving that has no criminal records in matters related to finance, fraud honesty or integrity and has a good reputation
4. Provide audited financial statements at least for the last one year
5. A description of the commercial activity the entity has been carrying on prior to the date of application
6. Physical location, postal address and telephone number of the entity
7. Evidence of availability of funds to cover agent operations including deposits and withdrawals by customers
8. Certificate of incorporation, certificate of registration business license of the entity

The M-BIRR MMS agents' are responsible for customer registration, training and providing support; providing 'Face to Face' services to Subscribers and Agents including: accepting mobile money deposits, giving money withdrawals, sale of mobile top-ups, and customer support; and complaint registration and transfer to the associated MFI branch.

To open an M-BIRR mobile money account individual customers are required to own a mobile phone and have it at registration; to have a copy and the original of an accepted and valid identification card with picture on it (kebele ID, residence ID, passport, or student card); and to be at least 18 year old at time of registration. A business customer is required to own a mobile phone and have it at registration; have a copy and the original of an accepted and valid identification document of the person(s) designated by the business to operate the account; to own a business, and present copies and the originals of the business license and TIN Certificate at the time of registration to open an M-BIRR mobile money account.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Study Areas

The study was conducted by taking 3 selected sample MFIs, namely: ADCSI, ACSI and OCSSCO operating in Addis Ababa, Amhara and Oromiya regions, respectively as case studies. Nine sample woredas and 8 cities in the same regions where the 3 sample MFIs have been operating were covered by the study. Two sample branches from each of the 3 sample MFIs were included in the study. From ADCSI, Kazanchis Micro Bank and Gullele Woreda 02 branches were selected. From OCSSCO Sebeta and Chanco branches were selected. From ACSI Bahir Dar Micro Bank and Tis Abay branches were included in the study. From each branch 2 sample agents were selected. In ADCSI the selected agents are located in Kirkos, Arada and Bole Sub cities. In ACSI, the selected agents are located in Tis Abay, Bahir Dar, and Andassa. In OCSSCO the agents are located in Chancho, Sebetta, Sululta and Alem Gena towns.

3.2. Type and Sources of Data

Quantitative and qualitative data from primary and secondary sources, such as relevant literatures, articles, the MFIs reports, operational documents, the NBE Mobile and Agent Banking Directive, the M-BIRR pilot electronic transaction data were used in the study. Primary data were collected from 12 agents 6 branches of the 3 sample MFIs and other key informants from the 3 MFIs, the NBE, the technology provider and Ethio telecom.

3.3. **Sample** Design and Sampling Techniques

In the study, purposive sampling technique was used to select the study samples. Among around 30 MFIs registered at the NBE, five MFIs, such as: ACSI, ADCSI, OCSSCO, OMO and DECSI were selected because the 5 MFIs are the only MFIs in Ethiopia that provide mobile and agent banking services according to information obtained from the NBE; among the 5 MFIs, 3 sample MFIs, such as: ACSI, ADCSI and OCSSCO were purposefully selected because the 3 selected MFIs are the only MFIs in Ethiopia that has

completed their respective pilot periods on the M-BIRR MMS during the study's sample selection. From each of the 3 selected sample MFIs two sample branches were purposefully selected because they are the only branches in the sample MFIs that are allowed to provide the M-BIRR MMS by the NBE. Two sample agents affiliated to each of the sample branches were also selected due to they are the only MMS providing agents available. In addition, 12 sample key informants who have the required experience and knowledge on MMSs in Ethiopia were selected.

The study focused on the 3 selected sample MFIs, their 6 branches and the 12 sample agents that provide the M-BIRR MMS due to lack of other MFIs and agents that provide mobile money services in the country.

3.4. Data Collection Methods

As indicated earlier, both primary and secondary sources of data were used in the study.

Designed questionnaires were used to collect primary data from 12 purposefully selected sample agents, comprised of 4 sample agents from each of the 3 selected MFIs. The selected samples were asked to rate 29 factors that affect the viability of the M-BIRR MMS business model for agents. A total of 9 sample employees comprised of 3 samples from each MFI were asked to rate 24 factors that affect the viability of the M-BIRR MMS business model for MFIs on a Likert scale who are engaged in the delivery of the M-BIRR MMS. In addition, 12 key informants who are knowledgeable and have the required experience in the M-BIRR MMS pilot project, such as: agents, employees of the 3 MFIS, individuals from the financial regulator (NBE) and the technology provider through structured questionnaires were asked to collect qualitative information regarding the viability of the M-BIRR MMS business model for agents and MFIs.

Secondary sources, such as (pilot) reports of the 3 MFIs, 12 months electronic records of customers' (subscribers of the M-BIRR MMS) transactions data and the NBE Mobile and Agent Banking Regulation Directives were used in the study.

Primary data from 9 sample employees of the 3 MFIs, the 12 sample agents and from the 12 sample key informants were collected on face-to-face interviews and by using structured

questionnaires for interview. The researcher personally travelled to the locations of each of the 6 branches of the 3 sample MFIs, the 12 sample agents' and the 12 sample key informants to collect the required primary and secondary data. The interview with ACSI agents and employees was conducted from March 26-31, 2014 in Bahir Dar and Tis Abay. Primary data from ADCSI agents and employees were gathered through March 18-22, 2014 in Addis Ababa. OCSSCO agents and employees were interviewed from March 11-18, 2014 in Chanco, Sululta and Addis Ababa. Key informants from the MFIs were interviewed simultaneously during the researcher's field visits to collect primary data from the sample agents and MFI branch employees. The face-to-face interviews with sample key informants from the NBE, Ethio telecom and the TP were held through March 3-6, 2014 at their respective head quarters'. Secondary data on the M-BIRR MMS transactions for 12 months were obtained from the 3 sample MFIs headquarters and from the TPs databases starting from March 11, 2014 through April 10, 2014.

3.5. Methods of Data Analysis

Descriptive statistical tools as well as an agent revenue model were employed to analyze subscribers' transactions data. IBM SPSS data analysis software version 20 was used in the data analysis.

3.5.1. Descriptive Statistics

Descriptive statistics was used to explain the different economic characteristics of the sample agents and MFI branches providing the M-BIRR MMS. These include mean, percentage, and frequency of occurrence of different types of MM transactions. The descriptive analysis was made using mean, frequency of occurrence, and percentage values of agent/MFI commission revenues from the M-BIRR MMS by type of transaction for groups agents/branches of the same MFI as well as for different MFIs.

Descriptive statistical analysis was carried out agents/cashiers of the same MFI as well as by agents/cashiers belonging to different MFIs and the mean agent/cashier revenue for agents/cashiers of the same MFI and agents/cashiers of different MFIs as well as between agents and branches of the same MFI and for all agents and cashiers of all MFIs were compared.

3.5.2. Agent/MFI commission revenue model

A agent/MFI revenue model developed based on secondary data was employed to analyze agent/MFI commission revenues from the M-BIRR MMS for various groups of agents/cashiers of the same MFI and for agents/cashiers of different MFIs as well as between groups of agents and groups of cashiers belonging to the same MFI, between MFIs and between agent groups and cashiers of all MFIs. The agent/MFI commissions from the M-BIRR MMS were analyzed for the various groups of agents and/cashiers by transaction types such as commissions from FtF and nFtF transactions as well as commissions from withdrawal, money transfer, money voucher, mobile top-up and other/admin services.

The agent/MFI revenue model was used to analyze agents' and MFIs' revenue from the M-BIRR mobile money service. Agent/MFI revenues from mobile money financial transactions and non-financial services were assessed by the revenue model. The agent/MFI revenue model used is depicted below.

Total Agent/MFI Revenue = commission from financial transactions + commission from non- financial transactions (other services), R

$$R = T + W + V + E + S$$

T = Agent/MFI commission from transfer

W= Agent/MFI commission from withdrawal

V = Agent/MFI commission from money voucher

E = Agent commission from top-up

S = Agent/MFI commission from other services such as PIN change, balance inquiry, language change and mini-statement request

$$R = [(1.6n_{ij} + r_i n_{ik}) + (r_a n_l) + (r_b n_c) + (0.04v_{xy} n_{xy} + 0.02 v_{xz} n_{xz}) + (0.24 (n_{s1} + n_{s2} + n_{s3} + n_{s4}) + 0.35n_{s5})]$$

Where:

1. $T = \text{Commission from transfer to registered customer (rc)} + \text{commission from transfer to non-registered customer (nr)}$

$$rc = 1.6n_{ij} \quad \text{and } nr = r_i n_{ik}$$

$$T = 1.6n_{ij} + r_i n_{ik}$$

where, $r_i = \text{Commission rate for transfer to nr}$ and i ranges from 1 to 6
($r_1 = 1.8$ when the transfer amount is from birr 1 to birr 1000,
 $r_2 = 2.8$ when the transfer amount is from birr 1001 to birr 2000,
 $r_3 = 3.9$ when the transfer amount is from birr 2001 to birr 3000,
 $r_4 = 5$ when the transfer amount is from birr 3001 to birr 4000,
 $r_5 = 6.1$ when the transfer amount is from birr 4001 to birr 5000 and
 $r_6 = 6.9$ when the transfer amount is from birr 5001 to birr 6000)

$n_{ij} = \text{Number of transfers to registered users}$

$n_{ik} = \text{Number of transfers to non-registered users}$

2. $W = r_a n_l$

where, $r_a = \text{Commission rate for withdrawal by registered users}$ and a ranges from 1 to 6 ($r_1 = 1.2$ when the amount of withdrawal is from birr 1 to birr 1000,
 $r_2 = 2$ when the amount of withdrawal is from birr 1001 to birr 2000,
 r_3 when the amount of withdrawal is from birr 2001 to birr 3000,
 $r_4 = 4$ when the amount of withdrawal is from birr 3001 to birr 4000,
 $r_5 = 5$ when the amount of withdrawal is from birr 4001 to birr 5000
and $r_6 = 5.6$ when the amount of withdrawal is from birr 5001 to birr 6000)

$n_l = \text{Number of transactions (withdrawal by registered users)}$

3. $V = r_b n_c$

where, $r_b = \text{Commission rate for money voucher}$ (b ranges from 1 to 6 and
($r_1 = 1.8$ when the transaction amount is from birr 1 to birr 1000,
 $r_2 = 2.8$ when the transaction amount is from birr 1001 to birr 2000,

r3=3.9 when the transaction amount is from birr 2001 to birr 3000,
 r4=5 when the transaction amount is from birr 3001 to birr 4000,
 r5=6.1 when the transaction amount is from birr 4001 to birr 5000 and
 r6=6.9 when the transaction amount is from birr 5001 to birr 6000)

n_c = Number of transactions (vouchers)

4. E = Commission from direct top-up (D) + commission from indirect top-up (I)

$$E = 0.04v_{xy} n_{xy} + 0.02 v_{xz} n_{xz}$$

where, 0.04= Commission rate for D and 0.02 is for I

v_{xy} = Value (amount) of direct top-ups

n_{xy} = Number of direct top-ups

v_{xz} = Value (amount) of indirect top-ups

n_{xz} = Number of indirect top-ups

5. Commission from other (admin) services, S

$$S = B + P + L + S + M = 0.24 (n_{s1} + n_{s2} + n_{s3} + n_{s4}) + 0.35n_{s5}$$

Where, B, P, L, S, M = Commissions from balance inquiry, PIN change, language change, secret word change and mini-statement request respectively

0.24 = Commission rate in birr for B, P, L, S and 0.35 birr for M

$n_{s1} + n_{s2} + n_{s3} + n_{s4}$ = Number of transactions for B, P, L and S respectively

I. Factors that affect viability of the M-BIRR MMS business model for Agents

A. Dependent variable, Y, = Viability of the M-BIRR MMS business model for Agents

$$Y = B_1X + B_2Z + B_3E + B_4T + B_5O$$

Where, B_1, B_2, B_3, B_4 and B_5 are coefficients

X, Z, T, E and O are independent variables with:

X = Amount of agent commission from the M-BIRR MMS

R = Role related factors

T= Time specific factors

E = Exogenous variable

O= Other factors

B. Independent Variables

1. Amount of(agent's) commission (revenue) from the M-BIRR MMS
(from both financial and non-financial transactions), X

$$X = b_1t + b_2w + b_3V + b_4E + b_5S$$

- Transfer, t
- Withdrawal, w
- Money voucher, V
- E-Vouchers (mobile top-ups), E
- Other transactions, S

2. Role related factors , Z,

$$Z = b_1u + b_2i + b_3f$$

- Upfront capital , u
- Liquidity management, i
- Staff and space, f

3. Exogenous variables, E

$$E = b_1s + b_2r + b_3e$$

- System reliability, s
- Security risk, r
- Effect on other agent business, e

4. Time specific factors, T

$$T = b_1a + b_2g + b_3d + b_4v + b_5k$$

- Adequate revenue at start up, a
- Major (anticipated) costs with growth, g
- (fragmented) demand among agents, d
- Adequate (M-BIRR) MMS availability for subscribers to utilize their money deposited in their (M-BIRR) mobile accounts, v
- Accessibility of the M-BIRR MMS for customers/accessibility/availability of (the M-BIRR) cash-in/cash-out service outlets, k

5. Other factors, O

$$O = b_1p + b_2m + b_3c + b_4n + b_5h + b_6q + b_7l + b_8j$$

- Capital tie-up cost, p
- Agent physical proximity to MFI ('s M-BIRR MMS providing) branch, m
- (travel cost) transport cost to and from MFI branch (to replenish agent MM deposit), c
- Time spent for travel to and from MFI branch (to replenish agent MM deposit), n
- (Level of) customer awareness about the M-BIRR MMS, h

- Marketing and promotions of the M-BIRR MMS by the M-BIRR MMS providers, q
- Individual mobile account balance limits, l
- Daily debit limits of MM accounts, j

II. Factors that affect viability of the M-BIRR MMS business model for MFIs

A. Dependent variable, viability of the M-BIRR MMS for MFIs, Y

$$Y = B_1C + B_2R + B_3E + B_4T + B_5O$$

Where B_1, B_2, B_3, B_4 and B_5 are coefficients

C, R, T, E and O are independent variables with:

C = Amount of MFI commission from the M-BIRR MMS

R = Role related factors

T = Time specific factors

E = Exogenous variable

O = Other factors

B. Independent variables

1. Amount of MFI commission from the M-BIRR MMS, C

$$C = b_1T + b_2W + b_3V + b_4E + b_5S$$

Where,

- Transfer, t
- Withdrawal, w

- Money voucher, V
- E-Vouchers (mobile top-ups), E
- Other transactions, S

2. Role related factors, R

$$R = b_1u + b_2i + b_3s$$

Where,

- Upfront capital , u
- Liquidity management, i
- Staff and space, s

3. Exogenous factors, E

$$E = b_1r + b_2s + b_3e$$

Where

- System reliability, s
- Security risk, r
- Effect on other agent business, e

4. Time specific factors, T

$$T = b_1r + b_2g + b_3d + b_4v + b_5k$$

Where,

- Adequate revenue at start up, r
- Major (anticipated) costs with growth, g
- (fragmented) demand among at start up, d
- Adequate (M-BIRR) MMS availability for subscribers to utilize their money deposited in their (M-BIRR) mobile accounts, v
- Accessibility of the M-BIRR MMS for customers/accessibility/availability of (the M-BIRR) cash-in/cash-out service outlets, k

5. Other factors, O

$$O = b_1g + b_2d + b_3a + b_4p + b_5m + b_6n$$

Where,

- Geographical coverage of the service, g
- Deposits mobilized through M-BIRR, d
- (Level of) customer awareness about the M-BIRR MMS, a
- Marketing and promotions of the M-BIRR MMS, p
- Individual's maximum mobile account balance limits, m
- Daily debit limits of MM accounts, n

3.5.3. Likert Scale

Likert scale was used to rate the level of significance of 24 factors for agents and 29 factors for MFIs categorized under 5 major variables that affect the viability of the M-BIRR MMS business model for agents and MFIs in Ethiopia. Determinants of agent and MFI revenue were analyzed using a Likert scale. The scale ranges from 1 to 5 scale points. In the scale, 1 represented highest significance of the factor; 2 represented significance of the factor; 3 as neutral factor; 4 represented lower significance of the factor; and 5 represented least significance of the factor in determining the viability of the M-BIRR MMS business model for agents and MFIs.

In addition, qualitative data was collected through independent structured interviews with key informants selected from the TP, MFIs, the financial regulator, other financial institutions (commercial banks and other MFIs not involved in the M-BIRR MMS provision), the MNO, active M-BIRR agents, previous M-BIRR agents and non-agents. The primary data obtained from key informants was systematically recorded and analyzed.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter has two sections, namely: results and discussion sections. The results section describes the results and findings of the descriptive statistics, the agent/MFI revenue model analysis and the Likert Scale analysis of the study. The discussion section presents critical and summarized views of the researcher based on the findings of the study. This section also discusses the experience of the researcher with regard to the M-BIRR MMS experiences of the 3 sample MFIs and agents in detail.

4.1. Results

The M-BIRR agent/MFI revenue model analysis was made by using the agent/MFI revenue model developed based on secondary data obtained from the 3 sample MFIs and 12 sample agents and the secondary data on the 12 months M-BIRR MMS customers' transactions obtained from the MFIs. The model was developed based on the end user service pricing, fees, and actual M-BIRR transactions and commissions earned by the MFIs, agents and the TP.

4.1.1. The Viability of the M-BIRR MMS Business Model for Agents Results

The analysis on the viability of the M-BIRR MMS business model for agents was made by using the below equation developed by the researcher.

$$Y = B_1X + B_2Z + B_3E + B_4T + B_5O$$

Where, B_1, B_2, B_3, B_4 and B_5 are coefficients

X, Z, T, E and O are independent variables with

Y = Viability of the M-BIRR MMS Business Model for Agents

X = amount of agent commission from the M-BIRR MMS

R = role related factors

T= time specific factors

E = exogenous variable

O= other factors

The analysis on the viability of the M-BIRR MMS business model for agents was made on five major variables, such as: the amount of agents' revenue from the M-BIRR MMS; role related factors, such as: upfront capital requirement, liquidity management and staff and space; exogenous variables, such as: security risk, system reliability, and effect on other agent businesses; time specific factors, such as: adequate revenue at start up, major costs of growth, fragmented demand among agents, availability and accessibility of adequate mobile money services for customers to utilize their mobile money deposits; and other factors, including: the opportunity cost of capital, agent's proximity to MFI branches, transport costs to replenish deposits, time spent to replenish deposits, level of customer awareness, promotion and other marketing activities, the NBE mobile and agent banking regulation.

The analysis was further made on 29 factors categorized under the five major variables that have been identified to affect the viability of the M-BIRR MMS business model for agents. Each factor was rated by the 12 sample agents on a Likert scale ranging from 1 to 5 scale points. In the scale, 1 represented highest significance of the factor; 2 represented significance of the factor; 3 as neutral factor; 4 represented lower significance of the factor; and 5 represented least significance of the factor in determining the viability of the M-BIRR MMS business model for agents.

The study's findings from the analysis on each of the five major variables that affect the viability of the M-BIRR MMS business model for agents are presented below.

4.1.1.1. Amount of Agent Revenue from the M-BIRR Mobile Money Service Findings

According to the study results, the amount of agents' revenue from the M-BIRR MMS depends on 5 factors, such as: the amount of commissions earned from mobile money transfers, withdrawals, mobile air time top ups, money vouchers and administrative

services, such as: PIN changes, language changes, secret word changes and mini-statement requests.

The result of the study shows that the amount of agents' revenue from the M-BIRR MMS is the highest significant factor in determining the viability of the M-BIRR MMS for agents, with the score of 4.83. The descriptive statistics percentage analysis shows that money transfer accounts for 0.58% of the commission for agents while withdrawal, money voucher, mobile top-ups and other services contribute 0.73%, 0.03%, 96.30% and 2.35% respectively. The intensity of these 5 factors is converted on the basis of the Likert scale score of the dependent variable. In this case the amount of agent revenue, by taking in to account the relative weights of each of the independent variables that affect agents' revenue from the M-BIRR MMS to find the coefficients associated with each factor in the agent revenue equation.

The result of the agent revenue model shows that agents' revenue from the M-BIRR MMS is highly significantly influenced by their commission earnings from mobile top-ups. Accordingly the equation for agent revenue looks as follows:

$$X = 0.14t + 0.18w + 0.01V + 23.56E + 0.57S$$

Where,

- Amount of agent revenue, X
- Transfer, t
- Withdrawal, w
- Money voucher, V
- E-Vouchers (mobile top-ups), E
- Other transactions, S

If direct and indirect top-ups are treated separately, the agent revenue equation will be changed with direct top-ups accounting 25.89%, and indirect top-ups 73.12% contributions to agents' total commissions as per the descriptive analysis result; and the new agent revenue equation looks as follows with 6 independent variables; where direct top-up, D and indirect top-up, I:

$$X = 0.17t + 0.21w + 0.01V + 7.5D + 20.4I + 0.68S$$

This new equation reveals that agents' commission from the M-BIRR MMS is highly significantly depend on indirect top-ups, which is nFtFt.

4.1.1.2. Analysis on Role Related Factors

Five factors, such as: upfront capital requirement, liquidity management and requirement for additional staff and space were classified under role related factors and analyzed in the study.

The results of the analysis revealed that, upfront capital requirement and the need to hire additional staffs at startup of the service are considered as neutral factors. The respective scores of the two factors are 2.75 and 2.5. However, the initial investment required to start the M-BIRR MMS business for agents has higher significance in determining the viability of the M-BIRR business model for agents with the score of 3.25. On the basis of the findings of the research, the equation for role related factors is depicted as follows:

$$Z = 2.75u + 2.63i + 2.5f$$

Where,

- Role related factors, Z
- Upfront capital , u
- Liquidity management, i
- Staff and space, f

4.1.1.3. Exogenous Variable Analysis

In the study, the factors included and analyzed under the exogenous variable are security risk, system reliability, and effect on other agent businesses. The results of the analysis show that exogenous factors are significant in determining the viability of the M-BIRR MMS business model for agents with the average score of 3.52. Reliability of the M-BIRR MMS system is regarded as having the highest significance with the score of 4.47. The effect of providing the M-BIRR MMS on other businesses of agents is rated as having higher significance with the score of 3.42 points while security risk, including robbery is

considered as a neutral factor with the score of 2.75. According to the findings of the study, the equation for exogenous factors for agents is presented as follows.

$$E = 2.75s + 4.42r + 3.42e$$

Where,

- Exogenous factors, E
- System reliability, s
- Security risk, r
- Effect on other agent business, e

4.1.1.4. Time Specific Factors

According to the results of the study, the time specific variable depends on adequate revenue at start up, major costs with growth, fragmented demand among agents at start up, availability and accessibility of adequate mobile money services for customers to utilize their mobile money deposits during startups. The results of the study analysis revealed that, time specific factors have higher significance in determining the viability of the M-BIRR MMS business model for the sample agents with the average score of 3.6 points. Accessibility of the M-BIRR MMS and availability of adequate number of the M-BIRR services have higher significance with the respective scores of 4.67 and 4.25 points. Having adequate revenue from the M-BIRR MMS during its start-up is rated as having higher significance for the sample respondents with the score of 4 points. Whereas fragmented demand across wide spread agents at start up and anticipated costs that come associated with the growth of the M-BIRR MMS like requirement for hiring additional staffs and space are considered as neutral factors with the scores of 3 and 3.12, respectively. Based on the analysis of the study, the equation for time specific factors is depicted as:

$$T = 4a + 3.17g + 3d + 4.25v + 4.67k$$

Where,

- Adequate revenue at start up, a
- Major (anticipated) costs with growth, g
- (fragmented) demand among agents, d

- Adequate (M-BIRR) MMS availability for subscribers to utilize their money deposited in their (M-BIRR) mobile accounts, v
- Accessibility of the M-BIRR MMS for customers/accessibility/availability of (the M-BIRR) cash-in/cash-out service outlets, k

4.1.1.5. Other Factors

In the study, eight factors, including: the opportunity cost of capital, agent’s proximity to MFI branches, transport costs to replenish deposits, time spent to replenish deposits, level of customer awareness, promotion and other marketing activities, the NBE mobile and agent banking regulation (account balance limits, minimum requirements for agents) were classified and analyzed as other variables. According to the results of the study, the other variables have higher significance in determining the viability of the M-BIRR MMS business model for the agents with the average score of 3.5 points in the agent revenue model equation.

Among the eight factors analyzed under the other variable equation, the level of customers’ awareness about the M-BIRR MMS, the geographical coverage of the service to allow customers of the three MFIs to conduct MMS transactions among each other, and promotional activities conducted by MFIs and the technology provider have the highest significance with the respective scores of 4.42, 4.12 and 4.42 points on the respondents ratings. On the other hand, the opportunity cost of the money invested to provide the M-BIRR MMS by agents; the time they spent for travelling to and from their nearest MFI branch, and the agents’ proximity to their affiliated MFI branches have higher significance in the other variables equation with the scores of 3.92, 3.83 and 3.58 points, respectively. The maximum account balance limit set on individual mobile money accounts, cost of transport for travel to and from MFI branches as well as the daily debit limit on subscribers mobile money accounts are considered as having low significance by the sample respondents with the scores of 2.67, 2.42 and 2.08 points respectively. According to this finding, the equation for other factors is presented as follows:

$$O= 3.92p + 3.59m + 2.42c + 3.83n + 4.42h + 4.42q + 4.42q + 2.08l + 2.67j$$

Where,

- Capital tie-up cost, p
- Agent physical proximity to MFI's (M-BIRR MMS providing) branch, m
- (travel cost) transport cost to and from MFI branch (to replenish agent MM deposit), c
- Time spent for travel to and from MFI branch (to replenish agent MM deposit), n
- (Level of) customer awareness about the M-BIRR MMS, h
- Marketing and promotions of the M-BIRR MMS by the M-BIRR MMS providers, q
- Individual mobile account balance limits, l
- Daily debit limits of MM accounts, j

Finally, according to the joint findings of the agent revenue model and the Likert Scale analysis, the amount of agents' revenue from the M-BIRR MMS is the highest significant variable in the viability of the M-BIRR MMS business model for agents' equation with the highest score of 4.83. On the other hand, time specific, exogenous and other factors have higher significance in determining the viability of the M-BIRR model for agents with the score of 3.82, 3.52 and 3.5 points respectively in the model. Whereas role related factors are rated as neutral factors by the sample respondents. Accordingly, the equation for the viability of the M-BIRR MMS business model for agents is depicted below.

$$Y = 4.83X + 2.63Z + 3.52E + 3.82T + 3.5O$$

Where, X, Z, T, E and O are independent variables with

X = amount of agent commission from the M-BIRR MMS

R = role related factors

T= time specific factors

E = exogenous variable

O= other factors

4.1.1.6. Descriptive Statistics

The descriptive analysis was made using the maximum, minimum and average commissions earned by the sample agents from the M-BIRR MMS as well as the frequencies of each type of mobile money transactions. The descriptive statistics analysis revealed that the average amount of agents' revenue from the M-BIRR MMS is birr 695 per month, while the average commission for agents is birr 213; whereas, the maximum amount of their monthly commission is birr 2799 with a standard deviation of birr 692. The maximum, minimum and average monthly commissions of the sample agents of each of the 3 sample MFIs is presented in Table 1 below.

Table 1: Agents' commissions in birr

	N	Minimum	Maximum	Mean	Std. Deviation
Commission	12	213.2000	2799.8000	695.054833	692.9106899
Valid N (listwise)	12				

According to the descriptive analysis results, FtFt accounts for about 55% from the total transactions for agents and around 71% from the total commissions earned from the M-BIRR MMS transactions. Out of the FtFt indirect top-ups contributed, about 99% from both the number of transactions by agents and their commissions. On the other hand, nFtFt accounts 45% from the number of total transactions and about 28% from total commissions earned by the sample agents. From the nFtFt, direct top-ups take the lions share in terms of both the number of transactions and amount of commissions. The analysis revealed that direct top-ups account for about 87% of the number of transactions and 90% of the commissions from nFtFt earned by the sample agents. In general, top ups account for about 94% of the total number of transactions and 96% of the total commissions for agents from the M-BIRR MMS. The sample agents' commissions and number of transactions from FtFt and nFtFt is shown in Table 2 below.

Table 2 Agents' commissions (in percent) and number of transactions from FtFt and nFtFt

	FtFt				nFtFt			
	No. of trans.	%	Comm. amount	%	No. of trans.	%	Comm. amount	%
Agent	6047.00	0.55	6713.33	0.71	4966.00	0.45	2718.71	0.29

4.1.1.7. Findings from Sample Key Informants

The result of the analysis on the key information obtained from sample key informants revealed that, in the long run agents will lose their earnings from top ups due to the reason that most customers would prefer to top up directly from their phones. This will minimize the agents' commissions from indirect top ups. In addition, the commissions from direct top ups is limited only to 18 months of the customers' subscription. The sample key informants also have the fear of losing their earnings from the sale of ethiotelecom's mobile scratch cards in the long run with the growth of the M-BIRR service. On the other hand, the sample key informants revealed that agents could benefit from increased visitors due to the provision of the M-BIRR MMS. Most key informants agree that agents might get new prospects for their non M-BIRR businesses from M-BIRR visitors.

Almost all key sample informants interviewed agreed that there should be clear procedures in place to safeguard agents from potential robbery and other security risks even though there are no such cases so far reported. The sample key informants also revealed that, currently, the agents are not getting satisfactory commissions from the M-BIRR MMS due to: lack of public awareness about the service, lack of adequate number of the M-BIRR mobile services like salary and bill payments, and due to lack of sufficient number of MFI branches and agents that provide customer registration and cash in and cash out MMSs. In addition, the lack of inter MFI transactions that allow customers of different MFIs to transact among each other is considered as having higher significance for the growth and expansion of the M-BIRR MMS and its feasibility for the agents.

4.1.2. The Viability of the M-BIRR MMS Business Model for MFIs

Samples of nine branch employees (3 from each MFI) and 6 senior management staffs (2 from each MFI) who are closely working on the M-BIRR MMS were asked to rate 24 factors categorized under five major variables regarding their significance in determining the viability of the M-BIRR MMS business model for MFIs. The significance of each of the 24 factors was rated on a Likert scale of 1 to 5; with 1 representing least significance of the factor, 2 representing lower significance, 3 as neutral factor, 4 representing higher significance of the factor and 5 representing highest significance. In the study, the viability of the M-BIRR MMS business model for MFIs depends on the five major variables, such as: the amount of agents' revenue from the M-BIRR MMS, role related factors, exogenous variables, time specific factors, and other factors.

According to the research findings, the equation for the viability of the M-BIRR MMS business model for MFIs is depicted as follows:

$$Y = 4.67C + 2.67R + 4.17E + 3.57T + 3.47O$$

Where,

Y is dependent variable, viability of the M-BIRR MMS business model for MFIs

B₁, B₂, B₃, B₄ and B₅ are coefficients

C, R, T, E and O are independent variables with:

C = amount of MFI commission from the M-BIRR MMS

R = role related factors

T = time specific factors

E = exogenous variable

O = other factors

The results of the study revealed that, among the 5 major variables, amount of commission revenue from the M-BIRR MMS has the highest significance in determining the viability

of the M-BIRR MMS for MFIs with the average score of 4.67 points. Exogenous variables are also highly significant with the score of 4.17 points. The other highly significant variable is the role related factors that scored 4.12 average points. On the basis of the analysis of the study, the time specific variable and the other factors have higher significance with respective scores of 3.57 and 3.47 points.

4.1.2.1. The Amount of the MFIs' Revenue

According to the study results, the amount of MFIs' revenue from the M-BIRR MMS is the sum of MFI commissions from transfers, withdrawals, top ups, money voucher and from administrative services, such as: PIN change, language change, secret word change and mini-statement request. According to the findings of the MFI revenue model analysis, the amount of MFIs revenue from the M-BIRR MMS is the most significant factor that determines the viability of the M-BIRR MMS business model for the MFIs with the score of 4.67 points.

The study results show that, the amount of commission revenue from the M-BIRR MMS has the highest significance for the MFIs in determining the viability of the M-BIRR MMS business model with the score of 4.67 points. The descriptive statistics percentage analysis shows that, money transfer accounts for 0.01% of the commission for MFIs; while withdrawals, money voucher, mobile top-ups and other services contribute 2.42%, 0.07%, 89.78% and 7.73%, respectively. The intensity of these 5 factors is converted on the basis of the Likert scale score of the dependent variables. In this case, the amount of MFI revenue, by taking in to account the relative weights of each of the independent variables that affect MFIs' revenue from the M-BIRR MMS to find the coefficients associated with each factor in the MFI revenue equation.

The result of the MFI revenue model shows that MFIs' revenue from the M-BIRR MMS is highly significantly influenced by their commission earnings from mobile top-ups.

According to the research findings the MFI revenue equation is:

$$C = 0.003T + 0.56w + 0.02V + 20.96E + 1.81S$$

Where,

- Amount of MFI commission, C
- Transfer, t
- Withdrawal, w
- Money voucher, V
- E-Vouchers (mobile top-ups), E
- Other transactions, S

Further analysis of the model revealed that, if direct and indirect top-ups are treated separately, the MFI revenue equation will be changed with the direct top-ups accounting to 50.59%; and indirect top-ups to 39.19% contributions to MFIs' total commissions as per the descriptive analysis result. The new MFI revenue equation looks as follows with 6 independent variables, where Direct Top-Up, D and Indirect Top-Up, I:

$$X = b_1t + b_2w + b_3V + b_4D + b_5I + b_6S$$

$$X = 0.03t + 0.68w + 0.02V + 14.18D + 10.98I + 2.17S$$

This new equation revealed that, the MFIs' commission from the M-BIRR MMS is highly significantly depend on the direct top-ups, which is a FtFt unlike for the agents.

4.1.2.2. Role Related Factors

In the study, the factors classified and analyzed under role related variable equation are upfront capital requirement, liquidity management and the requirement for additional staffs and space.

According to the findings of the analysis, among the role related factors, liquidity management and the requirement for additional staffs and space to run the M-BIRR MMS are found to be neutral factors in determining the viability of the M-BIRR MMS business model for the MFIs with the average score of 2.67 points. Based on the basis of the study findings, the equation for role related variable is presented as follows:

$$R = b_1u + b_2l + b_3s$$

$$R = 2.5u + 2.84l + 2.67s$$

Where,

- Role related factors, R
- Upfront capital , u
- Liquidity management, i
- Staff and space, s

4.1.2.3. Exogenous Variables

On the basis of the model developed by the researcher, the factors classified and analyzed under the exogenous variable include: security risk, system reliability, and effect on other MFIs' businesses. According to the results of the analysis, among the factors analyzed under exogenous variable, reliability of the M-BIRR MMS system has the significance in determining the viability of the M-BIRR MMS for the MFIs by attaining the highest score of 5 points. The effect of (providing) the M-BIRR MMS on other businesses of the MFIs' is also the other highest significant variable for MFIs with the score of 4 points. Security risk, on the other hand, has higher significance for the MFIs with the score of 3.5. According to the results of the analysis, the equation for the exogenous variable is found to be as:

$$E = 3.5r + 5s + 4e$$

Where,

- Exogenous variable, E
- System reliability, s
- Security risk, r
- Effect on other agent business, e

4.1.2.4. Analysis on the Time Specific Factors

The factors categorized and analyzed under time specific variable include: adequate revenue at start up, major costs of growth, fragmented demand at start up, availability and accessibility of adequate mobile money services for customers to utilize their mobile money deposits at start up, accessibility of the M-BIRR MMS at anytime and anywhere

where there is (ethiotelecom's) mobile network coverage, and availability of adequate number of cash in and cash out outlets.

Based on the findings of the analysis, accessibility of the M-BIRR MMS and availability of adequate number of M-BIRR services for subscribers' have the highest significance in determining the viability of the M-BIRR MMS business model for the MFIs with respective scores 4.5 and 4.33 points. On the other hand, fragmented demand across wide spread at start up and anticipated costs that come with the growth of the (M-BIRR) MMS have higher significance in the the M-BIRR MMS business model for the MFIs with the respective scores of 3.33 and 3.17 points. The amount of revenue from the M-BIRR MMS at its startup is considered as a neutral factor in determining the viability of the M-BIRR MMS for MFIs with the score of 2.5. According to the results of the analysis, the equation for time specific variable is represented as follows:

$$T = 2.5r + 3.17g + 3.33d + 4.33v + 4.5k$$

Where,

- Time specific factors, T
- Adequate revenue at start up, r
- Major (anticipated) costs with growth, g
- (fragmented) demand among at start up, d
- Adequate (M-BIRR) MMS availability for subscribers to utilize their money deposited in their (M-BIRR) mobile accounts, v
- Accessibility of the M-BIRR MMS for customers/accessibility/availability of (the M-BIRR) cash-in/cash-out service outlets, k

4.1.2.5. Other Factors

The factors categorized under other variables in the equation of the MFI model are: opportunity cost of capital, deposits mobilized through the M-BIRR MMS, level of customer awareness, the geographic coverage of the service, promotion and other

marketing activities and the NBE mobile and agent banking regulation (account balance limits and minimum requirements for agents).

Based on the findings of the study, the three highly significant factors that are rated equally with the average score of 4 points in determining the viability of the M-BIRR MMS business model for MFIs are the level of customer awareness about the M-BIRR MMS, the geographical coverage of the M-BIRR MMS to allow customers of the three MFIs to transact among each other and deposits mobilized through the M-BIRR MMS. Promotion of the (M-BIRR) service by MFIs and the technology provider is rated as having higher significance in determining the viability of the M-BIRR MMS for MFIs by attaining 3.83 score. The maximum account balance limit set on individuals' MM accounts is rated as a neutral factor by all MFI respondents'. Whereas, the daily debit limit of subscribers' MM accounts is rated as having lower significance for the MFIs by scoring 2.33 points. According to the findings of the analysis, the equation for other factors that affect the viability of the M-BIRR MMS business model is depicted as follows:

$$O = 4g + 4d + 4a + 3.83p + 2.67m + 2.33n$$

$$O = 4(g + d + a) + 3.83p + 2.67m + 2.33n$$

Where,

- Other factors, O
- Geographical coverage of the service, g
- Deposits mobilized through M-BIRR, d
- (Level of) customer awareness about the M-BIRR MMS, a
- Marketing and promotions of the M-BIRR MMS, p
- Individual's maximum mobile account balance limits, m
- Daily debit limits of MM accounts, n

4.2.6. Descriptive Statistics

The descriptive statistics results show that the average amount of ACSI's, ADCSI's and OCSSCO's branches/cashiers revenue from the M-BIRR MMS is 8.76 birr, 17.80 birr and 38.45 birr respectively; while the average revenue of the same three MFIs is reported to be birr 21.67 per month. The maximum amount of the monthly commission for ACSI, ADCSI and OCSSCO cashiers is birr 11.00, birr 49.83, and birr 114.33, respectively; while the minimum amount of commission is birr 6.51, birr 36.17 and birr 3.29, respectively. The 3 MFIs average, minimum and maximum monthly commissions are presented in Table 3 below.

Table 3: MFIs monthly commissions in birr

	ACSI	ADCSI	OCSCO	ALL
Max	11	49.83	114.33	114.33
Min	6.51	36.17	3.29	3.29
Av.	8.76	17.80	38.45	21.67

According to the descriptive analysis results, the FtFt accounts for about 28% from the total number of transactions and about 42% from the total commissions earned from the M-BIRR MMS transactions by the MFIs. Out of the FtFt, indirect top-ups contributed around 29% of the number of transactions and 39% of the commissions of MFIs. On the one hand, nFtFt accounts for about 73% from the number of total transactions and 58% from total commissions earned by the MFIs. The study also revealed that, direct top ups account for about 84% of the number of nFtFt and 87% of the commissions earned by the MFIs. Indirect top up, on the other hand, accounts for about 98% of the total number of transactions and 94% of the total commissions earned from the total FtFt by the MFIs. The average monthly commissions for all of the 3 MFIs by each type of transactions are presented in Table 4 below.

Table 4: MFIs' monthly commissions by type of transaction in percent

	FtFt			nFtFt		
	Withdrawal	MV	IT	Transfer	DT	OS
cashier	5.80%	0.17%	94.03%	0.00%	86.74%	13.26%

4.1.2.6. Findings from Key Informants

Sample key informants from financial institutions (MFIs), the NBE, the MNO, agents and MMS technology providers who are knowledgeable in the introduction and development of Mobile and Agent Banking Services in Ethiopia were asked to give their (expert) opinions in the development status of Mobile and Agent Banking Services in Ethiopia by giving a particular emphasis to the M-BIRR MMS experience of the three MFIs. The information from the key informants was collected using structured interview questionnaires. The primary data collected from key informants addressed the following issues:

- The development status of microfinance institutions and their contributions in the introduction and promotion of Mobile and Agent Banking Services in Ethiopia;
- Mobile and Agent Banking Services regulatory limitations and challenges in Ethiopia;
The viability of the M-BIRR MMS Business Model for MFIs and Agents in Ethiopia;
- Factors that affect the viability of the M-BIRR MMS Business Model for MFIs and Agents in Ethiopia;
- Determinants of agent/MFI revenue from (the M-BIRR) MMSs;
- Various factors and their level of significance that affect different types of MM transactions such as money transfer, withdrawals, money voucher, mobile top-ups and other transactions, such as: PIN changes, changing secret word, language changes, balance requests and mini-statement request by MMS subscribers;
- The relationship of financial institutions (MFIs), MM technology service providers, MNOs, MM Agents and financial (MMS) regulators in Ethiopia;
- The current status and the long term effect of the development and provision of Mobile and Agent Banking Services for financial institutions (banks and MFIs), regulators, MNOs, agents and MMS technology providers in Ethiopia;
- Factors that motivate financial institutions (MFIs), regulators, MNOs, agents and MMS technology providers in the development and provision of Mobile and Agent Banking Services in Ethiopia;

- Factors that affect the introduction, development and promotion of Mobile and Agent Banking Services in Ethiopia; and
- The roles, responsibilities and limits of financial institutions (MFIs), regulators, MNOs, agents and MMS technology providers in the development and provision of Mobile and Agent Banking Services in Ethiopia.

According to the information obtained from sample key informants, the NBE has been concerned with the relationship between/among different parties involved in (the M-BIR MMS business model) and it is in the process of revising its “Mobile and Agent Banking Services Regulation” directive which was issued on December 31st, 2012. Recently, the NBE has informed financial institutions with a letter circulated to clarify the provision stated under Article 6.2 of the same directives that deals with the relationship of financial institutions with third parties including technology service providers and telecom companies.

According to the analyzed information obtained, the NBE requires Financial Institutions to engage with technology providers (TSPs) with the objective of gradually owning the mobile and agent banking technology platform and related hardware and software infrastructures on the basis of revenue sharing or leasing arrangement only for a predefined and specific time period acceptable to the National Bank of Ethiopia. Accordingly, the NBE strictly limits TSPs in order not to engage with a continuous business with financial institutions on the basis of revenue sharing or leasing modality indefinitely. Rather, their relationship should terminate by the end of the contract/agreement period between the two parties. TSPs shall be completely deprived of access to database and datacenter unless authorized by the financial institutions only for specific period and for purposes related to system support and/or maintenance services. With regard to the relationship with MNOs, the NBE requires Financial Institutions (not TSPs) to enter into written agreement or contract with Telecom Companies for the provision of mobile and agent banking services. In addition, the data center and related infrastructures which are used for the provision of mobile and agent banking service shall be in-house in the premises of financial institutions.

According to the sample key informants, all the 3 MFIs are currently in the process of revising their agreements with the technology provider (M-BIRR ICT Services PLC) in

order to be in line with the regulatory requirements since their current relationship with the technology provider is not in line with the NBE's requirements. In addition, the agreement between the technology provider and the MNO is seen as invalid according to the key informants. The MFIs are reported to be planning to enter in to a new agreement with the MNO to comply with the NBE's regulation.

On the basis of the assessment findings, deposits mobilized through the M-BIRR service is a significant factor for MFIs with regard to the viability of a MMS business model for MFIs. The MFIs are particularly interested with deposits generated through MMSs due to its non-interest bearing nature. Sample key informants revealed that MMSs has a positive impact in improving the business processes of financial institutions by significantly reducing their operation costs, such as costs associated with opening of additional branch offices since MMSs are branchless form of financial services.

According to the sample key informants, in a MMS (the M-BIRR) business model, an inter-financial institutions/MFIs relationship is a key issue for its success in terms of expanding the geographic coverage of the service(including the growth of subscribers and customer transactions) as well as for clearing and settlement of inter-MFIs' transactions. On the basis of the sample analysed information source, the clearing and settlement responsibility (whether nominating a third party /as a clearing bank, NBE as a clearing agent, or one of the MFIs or the TSP to act as a clearing house) is not yet clear in the (M-BIRR model) as well as in the NBE's regulation; and no system is in place yet. This is considered as one of the main factors that inhibit the growth of the M-BIRR MMS and a regulatory challenge that is not yet clearly addressed.

In addition, responsibilities for marketing and promotion of the service as well as customer support activities are also reported as not clearly mentioned in the NBE's regulation as per the key informants.

The researcher has also learned from the sample key informants that the NBE is in the process of revising the Mobile and Agent Banking Services regulation to address the above mentioned regulatory challenges.

4.2. Discussion

The M-BIRR MMS business model is a revenue sharing model in which the technology provider, M-BIRR ICT Services PLC, and the agent/MFI who initially registered the (MMS) subscriber shares the revenue collected from subscribers as service fees. The service charges paid by the (M-BIRR MMS) subscribers for all financial transactions is shared by the technology provider and either the MFI or the agent (who initially registered the subscriber) for a period of 18 months (following the customer’s subscription) for all non-face-to-face transactions (nFtFt) and for unlimited period of time for all face – to-face transactions (FtFt).

In the case of non-financial transactions or administrative services, such as: balance inquiries, language changes, PIN changes, secret word changes and mini-statement requests; the agent/MFI commission is limited to a period of 18 months following customers’ subscriptions. After 18 months of subscription any fees collected from customers in the form of service charges for all nFtFt as well as for administrative services goes to the technology provider’s account. However, the technology provider has an obligation to pay ethiotelecom (the mobile network operator, MNO) on all transactions whether it is financial or non-financial, FtFt or nFtFt.

The three MFIs have 1070 M-BIRR MMS subscribers. Out of which 614 are registered by agents, and the remaining 456 are registered at the branches of the MFIs. The 3 MFIs mobilized about 250, 000 birr non-interest bearing deposit through the M-BIRR MMS.

Table 5: number of M-BIRR MMS subscribers

	Agent	Branch	Total
ACSI	177	72	249
ADCSI	280	120	400
OCSSCO	157	264	421
Total	614	456	1070

Table 6: Amount of deposit mobilized by the M-BIRR MMS in birr

	Amount of Deposit
ACSI	19653.39
ADCSI	185553.4
OCSSCO	43239.76
Total	248446.57

4.2.1. Viability of the M-BIRR MMS Business Model for Agents and MFIs

The viability of the M-BIRR MMS business model for agents and MFIs depends on amount of agent's/MFI's revenue from the M-BIRR MMS, role related factors, exogenous factors, time specific factors and other factors categorized under other variables.

4.2.2. Amount of Agent/MFI Revenue

The amount of agent's/MFI's revenue from the M-BIRR MMS is the sum of agent /MFI commissions from transfers, withdrawals, top ups, money vouchers and from administrative services, such as: PIN changes, language changes, secret word changes and mini-statement requests. The amount of revenue is the highest significant factor for both the agents and the MFIs in determining the viability of the M-BIRR MMS business model for agents/MFIs.

4.2.3. Role-Related Factors

Role-related factors associated with signing up clients, conducting cash-in/cash-out transactions, and doing other typical functions such as upfront capital requirement, liquidity management, staff and space requirements. Role related factors are rated as the least significant factors in determining the viability of the M-BIRR MMS business model for both agents and MFIs. However, acting as an agent can be a capital intensive business. M-BIRR agents need to deposit a minimum of 10,000 birr initially; and they are required to have mobile phone apparatus and a SIM card. They are also required to recharge a minimum of 25 birr mobile credit to keep their SIM active even though it doesn't need to have a mobile credit to access the M-BIRR service agents for replenishing their mobile accounts when their deposits reach 2000 birr. This requirement to have balanced cash on

hand and electronic float to handle customers' cash-in/cash-out transactions without any interruptions which ties up agents' money to do other non M-BIRR business, like buying and selling of mobile scratch cards.

4.2.4. Exogenous Factors

Exogenous factors, such as: system reliability, security risk and the effect of the M-BIRR service on other agents' business are beyond the agent's immediate control. Exogenous factors are the second most important factors for MFIs; and they are ranked third for agents according to their importance in determining the viability of the M-BIRR MMS business model for agents/MFIs. System reliability is the most important factor for both agents and MFIs among all other factors classified under exogenous variable. Even though security risk is considered as having high importance for MFIs, it is rated as a neutral factor by agents with no security risk cases reported so far. The effect of the M-BIRR service on other businesses of agents and MFIs is a very important factor for both the agents and the MFIs. The effect was positively taken by many key sample informants as it is anticipated to bring new customers for other non M-BIRR business of both the MFIs and agents. For the MFIs it is considered as a way to mobilize non-interest bearing deposits. Assessment results, however, revealed that some of the MFIs have a fear of losing their customers and anticipated revenues from their non M-BIRR business (like local transfers) in the long run unless the M-BIRR revenue sharing model is revised. Sample key informants revealed that, with the growth of the M-BIRR service most transactions will be nonface-to-face which allows the TP to reap all commissions accrued from all nFtFt after 18 months of customers' subscriptions. Agents also share MFIs' fear of losing their revenue from all nFtFt in the long run as well as partially from their non M-BIRR business of selling ethiotelecom's mobile scratch cards by arguing that, with the growth of the M-BIRR MMS most customers would prefer to top-up directly from their phones with no earnings after 18 months of customers' registration.

4.2.5. Time Specific Factors

Time-specific factors come into play at different times in the life cycle of a branchless MMS. These include adequate revenue at start up, major costs of growth, fragmented

demand at start up, availability and accessibility of adequate mobile money services at start up, accessibility of the M-BIRR MMS at anytime and anywhere where there is mobile network coverage and availability of adequate number of cash in and cash out outlets at start up. Time specific factors are considered as the second most significant factors for agents, and third for MFIs.

The study revealed that, both the MFIs and the agents are not generating satisfactory revenue from the M-BIRR MMS. Mobile top ups dominated their current earnings due to very small and fragmented demand for the other types of the service at start up. Top uping accounts for some 90% and 96% of the MFIs' and agents' commissions, respectively. Out of the FtFt transactions, indirect top ups account for about 94% and 99% of the MFIs' and the agents' revenues, respectively. From the nFtFts direct top up contributed 86.74% and 89.82% to MFIs and agents' revenues respectively. According to the M-BIRR business model and information obtained from sample key informants, both MFIs and agents do not get any commission from all nFtFts (which is dominated by top-ups) after 18 months of customers' registration. In addition, based on the results of the study, it is argued that in the long run, with the growth of the M-BIRR MMS, most customers would prefer for top uping directly. However, such shift from indirect to direct top uping is believed to leave agents/MFIs with no potential earning from top up. This makes the current M-BIRR business model not attractive for both the MFIs and agents.

4.2.6. Other Factors

Other factors, including: opportunity cost of capital, deposits mobilized through the M-BIRR MMS, level of customer awareness, the geographic coverage of the service, promotion and other marketing activities and the NBE mobile and agent banking regulation are ranked last by both agents and MFIs according to their importance to determine the viability of the M-BIRR MMS business model for agents/MFIs. Among other factors, that include: deposits mobilized through the M-BIRR MMS; level of customer awareness and the geographic coverage of the service are the most significant factors for the MFIs whereas capital tie up; promotion and customers' awareness are the most important factors for agents. The MFIs are highly motivated by the non-interest bearing nature of the M-BIRR deposits. According to the sample key informants, currently there is a very limited

public awareness about the M-BIRR MMS due to the absence of marketing and promotional activities officially allowed by the NBE. In addition, there is no inter-MFI links and systems in place to enable inter-MFI MM transactions which is considered as a key factor for the growth of the service.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS

5.1. Conclusions

The study assessed the development status of the MFIs and their contributions with regard to the introduction and development of Mobile and Agent Banking services in Ethiopia by focusing on the M-BIRR MMS experiences of the 3 MFIs. The study examined the effects and significance of 24 factors for MFIs and 29 factors for agents categorized under 5 major variables that determine the viability of the M-BIRR MMS business model for agents and MFIs in Ethiopia.

The 5 variables include: the amount of agent/MFI revenue from the M-BIRR MMS, role related factors, exogenous variables, time specific variables and other variables. Each factor was rated on a Likert scale from 1 to 5, with 1 representing very low significance of the factor; 2 representing low significance of the factor; 3 representing medium significance of the factor; 4 representing higher significance of the factor; and 5 representing highest significance of the factor in determining the viability of the M-BIRR MMS business model for MFIs and agents in Ethiopia.

Qualitative data was collected from sample key informants comprised of agents, MFIs, NBE, TSPs, and MNO having knowledge and experiences about Mobile and Agent Banking Services in general and the M-BIRR MMS business model in particular. Such data was collected through structured questionnaire based interviews.

The M-BIRR MMS transactions for 12 months from the 3 sample MFIs were collected from secondary sources; and analyzed by employing descriptive statistical tools, and applying an agent/MFI revenue model developed based on secondary data.

Relevant literature on MMS, including: articles, research outputs, the MFIs reports, the M-BIRR MMS operational documents used by agents, the TP and MFIs, agreements between MFIs and agents, MFIs and the TP, the TP and MNO, the NBE Mobile and Agent Banking services regulation directives were assessed.

The Mobile and Agent Banking services regulatory framework in Ethiopia including setting of conceptual definitions and new terminologies were also examined by the study.

The research findings show that the current development status of MFIs is at its early stage in introducing and promoting Mobile and Agent Banking services in Ethiopia. The MFIs contributions to the development of Mobile and Agent Banking services has been hindered by lack of relevant technical know-how and expertise; lack of well-developed telecom infrastructures , lack of adequate supply of the required Hard Ware and Soft Ware technologies', lack of clearly defined regulation to run a MMS; lack of systems in place. Lack of systems in place in particular is found to have been negatively affecting the required integration between/among MFIs operating in different regions of the country to make inter-MIFs transactions and to allow customers of different MFIs to transact among each other. Lack of clearly defined systems and rules in place for inter-MFI clearing and settlement of MM transactions; lack of public awareness about MMSs; lack of well-developed cash-in/cash-out MMS networks, including in MFI branches and agents; and lack of sufficient information regarding the viability of (the M-BIRR) MMS business model for agents and MFIs are revealed by the study as major constraints for the development of the M-BIRR MMS.

In the face all these constrains, however, the 3 sample MFIs have showed encouraging efforts and progress in introducing and promoting the Mobile and Agent Banking Services in Ethiopia.

The regulatory framework of Mobile and Agent Banking services in Ethiopia is at its very early stage of development. The MFIs and concerned agents operate following the Mobile and Agent Banking services regulation's directives issued by the NBE on December 31st, 2012. The directives include issues that are not clearly defined with inherited limitations, including the relationship of various parties involved in the provision of a MMS, such as: MNOs, TSPs, financial institutions (including MFIs and Banks), cash-in/cash-out agents, and third parties like clearing banks.

The results of the study shows that the M-BIRR MMS business model suffers from the limitations inherited in the NBE Mobile and Agent Banking services regulations directives

as well as from lack of relevant skills and technical know-how on Mobile and Agent Banking services by the MFIs.

The study revealed that the viability of the M-BIRR MMS business model for agents and MFIs depends on the existing regulatory situation on Mobile and Agent Banking services in Ethiopia as well as on specific factors such as amount of agent/MFI revenue from the M-BIRR MMS, role related factors, exogenous variables, time specific and other variables.

Among these factors, the amount of revenue earned from the M-BIRR MMS is the most significant factor, whereas role related factors are least significant in determining the viability of the M-BIRR MMS for both the MFIs and agents. For the MFIs exogenous factors are the second most important factors, while time specific factors are considered as the second most significant factors for agents. The third important factor for MFIs is time specific factors that affect the viability of the M-BIRR MMS whereas it is exogenous factor for agents. Other factors, such as: opportunity cost of capital, deposits mobilized through the M-BIRR MMS, level of customer awareness, the geographic coverage of the service, promotion and other marketing activities and the NBE mobile and agent banking regulation are ranked as the fourth important factors in determining the viability of the M-BIRR MMS business model for both agents and MFIs.

The M-BIRR MMS business model suffers from the provision stated under Article 6.2 of the NBE Mobile and Agent Banking Services directive that deals with the relationship of financial institutions with third parties, including technology service providers and telecom companies. The current scenario shows that, in the M-BIRR business model, the TP entered in to a revenue sharing agreement with the MFIs that limits the MFIs' and Agents' commissions from the service for 18 months on all FtFts following customers' subscriptions while allowing the TP to be entitled to all commission earnings from nFtFts indefinitely. In the current M-BIRR business model, it is the TP who has a contractual relationship with the MNO. However, the existing directive requires financial institutions (not TSPs) to enter into written agreement or contract with Telecom Companies for the provision of mobile and agent banking services. In the existing system, the M-BIRR data center is located in the premises of Ethiotelcom with other related infrastructures which are used for the provision of mobile and agent banking service located in the premises of

the TP, which is against the NBE's requirements.. In addition, the directive obliged TSPs to be completely deprived of access to database and datacenter unless authorized by financial institutions only for specific period and for purposes related to system support and/or maintenance services. This, however, is not found to be the case in the current M-BIRR scenario according to the findings of the study.

In conclusion, in the current M-BIRR business model the relationship between/among MFIs' to enable MM transactions between/among customers' of different MFIs as well as for clearing and settlement of payments associated with inter-MFI MM transactions are not in place. Even though the TP and the MFIs have identified and proposed clearing and settlement rules and mandate agreement templates; it has neither signed by any of the MFIs nor approved by the financial regulator yet.

5.2. Policy Implications

There are important limitations observed and reported by the MFIs in the directive. It does not cater for 'Business Customers'. Even though it does not literally mention the terms of 'Business Customer', implicitly refers to it when the directive stipulates that agents can only register 'natural' customers, i.e. not 'business customers'. The limits stipulated by the directives are adequate for individual customers but inadequate for Business customers.

However, there should be a distinction between two types of Business customers:

- The 'small business customer' (small grocery or coffee shop, small restaurant, stationary shop, etc.) and
- The 'corporate customer' (large company, Government department, NGO, flower farm, company with large amount of customers, employees or beneficiaries).

For the 'Small Business Customer' the maximum account balance may remain at 25 000 Birr. The maximum daily debit however should be increased; this is to avoid that small businesses be forced, due to this limit, to go to their local Branch to often to withdraw cash and place it on a 'traditional account'. The researcher recommends that this daily debit be increased to 12 000 Birr. It would also be advisable that small business customers be able to register to the service at an Agent and not only at a Branch. This is important to allow an

Agent to develop in his catchment area a conducive environment in which shops accept payment by M-BIRR and customers can pay for goods using the service.

For the ‘Corporate Customer’ the maximum balance of 25 000 Birr is too low for a business customer that may receive payments from a large number of customers (for instance utility companies), or a business customer that need to disburse money to a large number of employees or beneficiaries (for instance, flower farm, NGO, large factory). Therefore it is recommended that the maximum balance for a business customer be increased to 100 000 Birr and even higher for very large disbursements carried out by NGOs, government departments or other similar bodies. The maximum daily debit should also be increased substantially for two reasons:

- To allow high value withdrawal after receiving a large amount of payments
- To allow large amount of disbursements that will correspond to a high value daily debit.

It is also observed that the customer registration process is time consuming due to the customer registration form contains too many fields to write.

Agents are asking for promotion and advertising to be made to create awareness of the public about the M-BIRR MMS.

Based on the findings of the study, the researcher suggests that financial institutions in general and MFIs in Ethiopia in particular need capacity development support through relevant skills trainings on Mobile and Agent Banking Services to develop their staffs’ technical expertise and know how on mobile money technologies.

The M-BIRR MMS business model needs revision in order to comply with the Mobile and Agent Banking Services regulation in Ethiopia as well as to be viable for agents and financial institutions, including MFIs in the current period as well in the long run.

All the actors involved in the introduction and development of Mobile and Agent Banking Services in Ethiopia including MFIs, TSPs, regulators, MNO and agents need to learn from other countries’ experiences on successful mobile money service business models to develop a viable and workable model for all the actors involved.

The financial regulator in Ethiopia in consultation with all stakeholders directly and indirectly involved in the development and provision of Mobile and Agent Banking Services in Ethiopia and by taking the regulatory experiences of other countries, particularly EACs, need to make the necessary changes and clarifications in the existing Mobile and Agent Banking Services regulation's directives for smooth introduction and development of the service.

The responsible government body needs to make the necessary developments in the telecom infrastructures to accommodate the introduction and further development of Mobile and Agent Banking Services in the country.

There should be a clear and workable system and inter-MFI integration and cooperation to allow mobile money transactions among customers of different MFIs, and to make on time clearing and settlement of inter-MFI mobile money transaction payments.

The MFIs in collaboration with TSPs need to conduct marketing and promotional activities about the M-BIRR MMS to create public awareness, and to increase the number of MMS subscribers and transactions.

Developing a national network of cash-in/cash-out mobile money agent network is a key issue for the growth and success of mobile and agent banking services. The MFIs and their TP need to make the necessary efforts in recruiting and developing competent agents to provide the service conveniently to users.

Finally, even though the study is constrained by lack of previous works in the introduction and development of Mobile and Agent Banking Services in Ethiopia, it answered all the research questions it has anticipated.

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APPENDICES

APPENDIX A

Questionnaire for Agents

Dear respondent, the purpose of this study is used for the partial fulfillment of the researcher's Master's Degree program in Agricultural Economics at St. Mary's University.

You are here by kindly requested to give your honest responses to the maximum of your knowledge and skills related to the attached questions.

The researcher would like to confirm to you that the identity of respondents as well as the data obtained through this questionnaire will remain confidential and used only for the academic purpose stated above.

Instruction

Please put a ✓ mark corresponding to your answer choices for each of the attached three page questions.

Thank you,

Mesfin Tefera

St. Mary's University

School of Graduate Studies

S/N	Factors	Very Low Importance	Low Importance	Neutral	High Importance	Very high Importance
1	The amount of commission earned from the M-BIRR MMS					
2	The number of transactions an agent conducts per day					
3	The type of transaction whether it is transfer, withdrawal, top ups, money voucher or admin service					
4	The commission rate for each type of transaction					
5	The number of months since the customer subscribed for the M-BIRR MMS					
6	The type of transaction whether it is face to face or non-face to face transaction					
7	The value of each transaction					
8	The daily debit limit of subscribers' accounts					
9	The maximum account balance limit set on individuals' mobile accounts					
10	The initial capital requirement to start an M-BIRR MMS					
11	The minimum amount of money an agent is required to keep in his/her M-BIRR account					

12	Additional staff and space need to run the M-BIRR MMS					
13	Security risk for example robbery					
14	Reliability of the M-BIRR MMS system					
15	Availability of (ethioptelecom) mobile network					
16	The effect of providing the M-BIRR MMS on other business of the agent					
17	The amount of revenue from the M-BIRR MMS at start-up					
18	Anticipated costs that will come with the growth of the M-BIRR MMS like requirement to recruit additional staff and space to operate the M-BIRR MMS					
19	Fragmented demand across widespread agents					
20	Level of demand at start-up					
21	Availability of adequate number of MM services for customers to utilize their M-BIRR account deposits					
22	Accessibility of the M-BIRR MMS at anytime and anywhere where there is a mobile network coverage					
23	Opportunity cost of the money the agent is using/invested to provide the M-BIRR MMS					
24	The agent's proximity to the MFI affiliated branch					

25	Cost of transport the agent pays for travel to and from its affiliated MFI branch to get an M-BIRR service					
26	Time spent by the agent for travel to and from its affiliated MFI branch to get an M-BIRR service					
27	The level of public awareness about the M-BIRR MMS					
28	The geographical coverage of the M-BIRR service to allow customers' of different MFIs' to transact among each other					
29	Promotion of the M-BIRR MMS by MFIs and M-BIRR					

APPENDIX B

Questionnaire for Microfinances

Dear respondent, the purpose of this study is used for the partial fulfillment of the researcher's Master's Degree program in Agricultural Economics at St. Mary's University.

You are here by kindly requested to give your honest responses to the maximum of your knowledge and skills related to the attached questions.

The researcher would like to confirm to you that the identity of respondents as well as the data obtained through this questionnaire will remain confidential and used only for the academic purpose stated above.

Instruction

Please put a ✓ mark corresponding to your answer choices for each of the attached two page questions.

Thank you,

Mesfin Tefera

St. Mary's University

School of Graduate Studies

S/N	Factors	Very Low Importance	Low Importance	Neutral	High Importance	Very high Importance
1	The amount of commission earned from the M-BIRR MMS					
2	The number of transactions an agent conducts per day					
3	The type of transaction whether it is transfer, withdrawal, top ups, money voucher or admin service					
4	The commission rate for each type of transaction					
5	The number of months since the customer subscribed for the M-BIRR MMS					
6	The type of transaction whether it is face to face or non-face to face transaction					
7	The value of each transaction					
8	The daily debit limit of subscribers' accounts					
9	The maximum account balance limit set on individuals' mobile accounts					
10	The initial capital requirement to start an M-BIRR MMS					
11	Additional staff and space need to run the M-BIRR MMS					
12	Security risk for example robbery					
13	Reliability of the M-BIRR MMS system					

14	Availability of (ethioptelecom) mobile network					
15	The effect of providing the M-BIRR MMS on other business of the agent					
16	The amount of revenue from the M-BIRR MMS at start-up					
17	Anticipated costs that will come with the growth of the M-BIRR MMS like requirement to recruit additional staff and space to operate the M-BIRR MMS					
18	Fragmented demand across widespread agents					
19	Level of demand at start-up					
20	Availability of adequate number of MM services for customers to utilize their M-BIRR account deposits					
21	Accessibility of the M-BIRR MMS at anytime and anywhere where there is a mobile network coverage					
22	The level of public awareness about the M-BIRR MMS					
23	The geographical coverage of the M-BIRR service to allow customers' of different MFIs' to transact among each other					
24	Promotion of the M-BIRR MMS by MFIs and M-BIRR					

APPENDIX C

Questions to Key Informants

1. Do you think the maximum daily debit limit for individual mobile accounts set in the NBE Mobile and Agent Banking Directive is fair? Why?
2. Do you think the maximum mobile account balance is fair? Why?
3. Why you didn't mention anything about corporate customers in the directive?
4. Why do you limit registration of business customers only at financial institutions' premises?
5. Do you think the minimum requirements for mobile money agents put on the directive is fair? Why?
6. Do you think M-BIRR ICT Services PLC is a pure technology provider?
7. What are the factors that motivate agents/MFIs to provide mobile money services?
8. What factors affect the introduction, development and promotion of Mobile and Agent Banking Services in Ethiopia?
9. What should be the roles and responsibilities of financial institutions (MFIs), regulators, MNOs, agents and MMS technology providers in the development and provision of Mobile and Agent Banking Services in Ethiopia?
10. What do you think will be the long term effect of the development and provision of Mobile and Agent Banking Services for financial institutions (banks and MFIs), regulators, MNOs, agents and MMS technology providers in Ethiopia?
11. What should be the relationship of financial institutions (MFIs), MM technology service providers, MNOs, MM Agents and financial (MMS) regulators in Ethiopia?

APPENDIX D

Table 7: ACSI Agents'/Cashiers' transactions

	Transfer		Withdrawal		Money Voucher		Direct Top-up		Indirect Top-up		Other Transactions		Total	
	#	Com.	#	Com.	#	Com.	#	Com.	#	Com.	#	Com.	#	Com.
Cashier	0.00%	0.00%	0.58%	1.23%	0.00%	0.00%	54.52%	38.87%	32.36%	54.53%	12.54%	5.38%	9.87%	6.79%
Agent	0.19%	0.44%	0.54%	1.06%	0.00%	0.00%	40.66%	22.69%	52.79%	73.44%	5.81%	2.36%	90.13%	93.21%

Table 8: ADCSI Agents'/Cashiers' transactions

	Transfer		Withdrawal		Money Voucher		Direct Top-up		Indirect Top-up		Other Transactions		Total	
	#	Com.	#	Com.	#	Com.	#	Com.	#	Com.	#	Com.	#	Com.
Cashier	0.00%	0.00%	0.39%	4.00%	0.00%	0.00%	58.14%	57.12%	22.29%	26.03%	19.19%	12.86%	8.58%	3.82%
Agent	0.37%	0.68%	0.09%	0.13%	0.00%	0.00%	34.97%	20.83%	59.49%	76.40%	5.08%	1.96%	91.42%	96.18%

Table 9: OCSSCO Agents'/Cashiers' transactions

	Transfer		Withdrawal		Money Voucher		Direct Top-up		Indirect Top-up		Other Transactions		Total	
	#	Com.	#	Com.	#	Com.	#	Com.	#	Com.	#	Com.	#	Com.
Cashier	0.00	0.00	0.55%	2.04%	0.07%	0.21%	62.93%	55.79%	26.15%	37.01%	10.29%	4.96%	53.57%	42.26%
Agent	0.00	0.01	0.50%	1.00%	0.04%	0.10%	47.34%	34.15%	45.15%	61.41%	6.67%	2.72%	46.43%	57.74%

Table 10: Number of M-BIRR MMS Agents and Branches

Region	Amhara	Oromiya	Addis Ababa	Total
Agents	4	4	4	12
MFI Branches	2	2	2	6
Total	6	6	6	18

Table 11: Agents'/Cashiers' FtF and nFtF transactions

	FtFt				nFtFt			
	#	%	Comm. Amt.	%	#	%	Comm. Amt.	%
cashier	966.00	0.27	731.61	0.42	2642.00	0.73	1023.81	0.58
Agent	6047.00	0.55	6713.33	0.71	4966.00	0.45	2718.71	0.29
Total	7013.00	0.48	7444.94	0.67	7608.00	0.52	3742.52	0.33

Table 12: Agent/MFI Number of Transactions by Transaction Type

	Transfer		Withdrawal		Money Voucher		Direct Top-up		Indirect Top-up		Other Transactions		Total	Com in birr
	#	%	#	%	#	%	#	%	#	%	#	%	#	
Cashier	0.00	0.00	19.00	0.01	2.00	0.00	2217.00	0.61	945.00	0.26	425.00	0.12	3608.00	1755.42
Agent	33.00	0.00	34.00	0.00	1.00	0.00	4314.00	0.39	6012.00	0.55	619.00	0.06	11013.00	9432.04
Total	33.00	0.00	53.00	0.00	3.00	0.00	6531.00	0.45	6957.00	0.48	1044.00	0.07	14621.00	11187.46

Table 13: Total Agent/MFI Commissions by Transaction Type

	Transfer		Withdrawal		Money Voucher		Direct Top-up		Indirect Top-up		Other Transactions		Total
	Comm. Amt.	%	Comm. Amt.	%	Comm. Amt.	%	Comm. Amt.	%	Comm. Amt.	%	Comm. Amt.	%	Comm. Amt.
Cashier	0.00	0.00	42.46	0.02	1.22	0.00	888.10	0.51	687.92	0.39	135.71	0.08	1755.42
Agent	55.15	0.01	68.88	0.01	2.99	0.00	2442.05	0.26	6641.46	0.70	221.51	0.02	9432.04
Total	55.15	0.00	111.34	0.01	4.21	0.00	3330.15	0.30	7329.38	0.66	357.22	0.03	11187.46

Table 14: Agents'/Cashiers' FtF and nFtF Transactions by Transaction Type

	FtFt						nFtFt					
	Withdrawal		MV		IT		Transfer		DT		OS	
	No. Trans. %	Comm. Amt. %										
cashier	1.97%	5.80%	0.21%	0.17%	97.83%	94.03%	0.00%	0.00%	83.91%	86.74%	16.09%	13.26%
Agent	0.56%	1.03%	0.02%	0.04%	99.42%	98.93%	0.66%	2.03%	86.87%	89.82%	12.46%	8.15%
Total	0.76%	1.50%	0.04%	0.06%	99.20%	98.45%	0.43%	1.47%	85.84%	88.98%	13.72%	9.54%

Table 15: Descriptive Analysis of Agents/MFIs M-BIRR Mobile Money Transactions

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
no.DT no. DT	3	2217	6531	4354,00	2157,278
no.IT no. IT	3	945	6957	4638,00	3232,946
no.MV no. MV	3	1	3	2,00	1,000
No.OfTransactions No. Of Transactions	3	0	33	22,00	19,053
No.Ofwithdrwl No. Of withdrwl	3	19	53	35,33	17,039
No.OT No. OT	3	425	1044	696,00	316,602
perDT	3	39,17%	61,45%	48,4300%	11,60615%
perIT	3	26,19%	54,59%	42,7867%	14,79432%
PerIT_A PerIT	3	5,62%	11,78%	8,1800%	3,20899%
perMV	3	0,01%	0,06%	0,0300%	0,02646%
pertrnsfr	3	0,00%	0,30%	0,1767%	0,15695%
perwithdrwl	3	0,31%	0,53%	0,4000%	0,11533%
Valid N (listwise)	3				

APPENDIX E

Definition of Terms

Mobile Money Service: Mobile Money Service is the service delivered by the MFIs and their network of Branches and Agents. The Service allows users to transfer funds to other registered users or Mobile phone holders within Ethiopia, transfer funds between accounts, deposit or withdraw funds, pay bills, top-up their phone credit, all from the convenience of their mobile phone.

Account: refers to a mobile money account that can only be accessed either with the use of a Mobile Phone or through a mobile money technology console.

Agent: Agents are businesses that deliver the M-BIRR service for the MFIs. Agents may be local grocery stores, petrol stations, or a village's butcher.

MFI: These 3 letters stand for **MicroFinancial Institution**. They are the account holders of the money deposited by Agents and Customers. MFIs are also responsible for selecting, registering, training and monitoring of Agents.

Branch: Branches are MFI branches and sub-branches which provide the face-to face Mobile Money Service to customers and agents.

Deposit/Withdrawal: These are the acts of physically putting money into an account (deposit), or taking from it (withdrawal). Agents and Customers carry-out those transactions on their account through their mobile phone. Deposits and withdrawals constitute 'Face to Face' transactions and are only carried out through Agents or MFI Branches.

Debit/Credit: A Debit means that money has been taken out of an account. A Credit means that money has been added to an account. Debits or Credits can be generated by a variety of transactions such as deposit/withdrawal, money transfer (sent/ received), transaction fee payment, purchase of mobile credit, etc.

Face-to-Face Transaction: A Face-to-Face transaction is a transaction carried out by a subscriber with an agent or a branch. Typical Face-to-Face transactions are: subscriber registration, deposit and withdrawal.

Non Face-to-Face Transaction: is the opposite of Face-to-Face Transaction.

NBE: National Bank of Ethiopia

Subscribers: Subscribers are the registered ‘end-users’ of the Mobile Money Service.

Users: Users are people using the Mobile Money Service; they can be subscribers, non-registered end-users.

KYC: KYC stands for Know Your Customer and refers to the activities of customer due diligence that financial institutions and other regulated agents must perform to identify their clients and ascertain relevant information pertinent to doing financial business with them.

AML/CFT: Stands for ‘Anti-Money Laundering/Combating the Financing of Terrorism’ – They are a set of rules to mitigate the adverse effects of criminal activity

Associated MFI Branch: is the Branch where the Agent was registered. It is usually the closest MFI branch for the agent.

Financial Transactions include money transfer, cash withdrawal, and mobile top-ups. Non-financial services include balance inquiry, changing secret word, language change, PIN change, and mini statement request.

Top-Up: refers to recharging of mobile phone credits from mobile money accounts.

Direct Top-Up: refers to recharging of mobile phone credits by purchasing from mobile money agents or cashiers.

Indirect Top-Up: refers to recharging of mobile phone credits by subscribers directly from mobile money accounts.

Money Voucher: refers to mobile money transferred non registered customers by subscribers of a mobile money service.

Cash Float: refers to the amount of cash an agent keeps in his/her till for daily cash-in/cash-out activities.

DECLARATION

I declare that this Thesis is my work and that all sources of materials used for this Thesis have been dully acknowledged. This Thesis has been submitted in partial fulfilment of the requirements for an advanced (MA) degree at the St. Mary's University and deposited at the University Library to be made available to borrowers under rules of the Library.

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Name: Mesfin Tefera

Signature -----

St. Mary's University, Addis Ababa, Ethiopia

Date of submission:

ENDORSEMENT

As Thesis Research advisor, I hereby certify that I have read and evaluated this thesis prepared, under my guidance, by Mesfin Tefera Alemayehu entitled “**THE DEVELOPMENT OF MOBILE BANKING IN ETHIOPIA: THE M-BIRR EXPERIENCE OF ADDIS, AMHARA AND OROMIYA MICROFINANCE INSTITUTIONS**”. I recommend that it be submitted as fulfilling the thesis requirement.

Dagneu Eshete (Ph.D)

Thesis Advisor

Signature

Date