THE VALUE OF MOBILE BANKING:

THE CASE OF MTN MOBILE MONEY IN ACCRA, GHANA

by

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ABSTRACT

The convergence of mobile telephony, banking services, and information systems

creates significant economic opportunities on a global scale. While the adoption of

mobile banking and mobile money emerged on the global scene as a tool to promote

financial inclusion, new developments in the industry have created additional

possibilities for this type of technology to revolutionize the practices and experiences

of business owners in the Third World. This paper calls attention to the different ways

in which mobile banking services and mobile payment systems are able to create value

for their consumers. An empirical case study is developed using the Accra

Metropolitan Assembly (City of Accra) that details the experiences of MTN Mobile

Money users.

Chapter 1

INTRODUCTION

The transformative nature of the mobile phone has been proven to be an effective tool

for development in recent years, especially in the Developing World ("Eureka

moments: How a luxury item became a tool of global development," 2009). High

mobile phone penetration rates, coupled with record economic growth in developing

regions like Sub-Saharan Africa have demonstrated that adopting newer, more cost-

effective communications technologies such as the mobile phone has the potential to

stimulate economic growth, and expand access to communication and financial

services. Today, dozens of Third World countries are capitalizing on the revolutionary

nature of the mobile phone by developing and implementing systems that represent yet

another technological breakthrough: Mobile Money.

The mobile phone's newfound purpose as a tool of financial intermediation is

projected to create value for developing economies and consumers alike by not only

promoting financial inclusion and economic growth, but also by revolutionizing

business practices, activities, and experiences. A case study application of the concept

of "value" will be explored in this paper. By examining the business practices and

experiences of merchants in the City of Accra who currently use MTN Ghana's

Mobile Money cash management service, MTN Mobile Money, the author of this

study will determine whether, and if so, how, mobile money creates value for

merchants and business owners residing in the City of Accra.

1.1 Importance of the study

The literature on electronic and mobile innovation "…has predominantly restricted

itself to the adoption and diffusion perspectives" (Ram, 1987). As a result, little

research has been conducted on the actual use of mobile banking services, or

consumer behaviors and attitudes towards live deployments of mobile banking

platforms. This is no surprise, considering the technologies used to facilitate these

types of services are still evolving.

This study will contribute to research being conducted in the fields of financial

innovation and intermediation. It also provides entrepreneurs, Mobile Network

Operators, policymakers, and other mobile banking stakeholders who have the

intention of using mobile banking as a strategy, a framework for understanding how

mobile banking services affect businesses and business owners.

1.2 Research Objectives

This study will seek to determine whether providing financial services to merchants

via the mobile phone creates value, and therefore has the ability to affect the activities

and experiences of business owners and merchants in Accra, Ghana. The main research objectives for this paper will be:

1. To identify key ways merchants in the City of Accra use MTN Mobile Money;

2. To determine whether the adoption of MTN Mobile Money has created value for merchants in the City of Accra; and

3. To identify a model for use in determining key areas of value that have been created for merchants and traders in the City of Accra who actively use MTN Mobile Money.

Chapter 2

LITERATURE REVIEW

2.1   Financial Intermediation

2.1.1   The Economics of Financial Intermediation

The role of intermediaries in financial markets has been debated for some time. Not too long ago, economic theories of financial intermediation portrayed bank-like financial institutions as passive agents who have no real effects in financial markets or on the efficient allocation of resources in the larger economy (Gorton & Winton, 2002, p. 1). Today, theories surrounding the existence of these agents are largely based on the utility consumers derive from using their (financial) services or instruments, and the role intermediation plays in redistributing savings and costs to both consumers and facilitators in the financial marketplace.

Modern financial intermediation theories hypothesize that consumers demand the products produced by financial intermediaries because (financial) intermediation activities enable buyers and sellers to conduct transactions smoothly while incurring

lower levels of transaction costs (intermediation savings) and achieving higher levels of utility (Benston & Smith, 1976, p. 218). On the other hand, these same theories also postulate that suppliers of intermediation activities, namely financial intermediaries, are driven to provide intermediation instruments and facilitate transactions for consumers because they are compensated for their services (Benston & Smith, 1976, p. 219).

Banks are the most common type of financial intermediary, and theories pertaining to financial intermediation usually refer to the utility-enhancing activities undertaken by bank-like financial institutions. Although banks are the most common type of financial intermediary, they are considered "special" agents in the financial marketplace because they are able to further reduce high transaction costs and enhance utility by integrating the following three key services:

1. Money services: such as cash management, checking and savings accounts, and money transfer services;

2. Credit services: such as the provision of loans and lines of credit; and

3. Payment services: such as bill pay and wire transfers.

Based on current theories of financial intermediation, the activities undertaken and instruments provided by bank-like institutions in the financial marketplace can be viewed as a value-creating phenomenon that enables the consumer to possibly maximize his/her utility and further reduce his/her transaction costs, while allowing the (financial intermediary) facilitator to increase their compensation potential.

2.1.2 The changing role of Information and Communications Technology (ICT) in Financial Intermediation

In recent years, financial intermediaries have begun to produce and market more sophisticated financial services and products to their customers using technology-based instruments and a wide variety of networks. The branchless banking[1] approach, as it is commonly referred to, has become an increasingly preferred method by banks to supply consumers with services, as it enables facilitators to increase their compensation level, provides consumers access to core financial services, and "…lowers the cost of delivery, including costs both to banks of building and maintaining a delivery channel and to customers of accessing services" (Ivatury & Mas, 2008). In essence, the adoption of technology-based instruments like the mobile phone by financial intermediaries is predicted to raise the possibility for participants in the marketplace to receive additional value.

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[1] Branchless Banking is a method under which banking services are provided to customers through the use of technology or third party outlets, such as mobile phones, payment cards, post offices, or small retailers. Please see Ivatury & Mas (2008) and Diniz, Porto de Albuquerque & Cernev (2011) for more information about branchless banking.

2.2 Mobile (Phone) Banking & Mobile Payments (m-banking, m-commerce)

2.2.1　　　General background and definition of the terms

Mobile (Phone) banking, sometimes referred to as m-banking or m-commerce, is one form of branchless banking. M-banking is defined as the use of mobile phones, personal digital assistants (PDAs), or other portable devices connected to telecommunications networks, to facilitate banking services such as money transactions/transfers, and other financial services linked to customer (bank) accounts (Diniz, Porto de Albuquerque, & Cernev, 2011, p. 5). A mobile payment, on the other hand, involves a customer, "…paying for a product or service using mobile technology" (International Telecommunications Union, 2011). It is important to note that many scholars separate the activities customers perform while mobile banking from payments made by customers via mobile phone. Without the enabling framework of an m-banking system, however, mobile payment services would not exist, as they rely on the same banking instruments and value accounts that mobile banking systems operate on. Thus, for the purposes of this study, the term "mobile banking" will be used to describe the activities of both mobile banking and mobile payment users.

2.2.2 M-banking Stakeholders

There are three main stakeholders who are involved in the delivery and provision of m-banking services worldwide: banks, Mobile Network Operators (MNOs), and Mobile Banking Technology Vendors (MBTVs) (Krugel, 2007, p. 1).

In the developing world, policies tend to also play an important role in shaping and supporting the infrastructure, technology, and delivery of m-banking services and applications to the consumer. The role played by policy in Ghana's m-banking sector will be explored in the section titled *Government Actors and Regulatory Environment*.

Banks

Banks are one of the most important stakeholders in the m-banking industry. These institutions are dedicated to delivering financial services to a customer base using the most cost effective method. As a result, the adoption of the mobile phone—one of the most cost effective and efficient technologies on the market—to reach the consumer has become an increasingly profitable and popular business for banks.

There are three ways in which a bank can participate in the m-banking industry:

1. Leverage an MNO's bearer channel[2] (data, voice, and other services) and infrastructure to extend its payments franchise to mobile facilities;

2. Leverage the MNO brand, distribution network, and extended customer base to target new market segments; or

3. Allow an MNO to use its (a bank's) financial license and/or infrastructure to become a bank (Krugel, 2007, p. 3).

MNOs

MNOs are quickly rethinking their business strategies and are finding ways to provide a new range of services to their existing customers and reach a new clientele, namely by participating in the m-banking industry. Globally, MNOs are becoming leaders in the m-banking industry because they provide the network infrastructure and technological-capabilities (the mobile phone) that enable consumers to use m-banking services (Krugel, 2007, p. 3). Further, MNOs view their investment in the m-banking industry as a value-creating phenomenon that:

- Increases their customer base, as they are able to provide an innovative service to both new and existing clients; and

- Generates revenue, as adopting a new service provides the MNO with a stream of revenue, "...outside of traditional telephony" activities (Krugel, 2007, pp. 3-4).

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[2] The technology used by MNOs to transmit data over a network. For more information about bearer channels, please see Krugel (2007).

An MNO has three avenues it can pursue if it wants to participate in the m-banking industry:

1. Provide a bearer channel for a bank, which will enable an MNO to extend a bank's payment license to mobile phones;

2. Lend their brand, distribution network, and extended customer base to a bank; or

3. Use their existing infrastructure and customer base to become a bank by collaborating with a bank-like financial institution or by applying for a banking or e-money permit (Krugel, 2007, p. 4).

MBTVs

MBTVs have played an integral role in the development of the m-banking industry and in the delivery of m-banking services since the inception of the sector (Krugel, 2007, pp. 4-6). These agents have spent billions of dollars pioneering the applications and platforms that have enabled consumers to use m-banking services on their mobile phones, as well as created "…the technology that integrates the mobile banking participants (MNO, banking systems, user applications, access channels)," and ensured that current banking instructions and services are able to be viewed and utilized on a consumer's mobile device and understood by banking systems (Krugel, 2007, p. 5).

2.2.3 Types of m-banking business models

There are two main business models to consider when implementing an m-banking system:

1. A bank-led model; and

2. A non-bank model.

It is important to note that the two types of business models listed above can be implemented using a variety of service providers, regulatory agents, and facilitators. How a particular model is implemented greatly depends on how a country or municipality wants to establish an m-banking system and the amount of volume and coverage a particular bank wishes to have (Chemonics International, 2010, p. 7).

The Bank-Led Model

At its most basic form, the bank-led model is as an extension of conventional branch-based banking. Like conventional banking practices, when a bank-led, m-banking model is adopted, the customer account relationship rests with the bank. (This relationship can vary, however, depending on what type of arrangement has been predetermined between the bank(s), retail agents, and other partners.) In addition, the bank-led model offers consumers access to the same core financial functions, including the ability to check account balances, make deposits, process transactions, and the opportunity to extend credit.

This model differs from conventional branch-based banking in the sense that consumers are no longer forced to access bank services or facilitate financial transactions at a bank branch. Instead, consumers are provided with an opportunity to remotely conduct financial transactions using a whole range of agents or mobile technologies. Moreover, if a bank chooses to adopt a bank-led, m-banking model, it can utilize these alternative delivery channels to flexibly and inexpensively increase its outreach without having to build new bank branches or hire more employees.

The bank-led m-banking business model has a number of sub-models. These sub models are:

1. The one-to-one model;

2. The one-to-many model and;

3. The many-to-many model.

The One-to-one Model is one of the most common bank-led sub models employed in the world. In the one-to-one model, a bank is the only institution permitted to offer m-banking services to the customers of a specific MNO (Bank of Ghana, 2008, p. 3). The bank-led, one-to-many model is very similar to the one-to-one model, except for the fact that a bank is permitted to provide m-banking services to anyone who has an active mobile phone connection (Bank of Ghana, 2008, p. 3). The final sub-model is the many-to-many model. In the many-to-many model, exclusive partnerships between m-banking agents are not permitted. Further, m-banking sector participants that exist

within a bank-led, many-to-many model are expected to collaborate with one another in order to take advantage of economies of scale, increasing customer bases, and available network infrastructure (Bank of Ghana, 2008, p. 3). Today, only one country has adopted this type of bank-led model at the national level: Ghana.

The Non-Bank Model

The non-bank-led m-banking model does not vary wildly from the bank-led model. In this model, however, a bank does not actively participate in the m-banking sector, except possibly as a regulator. Instead, non-banks, such as telecommunication service providers, retailers, and other third party agents, promote and provide m-banking services to customers.

Figure 1, which is displayed on page 14, provides the reader with an illustration of the different types of m-banking business models (from "FI-led" or bank-led, to MNO-led) that can be employed.

2.2.4   Ghana's m-banking sector

Government Actors and Regulatory Environment

In 2008, the Government of Ghana (GoG) and Ghana's Central Bank, the Bank of Ghana (BoG), formally established a bank-led, many-to-many m-banking sector in

Ghana. The creation of the market was announced in the form of a Bank Notice[3],

which included major guidelines for financial institutions and other interested parties

who desired to undertake mobile banking in Ghana (Bank of Ghana, 2008, p. 1).
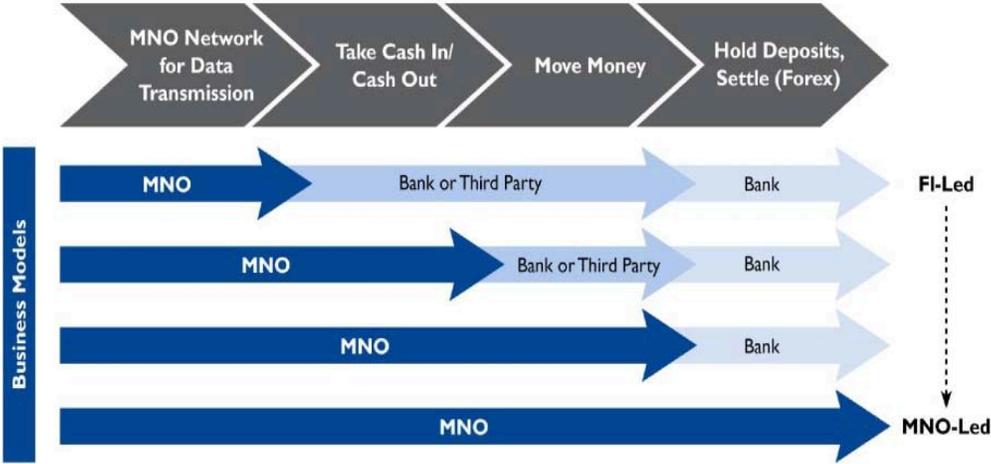
Figure 1. *MOBILE BANKING BUSINESS MODELS*

Note. Adapted from *Financial Sector Share Knowledge Sharing Series #9: Enabling
Mobile Money Interventions*, (p. 7) by Chemonics International. Image, 2010.
Retrieved August 10, 2012, from United States Agency for International
Development.

To date, no formal body or government department has been tasked with monitoring

Ghana's m-banking sector. As a result, the Bank Notice released by BoG in 2008

serves as the country's most up-to-date policy regulating the m-banking sector.

Ghana's mobile banking guidelines specify the following:

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[3] Although the Bank Notice issued to banks and other bank-like financial institutions
in 2008 was titled *Guidelines for Branchless Banking* [in Ghana], Ghana's branchless
banking sector is largely dominated by m-banking. For more information about
branchless banking in Ghana, please see Bank of Ghana (2008).

- **Bank led**. Ghana's m-banking sector will be bank-led, meaning bank-like financial institutions or their agents are the only types of institutions that are permitted to undertake mobile banking activities (Bank of Ghana, 2008, p. 2).

- **Many-to-Many Model**. Further, Ghana's m-banking sector will promote maximum connectivity and outreach by prohibiting exclusive partnerships and encouraging banks, MNOs, and other agents to form partnerships and entertain each other's customers (Bank of Ghana, 2008, p. 3).

- **Central processing area, Ghana's Interbank Payment and Settlement System (GhiPPS)**. All electronic banking services are to be centrally processed using GhiPPS. Moreover, all new electronic platforms and products created in Ghana issued by bank-like financial institutions must be compliant or interfaced with the Government's platform, e-zwich (Bank of Ghana, 2008, p. 3).

- **Permissible Activities**. Permissible activities in Ghana's m-banking sector include:
  - Opening and maintaining an account;
  - Transferring funds between accounts (between electronic/branchless banking and current physical accounts with banks and saving companies);
  - Person-to-person money transfers, where customers can transfer funds from their account to a branchless banking account or a physical

account with a bank to a customer of the same or participating bank(s);

- o Cash in/ Cash out, where customers are able to deposit or withdraw money from the branchless banking or physical bank account from bank-branches, ATM machines, and third party agents;

- o Bill payments, where branchless banking accounts or linked bank accounts can be used to pay utility bills; and

- o Merchant payments, where customers can use their branchless banking account to pay for goods and services at retail locations throughout the country (Bank of Ghana, 2008, p. 4).

MNOs and Mobile Money Deployments in Ghana

Currently, there are six MNOs operating in Ghana: Vodafone; Airtel; GLO; Expresso; Tigo; and MTN Ghana (National Communications Authority: Ghana, 2013). As Figure 2, which is displayed on page 17, denotes, MTN Ghana dominates the MNO marketplace, with 45% of the market share and more than 11.7 Million subscribers (National Communications Authority: Ghana, 2013). Three MNOs (MTN Ghana, TIGO, and Airtel) have launched m-banking platforms, and a fourth (Vodafone) plans to launch an m-banking platform this year. Unfortunately, all MNOs suffer from inadequate network infrastructure, high bandwidth costs, and poor network quality.
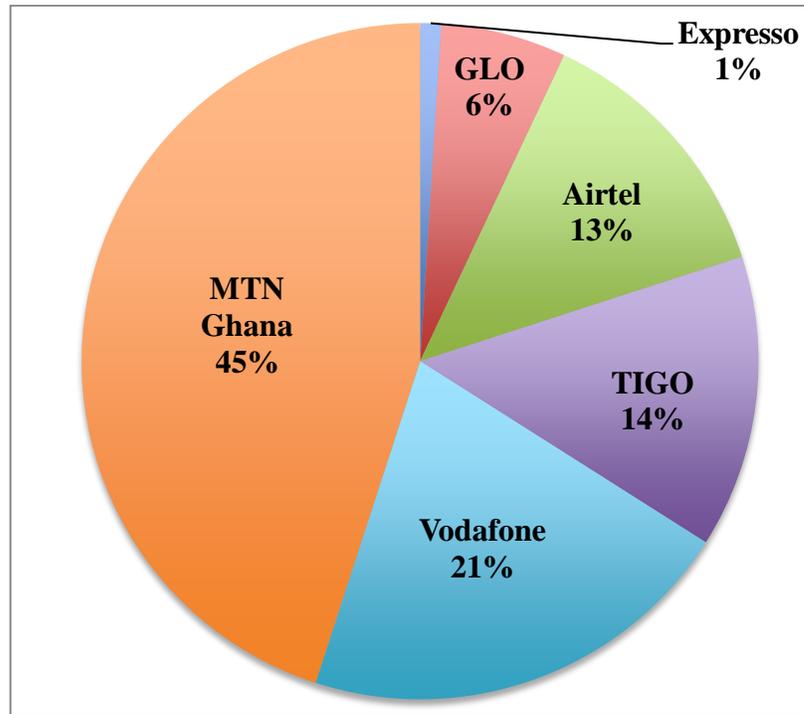
**Figure 2.   CELLULAR MOBILE VOICE MARKET SHARE IN GHANA
(JANUARY 2013)**

Note. Adapted from *Cellular Mobile Voice Market Share @ January 2013*, by
National Communications Authority: Ghana, 2013.

MTN Mobile Money

In July 2009, MTN Ghana launched a mobile money cash management service called

MTN Mobile Money. MTN Mobile Money is a collaborative effort between MTN

Ghana, authorized merchants, and ten banks in Ghana: Ecobank, Fidelity Bank, GT

Bank, CAL Bank, Stanic Bank, Zenith Bank, UBA, Merchant Bank, Intercontinental

(Access) Bank, and Agriculture Development Bank (MTN Ghana2, n.d.). In launching

MTN Mobile Money, MTN Ghana hopes to be able to provide a convenient money

service to their customers, "… [Facilitate] money transfer[s] for the Ghanaian

market," as well as gain a competitive advantage in the budding industry (MTN Ghana 2012; MTN Ghana2, n.d.).

Most of MTN Ghana's MTN Mobile Money services are mobile phone enabled (MTN Ghana2, n.d.). Some of the services offered under MTN Mobile Money are also available to non-mobile users, and can be used over other internet-enabled devices other than the mobile phone, or facilitated at MTN Ghana Service Centers, Partner Bank Branches, or at Authorized Mobile Money Merchant locations throughout Ghana (MTN Ghana 2012; MTN Ghana, n.d.).

The MTN Mobile Money Network has a number of participants. These participants include facilitators and subscribers (consumers).

Facilitators in the MTN Mobile Money Network are designated by MTN Ghana and the Partner Banks MTN Ghana employs to sell or resell MTN Mobile Money services. The main facilitators in the Network are MTN Ghana Service Branches/Centers and Partner Bank Branches throughout Ghana. Subscribers of MTN Mobile Money can visit MTN Ghana Service Centers or Partner Bank Branches to register for or use MTN Mobile Money services, including, but not limited to: money transfers, depositing and withdrawing money (MTN Ghana3, n.d.). The final facilitator in the MTN Mobile Money Network is the MTN Mobile Money Authorized Merchant (MMAM). MMAMs are Authorized Merchants within the MTN Mobile Money

Network who own or manage a registered business in Ghana (MTN Ghana3, n.d.). To become an MMAM, business owners and managers must undergo a background and business solvency check (Rufai, 2012). MMAMs are considered special intermediaries within the MTN Mobile Money Network because these facilitators have been selected to help sell MTN Mobile Money to the public and they are also provided with an opportunity to use MTN Mobile Money to facilitate money transactions for their own businesses. As such, most MMAMs are both consumers and facilitators of MTN Mobile Money.

The final participant in the MTN Mobile Money Network is the subscriber. Subscribers of MTN Mobile Money include all Ghanaian citizens who have a valid photo ID (MTN Ghana3, n.d.). Subscribers who choose to register for MTN Mobile Money must bring a valid photo ID to their nearest MTN Mobile Money Authorized Merchant, fill out a Mobile Money registration form, receive and load a Mobile Money sim card, and register their sim card on the MTN Mobile Money network (MTN Ghana4, n.d.). Subscribers who register for the service are able to enjoy basic financial services on their mobile phone, as well as facilitate money transfers and other transactions including, but not limited to:

- Airtime purchases (purchase additional talk time for your mobile phone);
- General Payments (pay for school fees, Dstv bills, electricity bills, online shopping purchases, supermarket purchases);
- Kwikadvance (salary advances); and

- Life insurance (MTN Ghana 2012).

All subscribers and facilitators of MTN Mobile Money must open a valid electronic wallet (e-wallet). E-wallets are electronic bank accounts where subscribers can store electronic money. Further, e-wallets are, "…opened and owned by Partner Banks," and all transactions conducted through this electronic wallet must be authorized with a PIN code (MTN Ghana3, n.d.).

For a visual representation of all participants within the MTN Mobile Money Network, please refer to Figure 3 below.
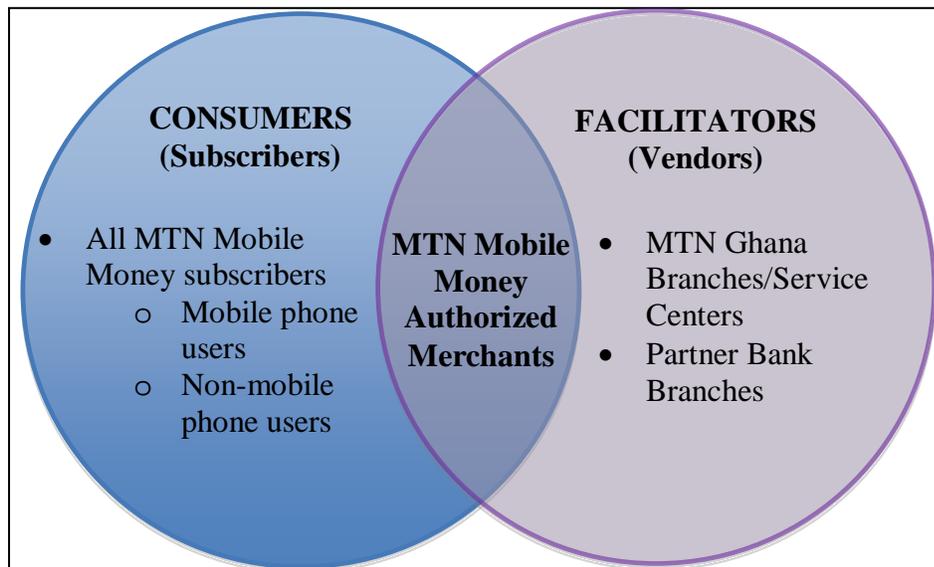
Figure 3.   MTN MOBILE MONEY NETWORK

Chapter 3

RESEARCH DESIGN & METHODOLOGY

In carrying out this research, the principal investigator hopes to be able to examine and describe the behaviors and experiences of merchants and traders in Accra, Ghana, who use MTN Mobile Money. Moreover, the researcher will attempt to determine whether MTN Mobile Money has created value for merchants included in this study. For these reasons, the research in this study will follow a qualitative case study design.

3.1   Research questions

Because this study hopes to examine the relationship between mobile banking services and the value it can create for users and facilitators, two questions will be posed to assist in the development of the study's methodology:

- How do merchants in the City of Accra use MTN Mobile Money; and

- Has the adoption of MTN Mobile Money created value for Merchants/Business owners in the City of Accra?

3.2 Preliminary Research Model

This study is concerned with the integration of mobile phone technology in Ghana's banking sector. Particularly, it seeks to determine whether MTN Mobile Money creates value for merchants and businesses owners in Accra, Ghana.

Figure 4 below illustrates how the framework discussed in Chapter 2 fits into the study's model. Namely, the model depicts the relationship between the use of MTN Mobile Money by merchants in the City of Accra, Ghana, and the value it creates for merchants residing in Accra, Ghana.
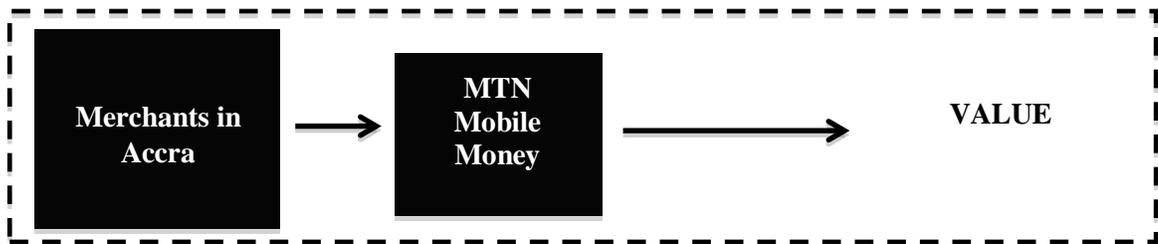
**Figure 4.   VALUE CREATED BY MTN MOBILE MONEY
(PRELIMINARY MODEL)**

3.3   Study Design

3.3.1   Data Collection

Data was collected via a (researcher-administered) questionnaire-interview method.

The questionnaire was developed by the researcher, and was based on the literature

reviewed in Chapter 2 and research questions outlined in section 3.1. Using this data

collection method provided the researcher with a flexible and inexpensive way of

gathering information concerning how merchants residing in the City of Accra, Ghana,

use and are affected by MTN Mobile Money. MMAMs were the only persons

interviewed in this study.

3.3.2   Questionnaire Design & Conduct

In this study, a questionnaire-interview method was implemented to explore how

MMAMs residing in Accra, Ghana, use and are affected by MTN Mobile Money. The

researcher-administered questionnaire included both unstructured and semi-structured

questions, and was organized in three sections: the first section was made up of

demographic questions and also asked respondents to describe their experience using

MTN Ghana's mobile money service; the second section asked interviewees questions

about their relationship with a bank; and the final section asked respondents additional

demographic questions.

The researcher also provided each merchant she interviewed with a brief background of her study, which included participation expectations. Further, merchants who participated in this study were promised confidentiality, and were provided with a copy of the study's consent form or the researcher's contact information in case they had any further questions regarding their participation in the study. In addition, to ensure that the appropriate information was gathered during the interview process, the researcher only spoke with merchant/ business owners, co-owners, managers, and co/managers. Finally, merchants included in this study were interviewed either via telephone or in person, and the survey period lasted for four weeks (December 20th, 2012 to January 18th, 2013).

Copies of the study's consent forms and questionnaire can be found in Appendix A (page 59). Also, to review the study's Institutional Review Board Human Subjects Exemption Letter, please see Appendix B (page 74).

3.3.3 Sample Selection & Response Rate

The population of interest in this study includes merchants and traders in the City of Accra, Ghana, who use a mobile money service. Because it is impossible to survey the entire population of interest, the researcher decided to survey a sample of the population in order to be able to make inferences about the larger population.

MMAMs residing in the City of Accra, Ghana, were chosen as participants in this study[4]. A representative from MTN Ghana provided the researcher with what she assumed to be a complete list of Accra-specific MMAMs; this list included the names/business names of 160 merchants. (This list will not be included in this paper for confidentiality purposes.)

It is important to note that merchants included in this study help to facilitate (sell) MTN Mobile Money services, on behalf of MTN Ghana and the partner banks MTN employs, and are also potential consumers of the service. As a result, they are capable of receiving value from using/facilitating MTN Mobile Money in two, if not more, distinct ways: 1. Reducing (business) transaction costs by using the service to conduct in-house business dealings; and 2. Receiving (monetary) compensation for acting as a third-party intermediary in the mobile money process.

The researcher employed a simple random sampling method to ensure that they study's findings would be unbiased and representative. In total, 114 MMAMs in the City of Accra were included in the study's sample. This sample size was selected based on a population size of 160, and the need to have a margin of error of +/- 5%.

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[4] These participants were chosen because: MTN Ghana is the largest market shareholder of mobile phone subscriptions in Ghana, and information concerning the experience and behaviors of these users will represent a large majority of the population—promoting the generalizability of the study.

The principal investigator of this study was able to contact 74 of the 114 merchants from the study's sample and conduct a total of 70 interviews; this corresponds with a 95% usable response rate (70/74). Although 70 interviews were conducted, 50 merchants completed a full interview, 20 merchants were partially interviewed, and 4 merchants refused to participate in the study[5].

3.3.4 Data analysis techniques

All raw data were gathered manually, input into an excel spreadsheet, and subsequently input into and manipulated using Excel. Semi-structured survey responses were categorized with the help of prompts[6] that were constructed by the researcher prior to the interview process.

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[5]The one condition that would lead to the termination of an interview in this study would be if a merchant indicated to the researcher that they no longer used/facilitated MTN Mobile Money. That being said, the researcher still tried to capture information from merchants who indicated that they no longer use MTN Mobile Money.

[6]Prompts in this setting refer to a list of predetermined answers to particular questions on the survey instrument that provided guidance to respondents who were uncertain of or unable to answer(ing) a specific survey question. The prompts were not forced upon the respondent, nor were they shown to the respondent before the start of the interview or during the course of the interview. The prompts were constructed to enable the researcher to easily categorize and analyze survey responses. For a full list of prompts, please refer to Appendix A.4 (page 70).

Descriptive statistics and cross tabulations of relevant information were obtained manually. Pertinent results were presented using charts, and tables to ensure that the study's findings section would be easy to interpret.

3.3.5   Limitations

There were a number of limitations faced by the researcher who carried out this study.

First, the study used a qualitative case study design to examine the experiences of a specific group. As a result, the findings of this study are not necessarily generalizable to the larger universe of merchants who use mobile money services. Further, because merchants included in this study are users (consumers) and facilitators (intermediaries), their experiences with using/facilitating MTN Mobile Money may be different from another sample of persons who are only users of a mobile banking service. Although the study is not necessarily statistically generalizable to the larger universe of mobile money users, the methodological approach undertaken to conduct the study enabled the researcher to explore, in detail, the experiences of merchants and traders who are MTN mobile money users and facilitators in Accra. Further, using Ghana as a case study enabled the principal investigator of this study to draw important lessons about how an infrequently used m-banking model (the bank-led, many-to-many model) can be implemented in a country, and what impacts this can have on users and facilitators of m-banking services.

Second, collecting primary data in Ghana is difficult. This is difficult because street names and addresses are not widely used throughout the country. For this reason, the researcher struggled to contact and interview merchants included her sample frame.

Finally, the author herself undertook the coding of all survey data. Consequently, there may be issues of validity and subjectivity in the interpretation and analysis of the data.

Chapter 4

FINDINGS & DISCUSSION

4.1   Summary of data

Tables 1-6 on pages 31-34 display demographic characteristics of and survey results

from all merchants who were interviewed by the researcher. Demographic

characteristics and survey results are analyzed by 5 categories, namely user type,

business size, MTN Mobile Money Use, Satisfaction, and Value[7]. In this study, when

the researcher is describing merchants' use of MTN Mobile Money, she is specifically

referring to the use of and perceptions about MTN Mobile Money by current users of

the service, unless otherwise specified.

It is surprising to note that 29% of the merchants who were randomly interviewed

have stopped using MTN Mobile Money (20 of the 70 merchants included in this

study), while the remaining 71% remain current users of the service. Further, when

asked why they stopped using MTN Mobile Money, most former users cited that the

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[7] Descriptive statistics for the category "Value" are not displayed on pages 31-34. For
a brief overview of "Value" created in this study, please refer to section 4.3 and/or
Table 7 (on page 39).

service was not profitable for their business (15% of all former users), it did not bring

in new customers (15% of all former users), the service was too complicated (20% of

all former users), or that they have switched to another MNO's mobile money service

(15% of all former users).

Although a significant portion of the study's participants have stopped using MTN

Mobile Money, the remaining 50 merchants, who are current users of MTN Mobile

Money, provided the researcher with demographic statistics about their businesses and

important information concerning their use of the service.

Survey results reveal that all 50 merchants who are current users of MTN Mobile

Money plan to continue to use the service for the next year. Further, many of these

merchants also use a competitor's mobile money service in conjunction with MTN

Mobile Money (15 of the 50 merchants use Tigo Cash, and 20 of the 50 merchants use

Airtel Money). Finally, 84% of the merchants who currently use MTN Mobile Money

are satisfied or very satisfied with the service, and the remaining 16% are either

dissatisfied or neutral/not sure about their experience with the service.

TABLE 1. *NUMBER OF MTN MOBILE MONEY USERS INCLUDED IN STUDY BY USER TYPE*

User Type	FREQUENCY	PERCENTAGE (% of all respondents)
Former MTN Mobile Money Users	20	29%
Current MTN Mobile Money Users	50	71%
Note. Variable responses recorded for both Current and Former MTN Mobile Money users. In addition, statistics are reported as a number or percentage of total respondents.		

TABLE 2. *REASONS WHY FORMER USERS DROPPED MTN MOBILE MONEY*

Reason why user dropped MTN Mobile Money	FREQUENCY	PERCENTAGE (% of all respondents)
Not profitable for business	3	15%
Did not bring in new customers	3	15%
Switched to another MNO mobile money service	3	15%
Service is too complicated/not good	4	20%
Business has closed/not doing well	5	25%
Other (Includes Refusals to answer question, problem with sim card, no longer in Accra, and merchant does not facilitate service)	9	45%
Note. Variable responses only recorded for Current MTN Mobile Money users. In addition, statistics are reported as a number or percentage of total respondents.		

TABLE 3. *MTN MOBILE MONEY SERVICES USED BY CURRENT USERS*

Service Used	FREQUENCY	PERCENTAGE (% of all respondents)
Money transfers (e-wallet, cash-in and cash-out, and other money transfers)	46	92%
Airtime purchases (top-up, phone credit purchases)	26	52%
General payments (pay for school fees, Dstv bill pay, electricity bills, and online shopping and supermarket purchases)	10	20%
Kwikiadvance (salary advance)	0	0%
Life insurance	1	2%
Does not use MMS for business activities	10	20%
Note. Variable responses only recorded for Current MTN Mobile Money users. In addition, statistics are reported as a number or percentage of total respondents.		

TABLE 4. *USERS' SATISFACTION WITH MTN MOBILE MONEY*

General Use	FREQUENCY	PERCENTAGE (% of all respondents)
1= Very Dissatisfied	0	0%
2= Dissatisfied	3	6%
3= Neutral/Not Sure	5	10%
4= Satisfied	26	52%
5= Very Satisfied	16	32%
Note. Variable responses only recorded for Current MTN Mobile Money users. In addition, statistics are reported as a number or percentage of total respondents.		

TABLE 5. *GENERAL MONEY SERVICE USE*

General Use	FREQUENCY	PERCENTAGE (% of all respondents)
Will use MTN Mobile Money for the next 12 months	50	100%
Currently uses Tigo Cash	15	30%
Currently uses Airtel Money	20	40%
Currently uses Other Money Services	9	18%
Note. Variable responses only recorded for Current MTN Mobile Money users. In addition, statistics are reported as a number or percentage of total respondents. Finally, Tigo Cash and Airtel Money are both money services consumers can use via the mobile phone, while "Other Money Services" includes other electronic money transfer services such as Western Union and Vigo Money (a national cash transfer service used in Ghana).		

TABLE 6. *MERCHANTS' SIZE OF BUSINESS*

Reason why user dropped MTN Mobile Money	FREQUENCY	PERCENTAGE (% of all respondents)
Micro-Business	34	68%
Not Micro Business	16	32%
Note. Variable responses only recorded for Current MTN Mobile Money users. In addition, statistics are reported as a number or percentage of total respondents.		

Merchants who were fully interviewed and revealed that they are current users of MTN Mobile Money were specifically asked to indicate how they use MTN Mobile Money. Based on survey results, almost all merchants use MTN Mobile Money to perform money transfers (92% of all current users), and the majority of all merchants (52% of all current users) use the airtime purchase option (buying additional "talk time").

Merchants who revealed to the researcher that they are current users of MTN Mobile Money were also asked to indicate how many workers they employ. The researcher asked current users this question because she wanted to be able to gauge the size of each merchant's business[8]. According to survey results, 68% of all current users included in this study own/manage a "micro-business," and the remaining 32% own/manage businesses that employ 6 or more workers.

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[8] To accurately classify each business as a "micro-business" or "non-microbusiness," the author of this report researched the International Finance Corporation's *Micro, Small and Medium Enterprise Country Indicators* (MSME-CI) , and identfied MSME indicators for Ghana. What she found was that businesses in Ghana that are considered "micro" employ between 1-5 workers, and businesses that employ 5 or more workers are not considered "micro-businesses". For analysis purposes, merchants who employ five or fewer employees are categorized as "micro-business" owners while merchants who employ 6 or more workers are categorized as "not-micro business" owners. For more information please see Kushnir, Mirmulstein, & Stevenson (2010).

4.2   Defining "value" in this study

The literature reviewed and analytical framework constructed in Chapters 2 and 3 largely guided the coding of questionnaire responses pertaining to value in this study. The researcher used a content analysis driven process to condense "value" data into three preliminary categories: 1. Transaction Costs; 2. Compensation; and 3. All other responses. After completely surveying the data and examining responses, other themes began to emerge from the data not accounted for by the theory.

Two additional areas of "value" were identified by the principal investigator of this study; these two areas of "value" are:

1. "Business Development"; and
2. "Other".

After reanalyzing survey results, the researcher found that many merchants viewed their use of or experiences with MTN Mobile Money as a strategic plan to promote the long-term wellbeing of their business. Further, many merchants stressed that their adoption of MTN Mobile Money was related to their relationship with their customers, the ICT market, and the promotion of ICTs in Ghana as a whole. As a result, the category "Business Development" was introduced to the study's research model.

The final category, "Other," was inductively introduced to the study's research model after the researcher found that many survey responses did not fall into any of the preceding categories. More specifically, this category encompasses all other ways in which MTN Mobile Money has created value for merchants/business owners included in this study. Examples of "other"-type value that has been created for merchants included in this study include: "Management Decision" and "MTN Ghana approached me about providing the [mobile money] service".

Collectively, the four categories previously outlined represent a set of value-adding features for merchants and business owners who choose to adopt MTN Mobile Money. It is important to note, however, that these categories are not mutually exclusive, and many survey responses were coded as one or more of the categories created to represent "value" in this study.

Figure 5 illustrated on page 37 how the four categories of "value" fit into the study's research model.
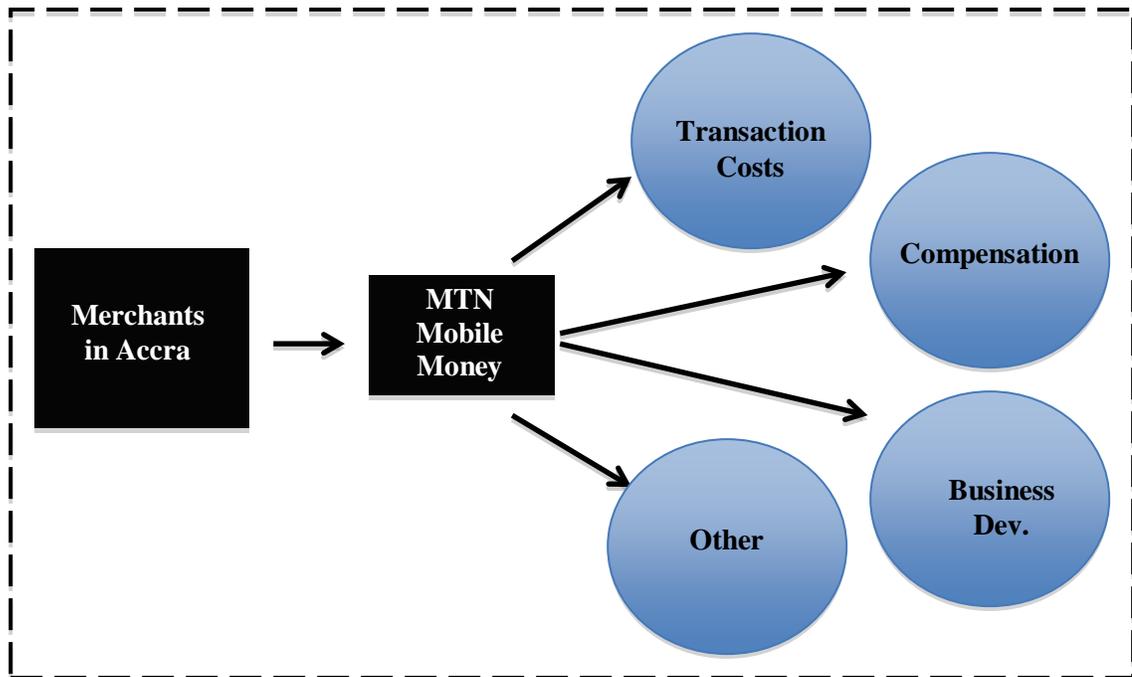
Figure 5.   *VALUE CREATED BY MTN MOBILE MONEY*

4.3   Does MTN Mobile Money create "value"?

This third section of the findings chapter will begin with a summary of "value" data recorded in this study, and then will proceed to break down the "value" data in four subsections. Please note: this section only includes information obtained from the 50 merchants who were fully interviewed, and indicated that they are current users of MTN Mobile Money.

To determine whether MTN Mobile Money creates value for merchants, the researcher included four key questions on the questionnaire. These four questions are:

1. Why did you choose to sign up to use MTN Mobile Money;

2. What benefits do you associate with using MTN Mobile Money;

3. What disadvantages do you associate with using MTN Mobile Money; and

4. Why did you choose to use MTN Mobile Money to perform certain [business] activities?

The four above-mentioned questions were left open-ended on the questionnaire. As a result, responses in this section are not mutually exclusive, and merchants could indicate more than one value type per question.

Table 7 on page 39 shows the distribution of responses recorded by merchants included in this study who actively use MTN Mobile Money by type of "value" and question number. As Table 2 Illustrates, active users of MTN Mobile Money who participated in this study believe that their adoption of the service has affected their compensation level and/or their ability to conduct transactions. These results support current theories of financial intermediation.

TABLE 7. *NUMBER AND PERCENTAGE OF RESPONDENTS ANSWERING BY TYPE OF VALUE AND QUESTION NUMBER*

Value Type/ Question #	TRANSACTION COSTS	COMPENSATION	BUSINESS DEVELOPMENT	OTHER
Q1. Why did you choose to sign up to use MTN Mobile Money?	6	14	8	39
	12%	28%	16%	78%
*Q2. What benefits do you associate with using MTN Mobile Money?	25	21	25	3
	56%	47%	56%	7%
**Q3. What disadvantages do you associate with using MTN Mobile Money?	35	19	1	13
	76%	41%	2%	28%
***Q4. Why did you choose to use MTN Mobile Money to perform certain [business] activities?	30	17	5	12
	75%	43%	25%	30%

Note. This table only includes responses recorded for the fifty current MTN Mobile Money users who were fully interviewed by the researcher. Each cell includes the number of merchants who cited a value type for each question and the corresponding percentage rate. (Percentages in each cell were calculated by dividing the number of respondents who cited the value type for each question by the total number of respondents who could cite a value type for the corresponding question). Finally, no column or row totals were calculated for this table because merchants could indicate more than one value type per question number.

*Five merchants replied "none" to this question. Their responses were omitted from the final table, and percentage rates have been adjusted to reflect the change in the total number of respondents who could answer this question.

**Four merchants replied "none" to this question. Their responses were omitted from the final table, and percentage rates have been adjusted to reflect the change in the total number of respondents who could answer this question.

***Ten merchants were unable to answer this question based on their response to a previous question. Their responses have been omitted from the final table, and percentage rates have been adjusted to reflect the change in the total number of respondents who could answer this question.

The following 4 subsections will take a closer look at each of the 4 "value" questions outlined at the beginning of Section 4.3. Specifically, the researcher will analyze the type of "value" that has been created for merchants included in this study, for each of the 4 "value" questions, by business type. -

4.3.1   Q1. Why did you choose to sign up to use MTN Mobile Money?

TABLE 8.   *REASONS WHY MERCHANTS SIGNED UP TO USE MTN MOBILE MONEY: MICRO VERSUS NOT-MICRO BUSINESS*

Size of business/ Value Type	Micro (# and % of micro-business merchants answering)	Not-Micro (# and % of not micro-business merchants answering)	All Respondents
Transaction Costs	6	0	6
	13%	0%	9%
Compensation	12	2	14
	25%	11%	21%
Business Development	5	3	8
	10%	16%	12%
Other	25	14	39
	52%	74%	58%
TOTAL	48	19	67
	72%	28%	100

Table 8 reports the distribution of "value" responses recorded for merchants included in this study who signed up to use MTN Mobile Money by size of business. As the theory hypothesized, one of the most reported "value" types for this question is

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"Compensation." This means that more merchants included in this study believed that signing up to use MTN Mobile Money would increase their businesses' sales and/or profits. Interestingly, fewer respondents (6 merchants) believed that signing up to use MTN Mobile Money would enable them to conduct transactions more smoothly. Instead, a large majority (58%) of all respondents who answered this question cited "Other"-type value as the main reason why they signed up to use MTN Mobile Money. Examples of "Other" value created for merchants who answered this question include: "MTN agents came to my store and told me about it," "Management Decision," and "Organization Policy." It is also important to note that for this question proportionately more merchants who have a "micro-business" reported receiving "value" in all four categories than those merchants included in the study who do not have a "micro-business." The previously mentioned pattern is also apparent when looking at the number of merchants who cited receiving value from the two "value" categories aligned with the theory; "Transaction Costs" (6 merchants) and "Compensation" (12 merchants).

4.3.2 Q2. What benefits do you associate with using MTN Mobile Money?

TABLE 9. *BENEFITS OF USING MTN MOBILE MONEY: MICRO VERSUS NOT-MICRO BUSINESSES*

Size of business/ Value Type	Micro (# and % of micro-business merchants answering)	Not-Micro (# and % of not micro-business merchants answering)	All Respondents
Transaction Costs	20	5	25
	42%	19%	34%
Compensation	13	8	21
	27%	31%	28%
Business Development	13	12	25
	27%	46%	34%
Other	2	1	3
	4%	4%	4%
TOTAL	48	26	74
	65%	35%	100%

Table 9 above reports the distribution of "value" responses recorded for merchants who actively use MTN Mobile Money and what advantages they believe they receive from using the service by size of business. According to survey results, more merchants believe that the greatest benefits of using MTN Mobile Money are the "Compensation" they receive (21 merchants), the ability for the service to enable them to conduct transactions smoothly (25 merchants), and the fact that they are able to increase customer patronage and advertise the other services their business offers (25 merchants). Here, the theory seems to support the notion that the use of mobile

banking services positively affects consumers and facilitators through increasing the potential for profits/sales as well as enabling market participants to conduct transactions more effectively. That being said, the theory does not account for the non-financial value created as a result of facilitators using technologically-savvy banking instruments to support the long-term growth of their business(es), namely business development. Finally, like Q1, proportionately more merchants who own/manage a "micro-business" and answered this question cited having received value in all four "value" types than merchants included in this study who do not own/manage a "micro-business." This same pattern is also evident when looking at the number of merchants who have a "micro-business" and cited receiving value from the two theory-related "value" categories: "Transaction Costs" (20 vs. 5 merchants) and "Compensation" (13 vs. 8 merchants).

4.3.3 Q3. What disadvantages do you associate with using MTN Mobile Money?

TABLE 10. *DISADVANTAGES OF USING MTN MOBILE MONEY: MICRO VERSUS NOT-MICRO BUSINESSES*

Size of business/ Value Type	Micro (# and % of micro-business merchants answering)	Not-Micro (# and % of not micro-business merchants answering)	All Respondents
Transaction Costs	24	11	35
	50%	55%	51%
Compensation	14	5	19
	29%	25%	28%
Business Development	1	0	1
	2%	0%	1%
Other	9	4	13
	19%	20%	19%
TOTAL	48	20	68
	71%	29%	100%

Table 10, which is depicted above, reports the distribution of "value" responses recorded for merchants who actively use MTN Mobile Money and what disadvantages the service has by size of business. Like Q2, two of the most reported "value" types for this question are "Transaction Costs" and "Compensation." In reference to "Transaction Costs," many merchants cited that the unpredictability of MTN Ghana's network frequently creates problems, as merchants are incapable of undoing transactions that are made in error and no transactions can be facilitated if the network is down. Further, while many merchants firmly believe that acting as an MMAM is a

great advantage that can positively affect their ability to increase their compensation level(s), many merchants also cited that they do not receive their compensation in a timely manner from MTN Ghana or its Partner Banks, or no compensation is received at all. Therefore, references to "Transaction Costs" and "Compensation" here demonstrate that while MTN Mobile Money has the potential to help business owners/managers increase their compensation level(s) and reduce transaction costs, there are still problems with the system's network that are hindering facilitators and users of MTN Mobile Money from fully realizing all of the benefits of this type of service. Finally, like Q1 & Q2, proportionately more merchants who have a "micro-business" reported "disadvantages" from using/facilitating MTN Mobile Money in all four "value" categories than those merchants included in the study who do not have a "micro-business."

4.3.4   Q4. Why did you choose to use MTN Mobile Money to perform certain [business] activities

TABLE 11.   *REASONS WHY MERCHANTS USE MTN MOBILE MONEY TO PERFORM CERTAIN BUSINESS ACTIVITIES: MICRO VERSUS NOT-MICRO BUSINESSES*

Size of business/ Value Type	Micro (# and % of micro-business merchants answering)	Not-Micro (# and % of not micro-business merchants answering)	All Respondents
Transaction Costs	25	5	30
	51%	33%	47%
Compensation	15	2	17
	31%	13%	27%
Business Development	3	2	5
	6%	13%	8%
Other	6	6	12
	12%	40%	19%
TOTAL	49	15	64
	77%	23%	100%

Table 11 above reports the distribution of "value" responses recorded for merchants who actively use MTN Mobile Money and why they decided to use MTN Mobile Money to perform certain business activities by size of business. Like Q2 and Q3, the two most cited "value" responses for this question are "Transaction Costs" and "Compensation". In addition, references to "Transaction Costs" and "Compensation" "value" types in this question helps to reaffirm how merchants included in this study who actively use MTN Mobile Money view using/facilitating MTN Mobile

Money—as a great advantage. Further, the proportion of all merchants who actively use the service, answered this question, and cited "Transaction" or "Compensation"-type value as a response (30 and 17 merchants respectively) helps to support what the theory hypothesizes concerning why consumers/(financial) intermediaries demand/provide banking services and instruments, namely these individuals have the potential to increase their compensation level and/or reduce their transaction costs. Lastly, like Q1 – Q3, more merchants who responded to this question and own/manage a "micro-business" cited a "value" type than merchants included in this study who do not own/manage a "micro-business."

Chapter 5

CONCLUSIONS, IMPLICATIONS, & FUTURE RESEARCH

5.1   Summary

In this paper, we have explored how MTN Mobile Money merchants in Accra, Ghana, use/facilitate mobile money services. We have also examined whether MTN Mobile Money is able to create "value" for users and facilitators of the service. Based on survey results, the principal investigator of this study was able to demonstrate that active users and facilitators of MTN Mobile Money do, in fact, receive value from using/providing banking services via the mobile phone. This relationship is especially apparent among merchants included in the study's sample who own/manage a "micro-business." In addition, the analysis performed in this study supports current theories of financial intermediation and proves that consumers/facilitators of financial intermediation activities choose to use/provide financial services via the mobile phone because they have the ability to promote increased compensation and reduce transaction costs. Further, the analysis performed in this study has also provided a framework for identifying other "value-adding" features of using and facilitating mobile banking services, namely "Business Development." In summary, the results of this study paint an optimistic picture concerning the benefits MTN Mobile Money,

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along with other mobile banking applications/services, provide for both users and facilitators.

5.2 Policy implications

Based on the results of this study, one may conclude that GoG and BoG's decision to implement a bank-led, many-to-many m-banking system has enhanced the ability for merchants to sustain their operations by reducing transactions costs and increasing compensation potential. Further, results of this study also indicate that Ghana's decision to adopt an interoperable m-banking system may prove to be a strategic way to support the growth and development of "micro-businesses" throughout the country. In addition, the apparent success of MTN Mobile Money, as illustrated by this study, provides a foundation up which one could suggest that BoG and GoG push m-banking facilitators and service providers to adopt MTN's Mobile Money Network model; this would include encouraging all merchants and traders throughout Ghana to adopt mobile banking (both as a user and a facilitator) to bolster the sustainable development of an m-banking system and business environment in the country. Finally, the unrepresentative empirical setting depicted in this study provides important lessons for Ghana and other countries concerning how a many-to-many, bank-led m-banking regulatory framework can impact user/facilitator experiences, namely by reducing transaction costs for facilitators and consumers, enhancing compensation potential for facilitators, and serving as a strategic tool for business development.

It is clear that mobile banking is a strong alternative to and holds significant advantages over the traditional branch-based banking paradigm. Further, GoG's adoption of an atypical mobile banking system—namely the bank-led, many-to-many model—has created the potential for the use of the mobile phone to become a tool to transform the banking experience for Ghanaians. As illustrated in the case study conducted by the author of this research, Ghana's m-banking model has the ability to enhance the banking experience for consumers and facilitators within the sector, and has the potential to serve as a strategy to promote the development of a sustainable business environment for microbusinesses in Ghana.

Given that Ghana's m-banking regulatory environment promotes partnerships between industry stakeholders (many-to-many) and the use of third party agents (much like MTN Ghana's Mobile Money Authorized Merchants) in the mobile banking process, the new sector should continue to grow. Further, based on the results of this study (concerning the value created for consumers and facilitators who use and/or facilitating mobile banking services) and consumer preferences in the developing nations like Ghana where bank penetration is low but many want and/or need access to the formal banking sector, one would expect that the current regulatory environment would only further promote the growth of this new industry.

Despite all of the gains to be had from Ghana's m-banking model, however, the government's adoption of a bank-led, interoperable m-banking system has one major flaw: GoG and BoG have prohibited exclusive partnerships in the sector, but expect MNOs, Banks, and other sector participants to invest in a system that their competitors will also benefit from. If GoG expects to move forward with this type of m-banking model, it will have to find a way to persuade banks, MNOs, and other m-banking stakeholders that the opportunity cost of choosing not to participate in this new market is greater than investing a system that is sure to benefit their competitors as well as themselves.

GoG and BoG should not have a hard time convincing the system's banking participants, as these regulatory agents have invested large amounts of money in Ghana's mobile banking system's infrastructure by developing and implementing an interoperable payment and clearing house, GhiPPS. Further, the GhiPPS system can be used nationally. Thus, for banks and other deposit-taking financial institutions within the m-banking system that wish to extend their mobile banking outreach beyond the City of Accra (where bank penetration is extremely low), GhiPPS does not represent a hostile takeover of the mobile banking sector by the national government. It instead provides a way to (remotely) link the rest of Ghana to the formal banking sector, and enhances the speed and reduces the costs associated with settling payments or financial transactions. Trying to persuade MNOs within Ghana's m-banking system, however, will certainly be more difficult.

Although Ghana's m-banking sector is bank-led, MNOs operating within the system have thus far taken on the most risk in developing, advertising, and deploying m-banking platforms. Further, MNOs provide the two most important technologies in the mobile banking process, the network infrastructure (wireless service) and wireless technology (access to the mobile phone). As a result, MNOs operating within Ghana's m-banking system face more costs than any other m-banking participant. If GoG and BoG wish promote the use of mobile banking outside of Accra, they will most likely have to assume some of the risk and/or costs that MNOs face as the main m-banking service providers in Ghana.

If GoG and BoG are successful at promoting the bank-led, many-to-many model, and are able to overcome some of the many challenges posed by the many-to-many model, Ghana's m-banking system will:

- Enable consumers and facilitators to experience and/or interact with the formal banking sector in an innovative way;
- Attract and serve more customers, while simultaneously promoting financial inclusion;
- Foster a culture of participation among stakeholders in the larger (Ghanaian) economy; and
- Encourage the participation and development of small businesses in Ghana.

While there is much to be learned from Ghana's adoption of a bank-led, many-to-many m-banking model, countries that wish to adopt this type of system as a strategy or instrument to promote social and economic development should take away the following lessons:

- Implementing a bank-led m-banking model has its advantages. Namely, banks can contribute their inside knowledge of banking activities as well as their banking infrastructure (payment settlement systems) to the mobile banking process.

- Employing a many-to-many model can promote interoperability and maximize outreach, but regulators should consider the risk, role(s), and costs faced by all m-banking participants, as these three factors have the ability to affect how willing m-banking stakeholders are to contribute to the development of an m-banking system.

- Finally, since the inception of the sector in 2008, the Ghanaian government and BoG have not formally created an institution that will monitor and/or regulate the progress of mobile banking in Ghana. While BoG and GoG at large have a "de facto regulatory role" in Ghana's m-banking sector, a country that wishes to implement any type of m-banking model should first create an independent body that will help oversee the development of mobile banking throughout the country. Creating this body will serve two important purposes:

1. Ensure that the activities of sector participants are being regulated and that all mobile banking stakeholders are adhering to minimum standards and qualifications; and

2. Allow for the government (or any other independent party) to perform impact evaluations of the sector that can help test whether the activities undertaken in the sector are meeting strategic goals and/or objectives.

5.3   Further Research

To learn more about the relationship between "value" created by mobile money services, like MTN Mobile Money, the author of this study recommends the following for further research:

1. This study should be re-conducted in order to examine whether obtaining a higher response rate has an impact on the ability of current financial intermediation theories to (fully) explain why consumers and facilitators do/should undertake/facilitate intermediation activities; and

2. A similar study should be conducted in another municipality or country, where the model of m-banking provision is not many-to-many and/or bank-led, to examine whether changing location, m-banking model-type, among other characteristics, has an impact on the ability of current financial intermediation

theories to (fully) explain why consumers and facilitators do/should

undertake/facilitate intermediation activities.

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Appendix A

Study Materials

A.1 Informed Consent Form

THE RISE AND GROWTH OF MOBILE BANKING IN GHANA:

A Case Study on the Impact of MTN Ghana's Mobile Money Cash Management Service on the Business Practices of Traders/Merchants in the Accra Metropolitan Assembly.

PURPOSE OF RESEARCH

My name is Ama Nyame-Mensah and I am a second year M.A. candidate at the University of Delaware's School of Public Policy and Administration. I am conducting a confidential survey to learn more about how mobile banking services impact businesses. In particular, I am interested in learning about how Merchants in the Accra Metropolitan Assembly use and are affected by MTN Ghana's Mobile Money service. You have been chosen at random from MTN Ghana's online list of Greater Accra Region Mobile Money Merchants. Overall, 114 persons will be included in the study.

RISKS & PARTICIPATION

Participation in the study will require answering questions from a survey and will take approximately 15-20 minutes. Your responses are voluntary and any information that you provide will remain strictly confidential. If you agree to participate, you will be asked a series of questions and your responses will be recorded (either manually or by voice recorder) for statistical analysis. The data collected from this survey will only be used for educational and/or research purposes related to the completion of my thesis, and all responses will be allocated and reported as a group .You can refuse to answer any question or to stop the interview at any time. Withdrawing from the project will not result in any negative consequences for you or your business.

If you have questions about the project, you may contact Ama Nyame-Mensah at +1 267-902-8488, or amanm@udel.edu. If you have questions regarding your rights as a participant, you may contact the Chair of the Human Subjects Review Board at the University of Delaware at +1 302-831-2137.

By allowing me to check the first box, below, you agree to participate in the study. By allowing me to check the second box, below, you agree to have the interview recorded.

**Please be aware that you will be given a copy of this form for your records.

☐ I agree to participate in this study

☐ I agree to have this interview recorded by a voice recorder

_____Project Director initials and Date

Thank you,

Ama Nyame-Mensah
MA Candidate, Urban Affairs and Public Policy '13
Graduate Research Assistant
Center for Community Research and Service
University of Delaware
+267-902-8488
amanm@udel.edu

A.2 Telephone Consent Script

THE RISE AND GROWTH OF MOBILE BANKING IN GHANA:

A Case Study on the Impact of MTN Ghana's Mobile Money Cash Management Service on the Business Practices of Traders/Merchants in the Accra Metropolitan Assembly.

PURPOSE OF RESEARCH

Hello, my name is Ama Nyame-Mensah and I am a second year M.A. candidate at the University of Delaware's School of Public Policy and Administration. I am conducting a confidential survey to learn more about how mobile banking services impact businesses. In particular, I am interested in learning about how Merchants in the Accra Metropolitan Assembly use and are affected by MTN Ghana's Mobile Money service. You have been chosen at random from MTN Ghana's online list of Greater Accra Region Mobile Money Merchants. Overall, 114 persons will be included in the study.

RISKS & PARTICIPATION

Your participation in the study will require answering questions from a survey and will take approximately 15-20 minutes. Your responses are voluntary and any information that you provide will remain strictly confidential. If you agree to participate, you will be asked a series of questions and your responses will be recorded for statistical analysis. The data collected from this survey will only be used for educational and/or research purposes related to the completion of my thesis, and all responses will be allocated and reported as a group .You can refuse to answer any question or to stop the interview at any time. Withdrawing from the project will not result in any negative consequences for you or your business.

If you have questions about the project, you may contact Ama Nyame-Mensah at +1 267-902-8488, or amanm@udel.edu. If you have questions regarding your rights as a participant, you may contact the Chair of the Human Subjects Review Board at the University of Delaware at +1 302-831-2137.

**Please be aware that you can be provided with a copy of this form for your records via fax or email.

Do you have any questions? (If no, continue below.) (If yes, answer their questions to the best of their ability.)

Do you agree to voluntarily participate in this survey?

(Check below if merchant agrees, and print their unique ID Number.)

☐ I agree to participate in this study

_____
Participant Unique ID Number

(If merchant decides that they do not want to participate, see below)

Thank you for your time, and have a nice day.

_____Project Director initials and Date

A.3 Questionnaire

Survey Tool Background
Survey format: In person/Telephone interview
Sample frame: Cross-sectional sample of randomly selected MTN Mobile Money
Merchants
Incentive: None
Respondents: MTN Ghana Mobile Money Authorized Merchants
Geographic region: City of Accra, Ghana

Start of Survey

PART I OF SURVEY

1. Date of Interview

2. Respondent ID Number

3. What type of business do you operate

4. Do you use MTN's Mobile Money Service? (If no, end interview)

    ☐ Yes

    ☐ No

    ☐ Prefer not to answer

5. Why did you choose to sign up to use MTN's Mobile Money service?

    ☐ Prefer not to answer

☐ Please describe

☐ N/A

(See prompts if interviewee is unsure of question)

6. What benefits do you associate with using the Mobile Money service?

(See prompts if interviewee is unsure of question)

☐ N/A

7. What are some of the disadvantages you associate with using the Mobile Money service? Or what concerns do you have about using the Mobile Money service?

(See prompts if interviewee is unsure of question)

☐ N/A

8. Answer the following three questions to the best of your ability:

(See prompts if interviewee is unsure of question)

☐ N/A

How do you currently use the Mobile Money service?	How did you perform these same business tasks in the past?	Why did you choose to use the Mobile Money service to perform these activities?

9. How satisfied are you with MTN Ghana's Mobile Money service?

☐ 1 = Very Dissatisfied

☐ 2 = Dissatisfied

☐ 3 = Neutral/Not Sure

☐ 4 = Satisfied

☐ 5 = Very Satisfied

☐ Prefer not to answer

☐ N/A

☐ [Be prepared to record any explanations volunteered by participants]

10. Do you plan to use MTN Ghana's Mobile Money service, or another type of mobile banking service, during the next 12months?

☐ Yes, Mobile Money

☐ No

☐ Other mobile banking service, please describe

☐ N/A

11. Do you currently have a relationship with a bank? (if have relationship ask

    interviewee to describe then skip to #13, if no relationship, skip to #12)

    ☐ Yes, please describe (See prompts if interviewee is unsure of question).

    ☐ No

    ☐ Prefer not to answer

12. Why do you not have a relationship with a bank?

    ☐ The minimum balances are too high

    ☐ I choose not to keep my money in a bank

    ☐ No bank is conveniently located near me, or my business

    ☐ No bank will give me an account

    ☐ Bank fees and service charges are too high

    ☐ Other, please describe

    ☐ Prefer not to answer

    ☐ N/A

13. In the past year, what mediums have you used to access banking services?

    (Check all that apply)

    ☐ Used the online services of a bank

☐ Called into a banking call center

☐ Physically went into a bank branch

☐ Used a bank ATM machine

☐ Used Mobile Phone to access finances

☐ Other, please describe

☐ Prefer not to answer

☐ N/A

PART III OF SURVEY

14. What type(s) of mobile phone do you/your business use? (Check all that apply)

☐ Basic mobile phone

☐ Smartphone (non-touchscreen device, can send/receive emails, and can

edit documents and store files)

☐ Pocket PC Device (smartphone with touchscreen capabilities)

☐ Prefer not to answer

☐ Other, please describe

☐ Prefer not to answer

☐ None

15. How many employees are currently employed by your business?

☐ 1-5

☐ 6-19

☐ 20-49

☐ 50-99

☐ 100-499

☐ 500-999

☐ 1,000+

16. Approximately how many customers did you serve in 2012, or 2011? (Note what year interviewee provides answer for).

17. What are your business' total operating costs, in New Ghana Cedis, for the year? Please select from the ranges below.

☐ Less than 25,000 Ghana Cedis

☐ 25,000 – 39,000 Ghana Cedis

☐ 40,000 – 74,999 Ghana Cedis

☐ 75,000 – 99,999 Ghana Cedis

☐ 100,000 or greater Ghana Cedis

☐ Other, please describe

☐ Prefer not to answer

18. What is your business' net revenue level, in New Ghana Cedis, for the year?

Please select from the ranges below.

☐ Less than 25,000 Ghana Cedis

☐ 25,000 – 39,000 Ghana Cedis

☐ 40,000 – 74,999 Ghana Cedis

☐ 75,000 – 99,999 Ghana Cedis

☐ 100,000 or greater Ghana Cedis

☐ Other, please describe

☐ Prefer not to answer

A.4 Complete list of Questionnaire Prompts

Prompts for: What type of business do you operate?

- Agricultural, forestry, fishing & hinting, and mining

- Construction

- Manufacturing

- Wholesale trade

- Retail trade

- Information

- Finance, insurance, real estate, rental/leasing

- Arts, entertainment, recreation, accommodation & food service

- Educational, health and social services

- Other services (except public administration_

- Public administration

- Transportation & warehousing, and utilities

- Transportation, scientific, management, administrative, and waste management services

- Non-profit

- Other, please describe

Prompts Part I

Check account balances

Transfer money between accounts and/or for business

Transfer money to non-mobile users

Send money to family/friends

Withdraw cash for business operations

Pay utility bills (ECG bills)

Buy "airtime" (equivalent to purchasing minutes)

[Can they use the system for processing payment from customers and/or to suppliers?]

Prompts Part II

I didn't

Went to bank branch

Paid utility services in person

Paid for other service in-person, via check in mail

Called in to pay over the phone

Used computer banking services

Prompts Part III, +ves and -ves

+ves

Increased speed of receiving/sending information for business purposes

Increased speed of transferring/receiving money for business purposes

It is more secure than banking online from a computer

Ease of registration/activation

Mobility of phone

It lowered my operating costs

It increased my revenues

It was easier to make transactions this way

It was easier for me to pay my bills this way (ie: utility)

I was able to retain customers better using the service

Employees worked better using the service

-ves

Don't see the need to use mobile phones (easier to go to a bank branch or bank online using a computer)

Mobile banking is less secure than internet banking (computer) or banking at an affiliated bank branch

Mobile technology is too hard to get used to

The cost of the Mobile Money Service is quite high

Prompts Part IV

Checking Account/Savings Account

Credit Card / Credit Line

Mortgage

Investment Account

Appendix B

Human Subjects Exemption Letter

RESEARCH OFFICE

210 Hullihen Hall
University of Delaware
Newark, Delaware 19716-1551
Ph: 302/831-2136
Fax: 302/831-2828

DATE: October 5, 2012

TO: Ama Nyame-Mensah
FROM: University of Delaware IRB

STUDY TITLE: [383281-1] THE RISE AND GROWTH OF MOBILE BANKING IN GHANA: A
                         Case Study on the Impact of MTN Ghana's Mobile Money Cash Management
                         Service on the Business Practices of Traders/Merchants in the Greater Accra
                         Region.

SUBMISSION TYPE: New Project

ACTION: DETERMINATION OF EXEMPT STATUS
DECISION DATE: October 5, 2012

REVIEW CATEGORY: Exemption category # 2

Thank you for your submission of New Project materials for this research study. The University of
Delaware IRB has determined this project is EXEMPT FROM IRB REVIEW according to federal
regulations.

We will put a copy of this correspondence on file in our office. Please remember to notify us if you make
any substantial changes to the project.

If you have any questions, please contact Jody-Lynn Berg at (302) 831-1119 or jlberg@udel.edu. Please
include your study title and reference number in all correspondence with this office.