# Mobile Commerce: Mobile Money Transfer in Ghana

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## Master Thesis

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**Abstract**

Mobile money transfer allows people to send money using Short Message Service (SMS). Its low costs, fast speed and no need of having a bank account. The service started in Kenya as MPESA introduced by Safaricom and has since been replicated in other parts of the world especially in developing countries. The service was introduced in Ghana in 2009. Much research has been done in mobile money transfer but mostly focused on the success of MPESA. Very little is known with respect to the service in Ghana. This paper studied the use of mobile money transfer service in Ghana. The study sought to compare the extension and impact of the service as against the successful implementation of Kenya's MPESA. The objective was to investigate the socioeconomic characteristics of MMT users, their MMT experience, as well as the agents' operations.

Quantitative and qualitative research method based on the Positivism and the Interpretivism philosophies were used. The survey method using questionnaire was used. The respondents were users and agents of mobile money transfer in Ghana with sample taken from four communities, Ahenkro, Offinso, Buoho, and Kodie, located in the Ashanti region of Ghana. Secondary data was also used.

The result of the survey showed that MMT was used to a large extent in Ghana, just as in Kenya; it was concluded that like the survey by Mas & Radcliffe, (2010) which found that 98 percent of users in Kenya were happy with the service, the users in Ghana were equally happy, however, the percentage in Ghana was 88%.

Other findings included there were more male users of MMT than female users, the elderly sent mobile money to their younger counterparts, and Formal workers use more mobile money than their informal counterparts; the educational level of the formal senders was higher than the educational level of the corresponding recipient, Siblings are more recipients of mobile money in Ghana; mothers receive more mobile money than fathers; and spouses receive more mobile money than children. Like in Kenya, the popularity and use of mobile phones in Ghana was widespread and reflected the global statistics of mobile phone use; 90% of household owned and could use mobile phone, Unlike in Kenya where M-Ticketing is widely used, the service is not widespread in Ghana.

Registration/subscription process was quite mild; however, more efforts needs to be put in place by MNOs in Ghana for effective MMT. Withdrawing money with MMT in Ghana was instant and therefore quite good, there was high usage of the service, cross-net was used in Ghana to a large extent and the main reason was that the recipients were affiliated to a different network, Some of the reasons for the non use of MMT in Ghana were Complex procedures, delay in withdrawing money, inadequate agents/point of registration, and distrust. Others were inadequate advertisement and illiteracy. On top of the list was inadequate agents/point of registration.

There was a high the high proportion of agents who were Senior High School leavers, the agents' procedure to becoming MMT agent was found to be well structured, however, their training aspects needed to improvement.

**Acknowledgment**

**List of Abbreviations**

| | |
|---|---|
| G2P | Government to person |
| GGB | Ghana Graphic Business |
| HND | Higher National Diploma |
| ICT | Information and Communications Technology |
| IFC | International Finance Corporation |
| IMF | International Monetary Fund |
| ITU | International Telecommunication Union |
| MMT | Mobile Money Transfer |
| MNO | Mobile Network Operators |
| MPS | Mobile Payment Systems |
| PSTN | Public Switched Telephone Network |
| SSA | Sub-Saharan African |

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# 1. Introduction

In its December 2010 issue, the Economist gave the award for social and economic innovation in 2010 to the founders of M-PESA, Kenya's pioneering mobile money-transfer service. As explained by Mas & Radcliffe, (2010), in the article Mobile Payments go Viral : M-PESA in Kenya published by the Bill and Melinda Gates Foundation, M-PESA was developed by mobile phone operator Vodafone and launched commercially by its Kenyan affiliate Safaricom in March 2007. M-PESA ("M" for mobile and "PESA" for money in Swahili) is an electronic payment and store of value system that is accessible through mobile phones (Mas & Radcliffe, 2010). According to Mas & Radcliffe, to access the service, customers must first register at an authorized M-PESA retail outlet. They are then assigned an individual electronic money account that is linked to their phone number and accessible through a SIM card-resident application on the mobile phone. Mas & Radcliffe explain that customers can deposit and withdraw cash to/from their accounts by exchanging cash for electronic value at a network of retail stores (often referred to as agents). These stores are paid a fee by Safaricom each time they exchange these two forms of liquidity on behalf of customers. Once customers have money in their accounts, they can use their phones to transfer funds to other M-PESA users and even to non-registered users, pay bills, and purchase mobile airtime credit. All transactions are authorized and recorded in real time using secure SMS.

M-PESA is growing from strength to strength; Safaricom reached the 9 million customer mark in under three years (Mas & Radcliffe, 2010). The survey by Mas & Radcliffe, (2010) also found that 98 percent of users reported being happy with the service and 84 percent claimed that losing M-PESA would have a large, negative effect on them.

The GSM Association in their 2009 annual report (GSMA, 2010) reported that M-PESA is the most widely adopted mobile money deployment in the world. There are several other researches that have been done on the success of M-PESA including Mobile Money: The Economics of M-PESA by Jack & Suri, (2011), Three keys to M-PESA's success: Branding, channel management and pricing by (Mas & Ngweno, 2009), Seeking Fertile Grounds for Mobile Money: M-PESA is a huge success… and now what? By Heyer & Mas, (2009), as well as so many others.

The success of M-PEASA has stimulated the creation of many similar schemes in developing countries like Ghana where the global trend in terms of increase in Mobile-broadband subscriptions is no different. There has being increased Mobile-broadband subscription as well the number and market share of mobile network operators in Ghana over the years. The Total Cellular/Mobile Voice Subscriber Base in Ghana as at January, 2012 stood at 26,086,795(Ghana NCA, 2012) as against a population of 25, 546, 000 (ITU, 2013a).

As at the time of this research, there were six MNOs in Ghana. Out of these, the Ghana National Communication Authority (Ghana NCA, 2012)reports that MTN's market share stood at

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11,857,772, Vodafone's market share was 5,423,932, Airtel had a market share of 3,273,048, Expresso owned 212,804. The market share of the new entrant, GLO stood at 1,649,767, while that of Tigo was 3,669,472.

This trend has accelerated mobile commerce and therefore mobile money transfer in Ghana. Mobile money transfer service allows people to send money to others using Short Message Service (SMS). Its low costs, fast speed and no need of having a bank account let this service grow very fast in Ghana.

Out of the six MNOs in Ghana, MTN, Airtel, and Tigo offer Mobile money transfer service. The fourth provider, TXTnPay with other emerging providers are not widely known. Very little is known with respect to the service in Ghana. This paper focuses on the use of mobile money transfer service in Ghana. The study seeks to compare the extension and impact of this service as against the successful implementation of Kenya's MPESA (Jack & Suri, 2011). The paper will investigate the socioeconomic characteristics of MMT users in Ghana, their MMT experience as well as the agents' operations in Ghana.

### 1.1. Organization of the paper

As depicted in the figure 1, chapter one of the paper discussed the problem statement, research objectives, thesis statement, limitations/delineation, definitions and assumptions. Theoretical framework and background information as literature review on mobile money transfer in Ghana were reviewed in chapter 2. In the literature review, secondary data as well as online resources were mainly used since lots of research has been done on mobile money transfer in Africa.

Chapter three discussed the methodology of the research; the research design and methodology used. Chapter three discussed in detail why the chosen method was selected and how it was applied, followed by a description of limitations of the research, among others. Chapter four highlighted the results of the questionnaire followed by a discussion. This chapter was divided into three main parts; the first discussed the socioeconomic characteristics of the respondents, the second covered the MMT operation from the perspective of the respondents, the last part covered the agents operations.

Chapter five covers conclusion of the research and recommendations for MMT operation in Ghana as well as those for future research.
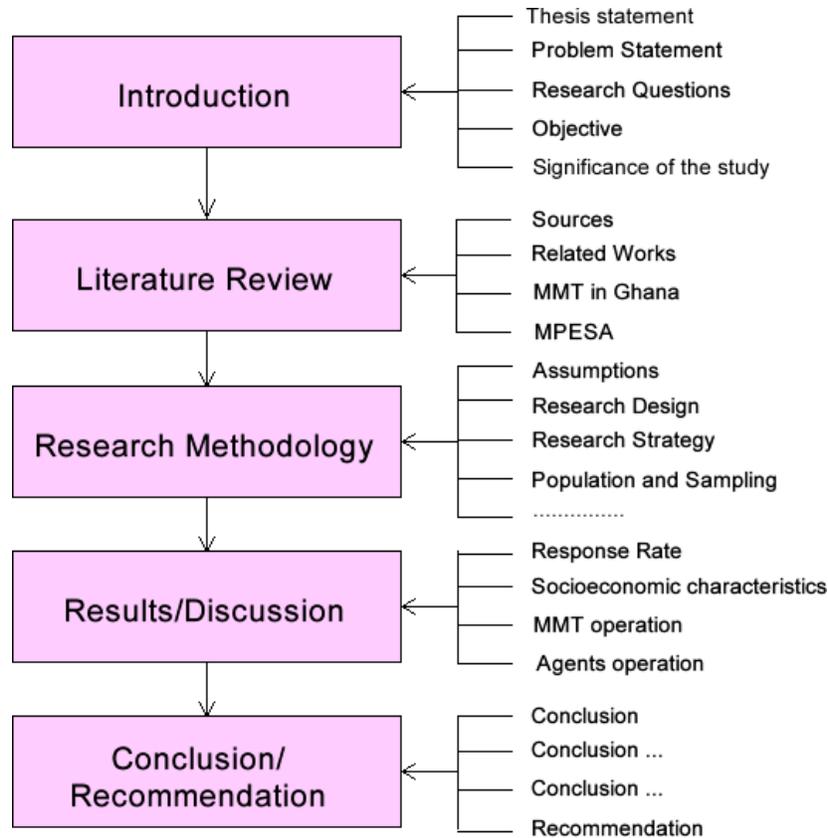
Figure 1: Overview of research. Adapted from Hoftstee, (2006)

### 1.2. Thesis Statement

An analysis of Mobile of Money Transfer in Ghana: Mobile Money Transfer has been successful in Ghana like Kenya's M-PESA, the service is cheaper and allow people without bank accounts to transfer money via SMS.

### 1.3. Problem Statement

Transferring money has been part of the socio-economic development of Ghana. Money is transferred for so many reasons; pay bills, as remittance, for trade, and among others. Remittance is one of the major reasons of transferring money in Ghana. Ghana, like most other developing countries has a high rate of migration. It is common to find the bread winner of most households residing in urban centers with the rest of the family in the rural areas. Most of their (migrants) siblings find themselves in schools (or other form of training) in urban cities. Migrants are misconceived to have a relatively higher standard of living than rural and/or non-migrants and therefore culturally obliged to remit the family and take care of the siblings on regular basis if not at the end of every month.

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Other reason for transferring money is the fact that there are high percentages of students who are temporary resident in locations away from their regular homes. Money transfer is often used to send and receive money from parents/guardians and other well wishers.

In Ghana, the most common channel for transferring money before the introduction of MMT was informal means by travelers and bus drivers. These informal and unlicensed means resulted in considerable risk that the money will either not reach its final destination or had some "stories" associated. The Government owned postal service as well as private companies mainly banks introduced formal remittance services which were intended to avert the risks of informal methods. However, these interventions are perceived by customers as costly, slow, or ineffective. An example is a lamentation of Stephen A.Quaye, a Ghanaian resident in Toronto-Canada as appeared in Ghana web as a feature article (Quaye, 2011). Other articles such as (Adjetey, 2005) and (GGB, 2013) point to the ineffectiveness of the Ghana postal system. The Money Order service by the Ghana Post required the recipient to endorse money orders by heads of institutions, a clergy, or a person of repute to certify the originality of the recipient. The recipient must present the endorsed order at the designated postal office for cash. People found this frustrating especially getting their orders endorsed and again travelling to nearest postal office.

As at the time of this research, there were 27 banks in Ghana, the largest bank; Ghana Commercial bank had 150 branches (BOG, 2011). All these branches are centered at the district capital towns. Again only a small share of the population has access to a bank account. This may be attributed to bureaucracy and rigorous documentation associated with getting a bank account in Ghana. To worsen the situation, those with access to banks are usually greeted with lots of frustrations as senders and recipients must queue sometimes for a whole day to transact at bank branches, and those living in more remote locations must travel to branches in district capitals.

Mobile Money Transfer has come out as the most innovative alternative and seen by many as ameliorating existing money delivery channels. The service has successfully accelerated financial inclusion of the disadvantaged and mostly rural unbanked and changed the financial landscape in Ghana allowing efficient transfer of money. Mobile phones are compensating for inadequate infrastructure, slow postal services, and the limited coverage of banking systems.

As a result of these trends, MMT has been a big business in Ghana and therefore the rising number of subscribers. However, challenges do exist in both regulatory and operations. The Bank of Ghana (BOG) is the governing authority of all payment systems/services in Ghana. BOG is responsible for the enactment of all policies and making sure that service operators are akin with those policies set by BOG.

Following the success of MPESA in Kenya, this research seeks to ascertain how successful the MMT model is in Ghana by looking at the socio economic impact of the service among Ghanaian households.

### 1.4. Research Questions

This research is intended to find the extent of Mobile Money Transfer in Ghana. To explicitly exhaust the topic, it needs to be broken down into questions. These questions will serve as a guide to give the research focus. A population is then needed to respond to these questions and then conclusion made from the answers.

In other to obtain data to argue and make conclusions to the research, the following questions form the basis of the paper. Originally, the research questions were divided into: the questions regarding the governmental regulations, Mobile Network Operation, Mobile Money Transfer operation from the perspective of the customers, and the agents operation.

However, this broad approach to the topic was envisaged to consume and increase the time and resources of the research and therefore there was the need to consider relevant aspects. More precisely, the paper would seek to ascertain answers to the following questions:

Socioeconomic Characteristics

1. What are the Individual Characteristics of respondents: age, sex, and educational attainment?
2. What were the means of sending and/or receiving money before mobile phone access?
3. What is the share of households with at least one cell phone?
4. What is the share of the unbanked population?
5. What is the share of urban/rural population in MMT?
6. What has been the method of saving before MMT?
7. What has been the nature of MMT sent and received: number per month?
8. To find out the products used and to what extent are users using the service to pay bills?

MMT operation (Customer experience with MMT)

1. Are there difficulties in subscription/registration?
2. Are there delays to withdrawing money from MMT (reasons)?
3. What is the time frame until withdrawal is possible?
4. What are the reported experiences with agents?
5. Are users satisfied/secured with MMT?
6. Which MMT MNO is used to high extent in Ghana?
7. What is the extent of on-net vs. cross net operation?
8. What are the Individuals' reasons for non-use of MMT?

Agents operation

1. What are the characteristics of MMT agents in Ghana?

2. What is the extent of the structure to becoming an MMT agent?

3. What is the extent of agents' MMT training?

4. Which MNOs does agents work with and which ones are popular?

5. What is the extent of complaints?

6. What are the challenges in the agents operation?

## 1.5. Research Objectives

In other to find answers to the questions, the following objectives form the scope of the research. They are intended to explain and measure what exactly will be the target and therefore the conclusion of the research in Ghana.

Socioeconomic Characteristics

1. To find out the Individual Characteristics of respondents: age, sex, and educational level
2. To find out the means of sending and/or receiving money before mobile phone access
3. To find out the share of households with at least one cell phone
4. To find out the share of the unbanked population
5. To find out the share of urban/rural population in MMT
6. To find out the method of saving before MMT
7. To find out the nature of MMT sent and received: number per month.
8. To find out the extent to which user are using the service to pay bills

MMT operation (Customer experience with MMT)

1. To find out whether there are difficulties in subscription/registration
2. To find out whether there are delays to withdrawing money from MMT
3. To find out the time frame until withdrawal is possible
4. To ascertain customers reported experiences with agents
5. To find out whether customers are satisfied/secured with MMT
6. To find which MMT MNO is used to high extent in Ghana
7. To find out the extent of on-net vs. cross net operation
8. To find out the individuals' reasons for non-use of MMT in Ghana

Agents operation

1. To find out the characteristics of MMT agents in Ghana
2. To find out the extent of the structure to becoming an MMT agent
3. To find out the extent of agents' MMT training
4. To find out the MNOs agents work with as well the popular/most used ones

5. To find out the extent of complaints

6. Find out the challenges in the agents operation

### 1.6. Significance of the study

Mobile Money Transfer (MMT) is a service that is fast growing in developing countries. This may be as a result of inadequate banking and postal infrastructure. Much research in the area of MMT has been done but saturated on the Kenya's MPESA. Very little is known in the context of Ghana, another developing country. This paper "Mobile Money Transfer in Ghana" is significant for the following reasons.

Firstly, it will provide information on the extension of MMT service in Ghana. This information will serve as a benchmark against Kenya's MPESA. Again, the research will provide the Ghanaian perspective of the MMT which will help stakeholders; Government, Academia, MNOs, among others to ascertain how successful or otherwise of the service in Ghana; whether the service in Ghana is as successful as the Kenya's MPESA.

Research on the operational procedures accelerating or impeding the MMT service in Ghana will guide MNOs to be better informed in policy mining; to do away with policies that hinder the success of MMT in Ghana especially on requirements for data encryption, user authentication and information checks/disclosures.

The research is intended to find out the Socioeconomic Characteristics of MMT users in Ghana. This information is very vital for MNOs. MNOS will have a better understanding of the user base and therefore to serve them better. This information will help MNOs to be well equipped and therefore plan for the future improvement on the MMT service

## 2. Literature Review

This chapter presents relevant review of literature related to Mobile Money Transfer in Ghana. It outlines what is known and not known about the Mobile Money Transfer in Ghana. This chapter is important because "without it you will not acquire an understanding of your topic, of what has already been done on it, how it has been researched, and what the key issues are. …show that you understand previous research on your topic. This amounts to showing that you have understood the main theories in the subject area and how they have been applied and developed, as well as the main criticisms that have been made of work on the topic" (Hart 1998, cited in Bell, 2010).

### 2.1. Sources

Saunders, Lewis, & Thornhill, (2009) explain that the literature sources available to help to develop a good understanding of, and insight into, previous research can be divided into three categories: primary (published and unpublished), secondary, and tertiary. They depicted the sources in figure 2 below.
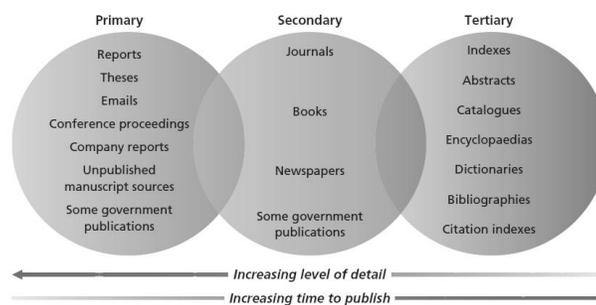


Figure 2: Literature sources available (Saunders et al., 2009)

In this research, primary, secondary, and tertiary sources were used to find literature. All three sources were selected as a result of the presumption by the author that not much research has been done and published on the topic. The reason may be attributed to the fact that mobile money in Ghana is a recent service and in the infant stage of development. There was therefore the need to broaden the scope of the search.

The following primary sources were used: general reports on MMT, MNOs reports, Theses on MMT, Government publications on MMT, and conference proceedings. Journals on MMT, Books, and Newspapers were also used as secondary sources. Tertiary sources included systematic search in databases included mainly from databases such as Science Direct, IEEE Xplore, Emerald Insight, ACM Digital Library, AIS eLibrary, among others. This information was obtained through emails, libraries and online searches via the Internet. For example, Search through tertiary literature sources through online journal such as ticTOCs at http://www.jisc.ac.uk/, ZETOC at http://zetoc.mimas.ac.uk/ , Wiley-Blackwell at http://onlinelibrary.wiley.com/, British National Bibliography (BNB) at http://www.bl.uk/, Thomson Reuters at http://thomsonreuters.com/, IngentaConnect at

http://www.ingentaconnect.com/, did not reveal any journal on the topic from the Ghanaian perspective. Even though EMERALD at http://www.emeraldinsight.com revealed journals relating to mobile phones in Ghana, they were not related to mobile money transfer in Ghana.

Tact was used in defining parameters of the search for literature on the topic. The following were taken into consideration: language of publication; English, subject area; E-commerce, business sector; telecommunication industry (mobile money), and geographic area; Ghana, publication period; at least five years.

Several offline and online libraries were used to review the academic literature related to this research including the library of the University of Applied Sciences Northwestern Switzerland as well other network of libraries. Google Scholar was also used.

The few literature found were further categorized into scientific and commercial publications. This categorization was to consider the originality and therefore the authenticities of the publications since scientific publications are usually works not previously published and are peer reviewed before being accepted for publication. They are more organized into databases and are relatively easier to reach. Commercial publications on the other hand, are less frequently published types of articles including reports, internal reviews/research, comments, and opinions, among others. Unlike scientific publications, commercial publications are usually replies on previously published articles, events, book reviews, among others.

## 2.2. Related works

The coming sections reviews commercial publications related to the research topic. The search for "Mobile Money Transfer in Ghana", "Mobile Money in Ghana" on the internet via search engines (Google, Yahoo, and Lycos) didn't lead to a large number of relevant academic publications. Only few commercial publications were related to Mobile Money Transfer in Ghana. The first article published by Visa (VisaInc, 2013), the global payments technology company, revealed that about 93% of Ghanaians are aware of Mobile Money. The publication pointed that MTN Ghana, a Mobile Network Operator in Ghana, is the most recognized mobile money provider with 90% of people being aware of the brand.

According to the study (VisaInc, 2013), 88% of respondents in Ghana cited "safety of not having to carry around a lot of cash" as the primary benefit of mobile money, with speed of sending money (73%) the second most important benefit. Also, the ability to quickly send money to family members (90%) is the principal intended use. Saving money for the family is the second highest rated intended use (69%), against an average of 52% across the countries surveyed "Sending money to the wrong number" is the number one barrier to adoption in Ghana (62%) (VisaInc, 2013).

Other highlights of the publication included 67% of Ghanaians feel they have a "clear understanding of mobile money". "Ability to have cash and send it in case of an emergency" is

considered a key benefit by Ghanaians (61%). "Keeping spending for myself" also ranked as a high intended use in Ghana (46%) (VisaInc, 2013). According to the survey, (VisaInc, 2013), Ghana is one of the leading mobile money markets in the world. Industry players have worked hard to raise the awareness of mobile money services in order to drive financial inclusion among Ghana's large unbanked population (VisaInc, 2013).

The Visa Mobile Money study (VisaInc, 2013) analyzed the financial services needs and expectations of mobile money among nearly 2,500 consumers, mobile money agents, and merchants in Bangladesh, Ghana, India, Indonesia, Nigeria and Pakistan. It must be emphasized that an attempt to obtain the full publication proved futile. The details of the study; the coverage, rationale, data collection instruments, among others were not mentioned.

The second article (King, 2013), pointed out that Tigo Ghana, one of Ghana's leading telecom operators reported high volume usage of mobile money services in Ghana, with a third of its total subscribers using Tigo Cash, Tigo's mobile money service. According to King, (2013), Tigo recorded about GHS 11 million (equivalent to CH5356407.45) mobile money transaction daily. Tigo Cash has approximately 3.75 million registered subscribers, equivalent to 30% of its total customer base (King, 2013). 13% of these subscribers are actively using mobile money transactions between 5 and 6 times per month (King, 2013).

King (2013) revealed that Tigo Ghana has the highest figure of mobile money subscriber base in Ghana. Furthermore, rival operators Airtel Money has approximately 900,000 subscribers, with a monthly transaction of 540,000 amounting to over GHS 4 million per day. MTN Mobile Money on the other hand, records 3 million subscribers, with 1.5 million transactions amounting to GHS 52 million monthly. Again, a news article (Tawiah, 2013) reported officials of MTN asserted that the service is under-subscribed at a time bulk cash transfer has become a risky venture.

According to King (2013), there is a great possibility and opportunity for other operators to compete with Tigo Ghana as it only offers plain and simple forms of services such as airtime top up, P2P money transfer, and cash withdrawals from agents; while rivals Airtel Money and MTN Mobile Money offer more sophisticated services including bills payments, online and offline shopping experience, and more. Again, he added that it is Tigo Ghana's strategy to keep its services simple as it is more reliable and less confusing to customers. He believes that this is the main reason that the company has the greatest number of users in Ghana. According to Tawiah, (2013) MTN sought Ghana government's support in the form of education to boost confidence of subscribers and to clear doubts about the genuineness of the service.

Even though Tobbin, (2012), a scientific publication, was a qualitative study on mobile banking technology acceptance by the rural unbanked, the findings revealed interesting trends. Tobbin, (2012) findings is in contrast with VisaInc, (2013) assertion of the popularity of MMT in Ghana. Tobbin noted that despite the appearance of MNOs in Ghana, these schemes have remained largely unnoticed by Ghanaians. This is interesting and needs further exploration. According to

Tobbin, The field study among the rural dwellers revealed some important perceptions that affect early adoption of the technology among this section of the population. All participants had very little knowledge of the *mobile banking schemes* available in Ghana. Mobile banking scheme is used in Tobbin's paper but it is still a form of mobile money transfer and therefore of interest in this paper. Tobbin asserted that although the majority of the participants in his paper had heard of mobile banking through MTN advertisements, only three out of the 91 participants had had an experience with any mobile banking service.

Again, Persistent network fluctuation, unavailability of funds from the agents, the effect of loss of mobile phone, unauthorized use and the fear of mistakenly transferring funds to someone unknown were some of the few barriers to using the services (Tobbin, 2012). Tobbin's paper stated that majority of participants said they trusted the mobile network operators over the banks. A further investigation to demystify this revelation will be worth doing.

The coming sections reviews scientific publications related to the research topic. There were not much scientific publications on the topic. A few scientific publications found included (Tobbin, 2012), who presented a qualitative study on mobile banking technology acceptance by the rural unbanked. The purpose of this paper was to determine the factors that will affect the acceptance of mobile banking by the rural unbanked in Ghana. the highlights of the paper have been discussed above.

Crabbe, Standing, Standing, & Karjaluoto, (2009) investigated and examined the reasons for the adoption and non-adoption of mobile banking in Ghana. They agreed that the impact of social and cultural factors on the adoption of technology still requires much research. They found that social and cultural factors in the form of perceived credibility, facilitating conditions, perceived elitisation and demographic factors do play a significant role in adoption decisions. They stated that elitisation of technology and services can be a positive influence for adopters whilst being a negative influence for non-adopters. In addition, perceived credibility and facilitating conditions also influence attitudes towards the technology. Their findings are interesting and need further elaboration in the context of MMT.

A related scientific paper was the one by Larkotey, Amoako, Laryea, & Dey, (2013) on the adoption of mobile payment systems (MPS) in Ghana. The aim of the paper was to examine technical, business and policy problems as mobile payment issues in Ghana and propose solutions by drawing from literature and the experiences of other developing and developed countries. Larkotey et al., (2013) agreed that Ghana's payment system had improved a lot in the past few years, and continues to evolve to meet the developmental needs of the country. Their paper found that the effective use of MPS in micro-trading and personal transactions is influenced by the afore knowledge of both the user and the potential user of MPS which may have advanced through trial demo and perceived benefits of the services, and above all the perceived positive perception that MPS has been giving to its customers. Furthermore, MPS use

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is influenced through perceived information and payment of the services that MPS has been giving to its customers.

The above findings by Larkotey et al., (2013) suggest that information is very vital to the success and use of MPS and that "information management through MPS can directly and indirectly enhances and encourages decision making, control and income generation, and this can contribute to the economic empowerment environs of the MPS consumers" (Larkotey et al., 2013).

They concluded that the benefits and impacts of MPS adoption and usage: the introduction of MPS in the economy of Ghana has influenced and affected business activities both individually and at the corporate level significantly. Again, the factors that influence the adoption of MPS were the benefits and the positive perceptions (PU and PEOU) by the user which influence the attitude of the individual (BI) towards the use of technology, while BI and perceived usefulness of the technology predict the individual's behaviour to use the technology, the intention to use MPS and awareness creation of these payment systems and the impact MPS will have on the trading or commercial transactions. In relation to PEOU and PU, the knowledge of MPS user, as an adopter, can influence the actual use of MPS.

The point to note by Larkotey et al., (2013) paper and what is explored here is the fact that their paper was a literature search with limited focus using the Technology Acceptance Model. This paper however has broad focus. The findings of this research are from the originality of mobile money transfer use in Ghana from the point of view of the users.

The GSMA Mobile Money for the Unbanked 2012 Annual Report reveals interesting trends which are worth mentioning. GSMA, 2012a explain that there are four barriers that need to be overcome to effectively reach the unbanked with mobile money. The four barriers as given by the GSMA are:

1. Operational challenges: GSMA explain that in many markets, deployments are still building their foundations from which they can scale. These markets have problems on how to build, offer incentives and manage their agent network, or how to acquire customers and drive mobile money usage to an appreciable level. GSMA acknowledge that some best practices already exist within the industry, and these must be replicated or adapted effectively by more deployments. This challenge is interesting and serves in the direction of the research; as one of the objectives would find out the agent experience with MMT in Ghana. This would help to conclude whether there is this type of operational challenge in Ghana.

2. The second challenge as highlighted by (GSMA, 2012a) is *Lack of enabling regulation*: GSMA reported that the regulatory environment in some countries limits the commercial viability of mobile money i.e. licensing requirements that do not allow non-banks to offer

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financial services, onerous customer registration/KYC ("know your customer") procedures, or regulations around mobile money agents which make it difficult to effectively scale an agent network and offer an adequate footprint of cash-in/cash-out points for customers. Furthermore, GSMA reported that more dialogue is needed between financial regulators and non-banks, to ensure that regulation adequately controls risks but does not hamper financial inclusion.

3. Thirdly, GSMA reported on the **need for further learning** as a challenge. They reported that there are aspects of mobile money where no standards and best practices exist yet and the industry still has much to learn, e.g. the development of more sophisticated financial products, or new business models for delivering a broader range of mobile financial services. Further creativity, coupled with adequate financial investment and resources, is required to properly pursue new opportunities. This is true considering the infancy of MMT in Ghana and therefore the comparison of the service with what is perceived to be the best in class; Kenya.

4. **Under-investment** was reported by GSMA as the fourth challenge. They reported that as margin pressures have increased on mobile operators' core business, mobile money is still perceived as risky relative to other investment areas and so operators have often failed to allocate sufficient investment. More proof-points are needed for the mobile money business case and more appropriate expectations need to be set around what investment is required and how long it will take for mobile money to grow and become profitable. Figure 3 below shows the annual investment in mobile communication services between Kenya and Ghana. (1) (2) Include investments for fixed line
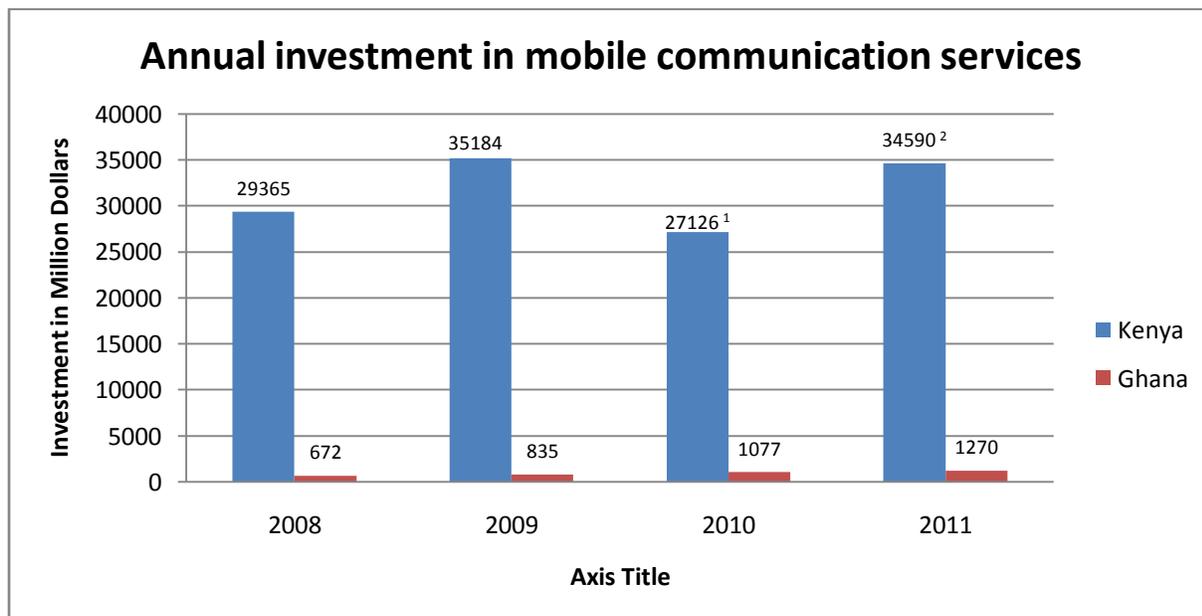


Figure 3: Annual investment in mobile communication services in Kenya and Ghana. (1) (2) Include investments for fixed line. Source: (ITU, 2013a)

GSMA, (2012a) also reported on the lack of cross-net transfer functionality. GSMA reported that Interconnection will require devising, negotiating, and implementing a host of business rules and service-level agreements and that the only scenario in which it would be commercially sensible for mobile operators to invest in interconnection is one in which they collectively have more to gain than to lose. One other difficulty which GSMA reported as a hurdle to interconnection is the question of who should own and operate the technical infrastructure that will enable cross-platform payments. This research, as one of the objectives, seeks to find out the interconnection options among MMT MNOs in Ghana and the direction of payments.

(GSMA, 2012a) further considered two segments to assess the likelihood that customers will begin making large numbers of net-new transfers. For segment one, GSMA considered existing customers of mobile money services and reported that the introduction of interconnection serves as a motivation through which existing customers may start making cross-net transfers. This they reported has the potential to occur when a sender and the customer's counterparty have both previously registered for mobile money, but with different mobile money service providers. Furthermore, GSMA stated that there are two forces which drive customers to affiliate with the same network as their transactional counterparties; Firstly, MNOs create significant financial incentives in the core business for people who want to call each other frequently to affiliate on the same network; and therefore it is usually cheaper to call on-network than off-network; secondly, A reinforcing dynamic applies in mobile money such that MNOS deliberately create considerable financial incentives for the senders and recipients of transfers in order for them to affiliate with the same mobile money network. This review is important as it gives the research focus to ascertain the on-net and cross-net transfers and the motivation behind.

On the second segment, GSMA considered new customers to mobile money and reported that new customers may subscribe to mobile money because cross-net transfers are now available to them. GSMA depicted the profile of such segment in the scenario that a customer who only infrequently uses mobile money and whose counterparties are affiliated with more than one network might be compelled to register for mobile money in an interconnected world. Furthermore, customers who regularly send to others will presumably have taken the step of registering for mobile money already; customers who meet this description but need only to send to affiliates of one network will find their decision unaffected by the introduction of interconnectivity, since they might today sign up for the same mobile money service that their transaction partners already use.

GSMA further wondered whether interconnection of mobile money services stands to create as much value for customers as it would cost to implement. This is interesting for this research and needs concrete data to support or reject this statement.

### 2.3. Related Indicators and reports

This section is intended to bring to the fore some mobile reports regarding mobile telephony in Ghana. It is equally important to compare the situation in Ghana with that of the Kenya since Mobile Money Transfer in Kenya has been considered as the forerunner.

Ghana is one of the leading countries in West Africa, a member of the Sub-Saharan African (SSA) sub-region. West Africa is made up of 16 countries with a combined estimated population of 312 million. The largest countries are Nigeria and Ghana, accounting for 60% of total population in the sub-region.

As at 2012, the total population of Ghana stood at 25,546,000 against 42,749,000 of Kenya (ITU, 2013a). Figure 4 below shows the population figures between Kenya and Ghana since 2002. From the figure, it is clearly seen that Kenya has a higher population more than that in Ghana.
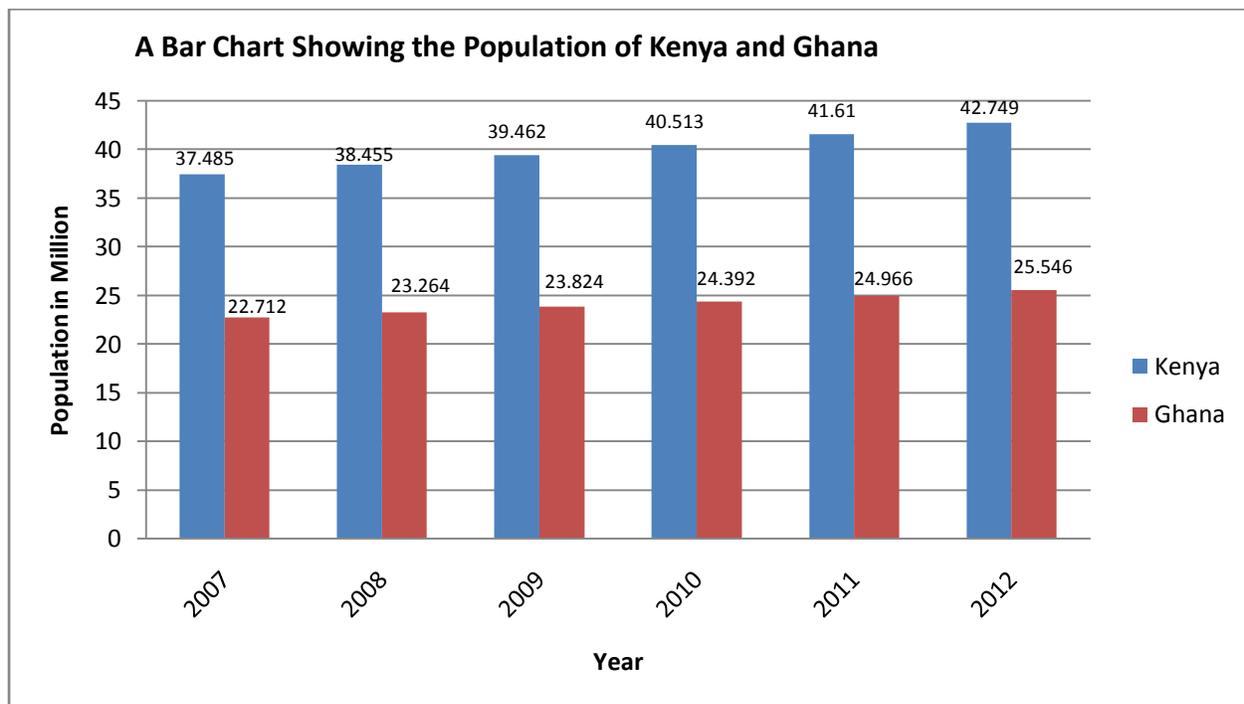


Figure 4: Population of Kenya and Ghana. Data source: (ITU, 2013a)

This analysis is important because it would help to articulate various mobile analyses in reference to the number of people in both countries relative to Africa and the world as a whole. It would also help to clearly understand the various mobile indicators between the two countries as highlighted below.

According to GSMA, (2012b) while SSA has only 8% of worldwide mobile connections, it has seen the highest rate of growth worldwide. Since 2000, the number of connections in SSA has grown by 44% (and in Africa as a whole by 43%) as shown in figure 5, compared to an average

of 34% for developing regions and 10% for developed regions. GSMA, 2012 explain that seven out of the 10 fastest growing countries in the world are located in SSA, and mobile connections are expected to increase significantly in the medium term.
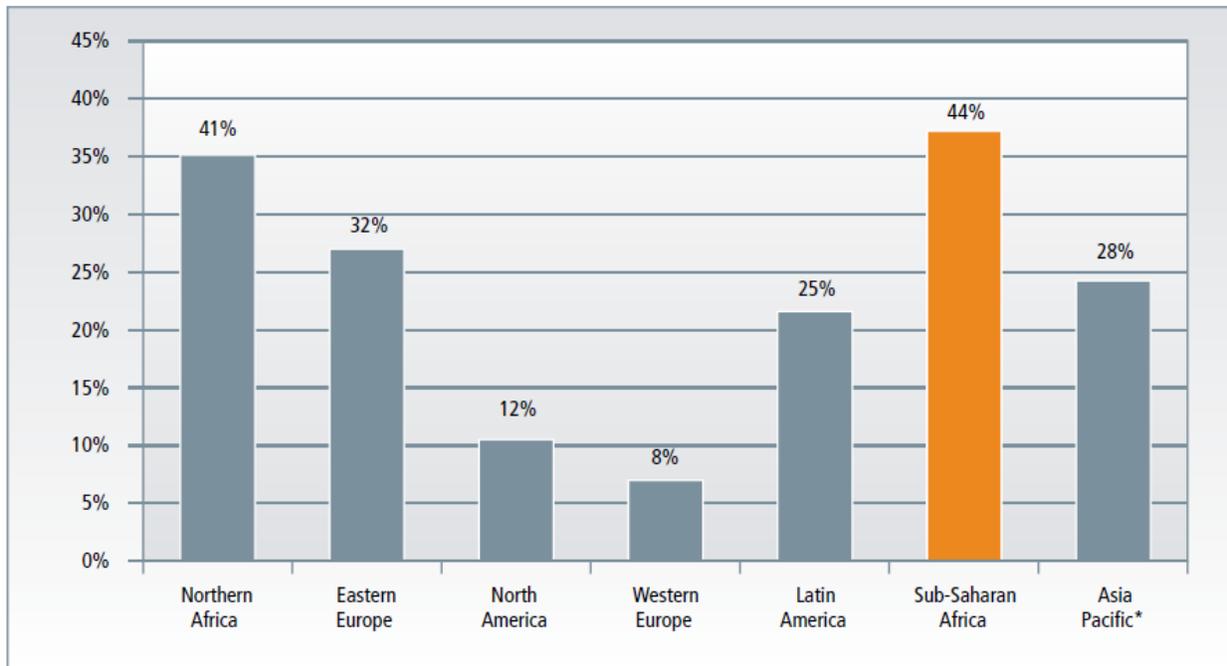


Figure 5: Growth in the number of mobile connections. Source (GSMA, 2012b)

Figure 6 below shows the estimated mobile connections of SSA in comparison to other regions.
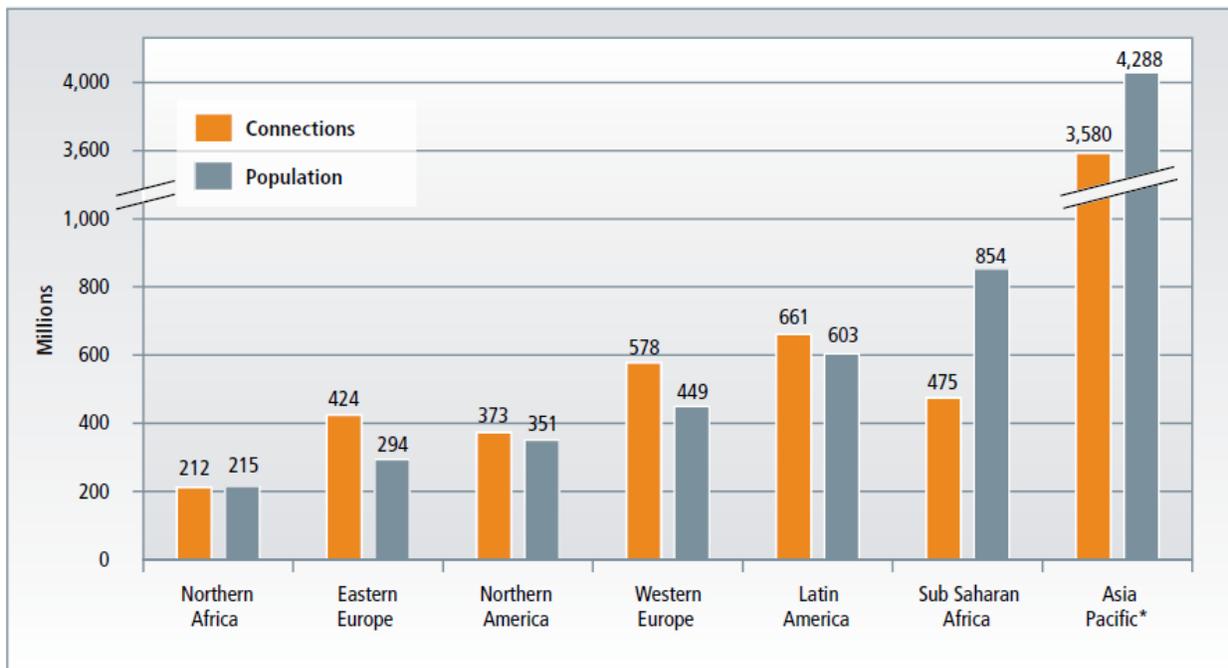


Figure 6: Population and mobile connections. Source (GSMA, 2012b)

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Similar to most African countries, Ghana and Kenya have different MNOs in operation. There are six MNOs in Ghana and four in Kenya. Vodafone operates in both Ghana and Kenya. However; Vodafone operates under the name Safaricom in Kenya. Figure 7 below compares the various MNOs in Ghana and Kenya and their respective market shares.
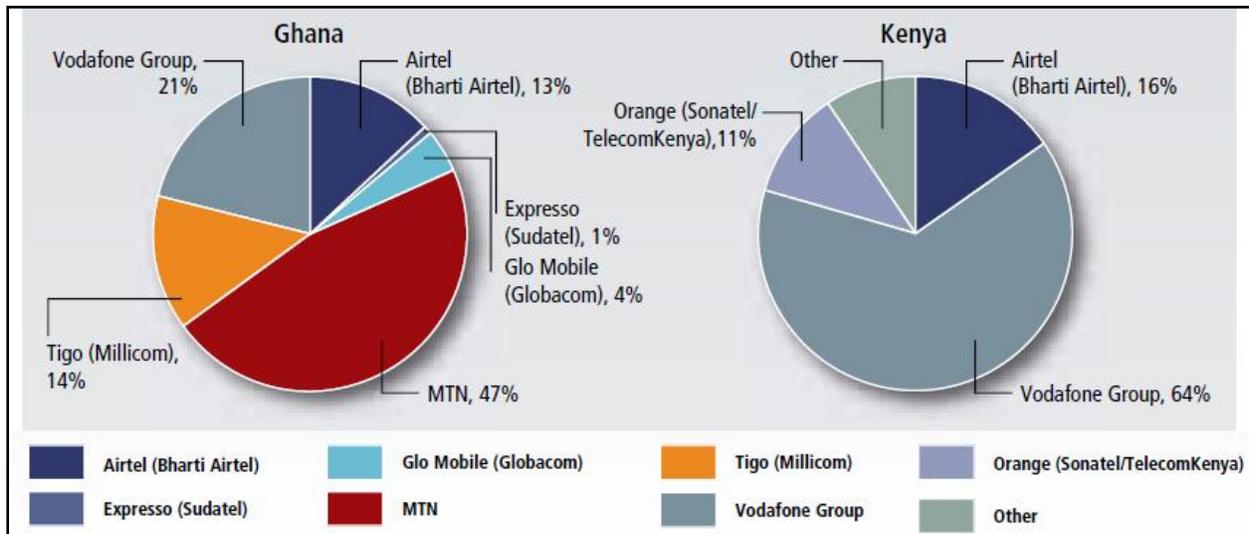


Figure 7: MNOs and their Market shares in Ghana and Kenya. Source (GSMA, 2012b)

The total mobile-cellular telephone subscriptions for Ghana as at 2012 was 25,618,000 with a total of 30,732,000 in Kenya (ITU, 2013a). According to the Handbook for the collection of administrative data on Telecommunications/ICT of the International Telecommunication Union (ITU, 2011), mobile-cellular telephone subscriptions refers to the number of subscriptions to a public mobile-telephone service that provide access to the public switched telephone network (PSTN) using cellular technology. The International Telecommunication Union (ITU, 2011), explain that the indicator includes (and is split into) the number of postpaid subscriptions, and the number of active prepaid accounts (i.e. that have been used in the two countries during the last three months). ITU further explain that the indicator applies to all mobile-cellular subscriptions that offer voice communications. Furthermore, it excludes subscriptions via data cards or USB modems, subscriptions to public mobile data services, private trunked mobile radio, telepoint, radio paging and telemetry services.

As shown in Figure 8 below the trend has been increasing for both countries since 2002 with Kenya having the greater subscriptions over Ghana.
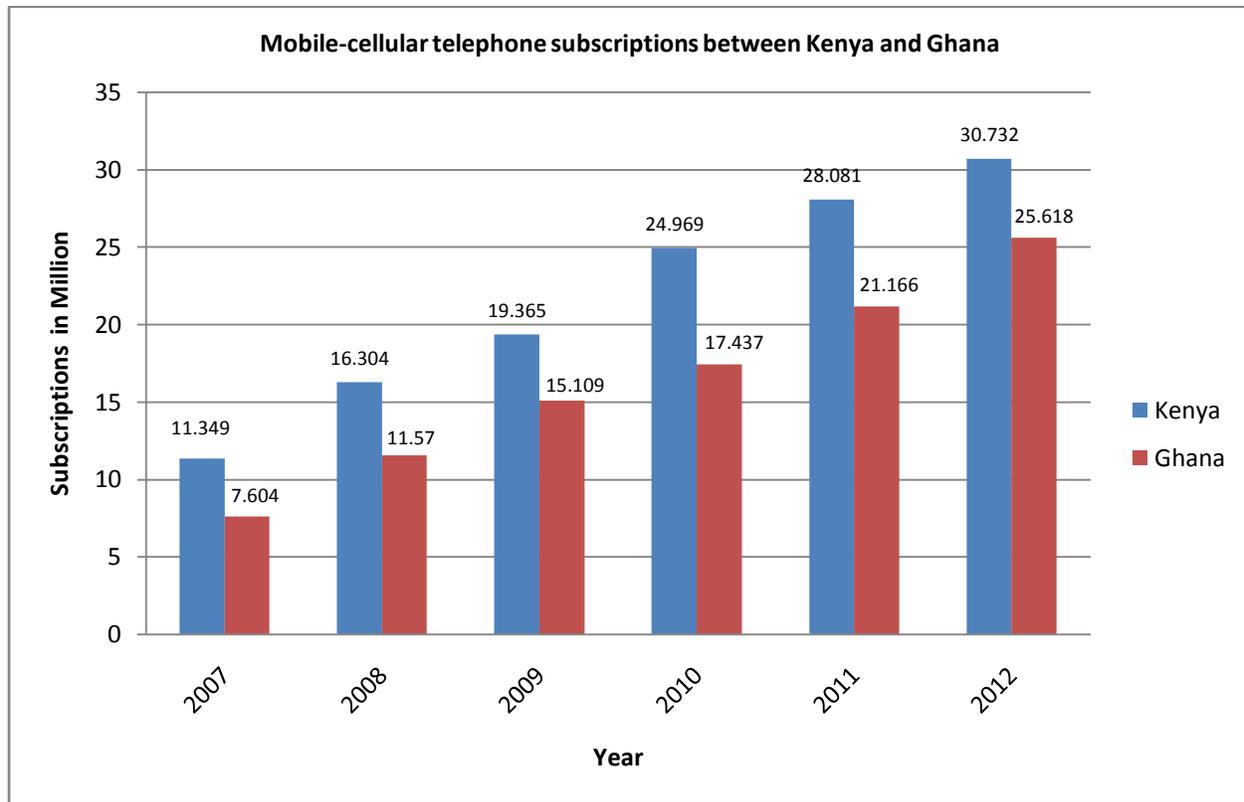
Figure 8: Total mobile-cellular telephone subscriptions in Kenya and Ghana. Data source: (ITU, 2013a)

It is interesting to note that despite the high mobile-cellular telephone subscription in Kenya, perhaps as a result of the higher population, Ghana has higher mobile-cellular subscriptions per 100 inhabitants than Kenya. From Figure 9, Ghana has 100.28 mobile-cellular subscriptions per 100 inhabitants higher than 71.89% of Kenya (ITU, 2013a). This indicator ascertains the level of mobile development in a country and is obtained by dividing the total number of mobile cellular telephone subscribers by the total population and multiplying by 100. Therefore, comparatively (taking hundred people) Ghana has more people with access to mobile phones than in Kenya.

**Mobile-cellular subscriptions per 100 inhabitants**
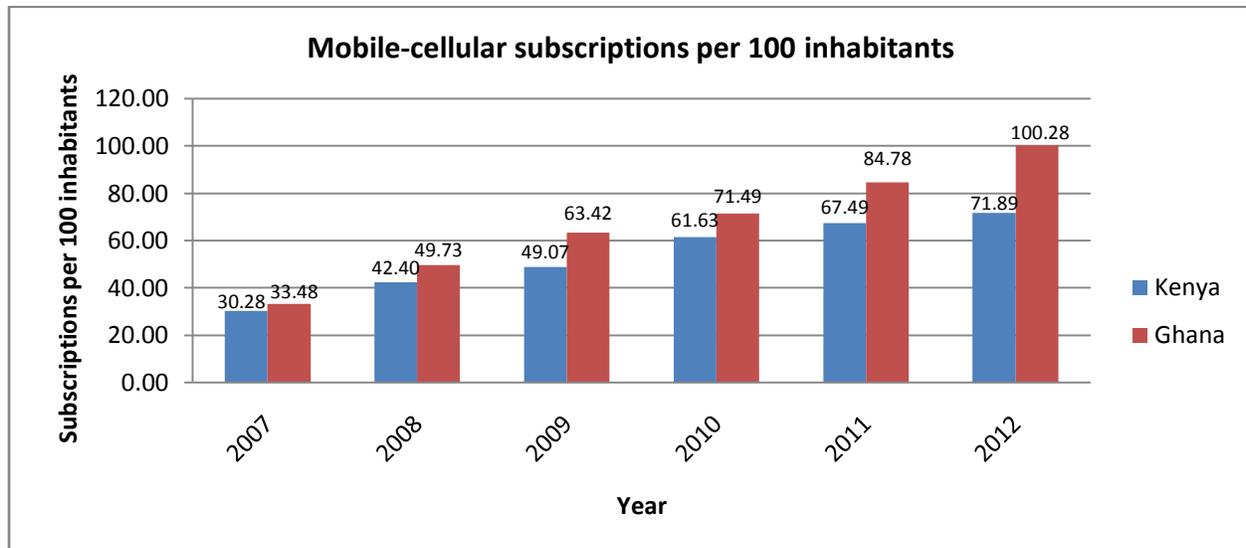
Figure 9: Mobile-cellular subscriptions per 100 inhabitants in Kenya and Ghana. Data source: (ITU, 2013a)

However, as shown in Figure 10 below Kenya has higher mobile population coverage than Ghana. This means that the percentage of the total population covered by mobile network operators in Kenya is higher than those in Ghana. This is understandable considering the higher population of Kenya than Ghana.

**Mobile population coverage between Kenya and Ghana**
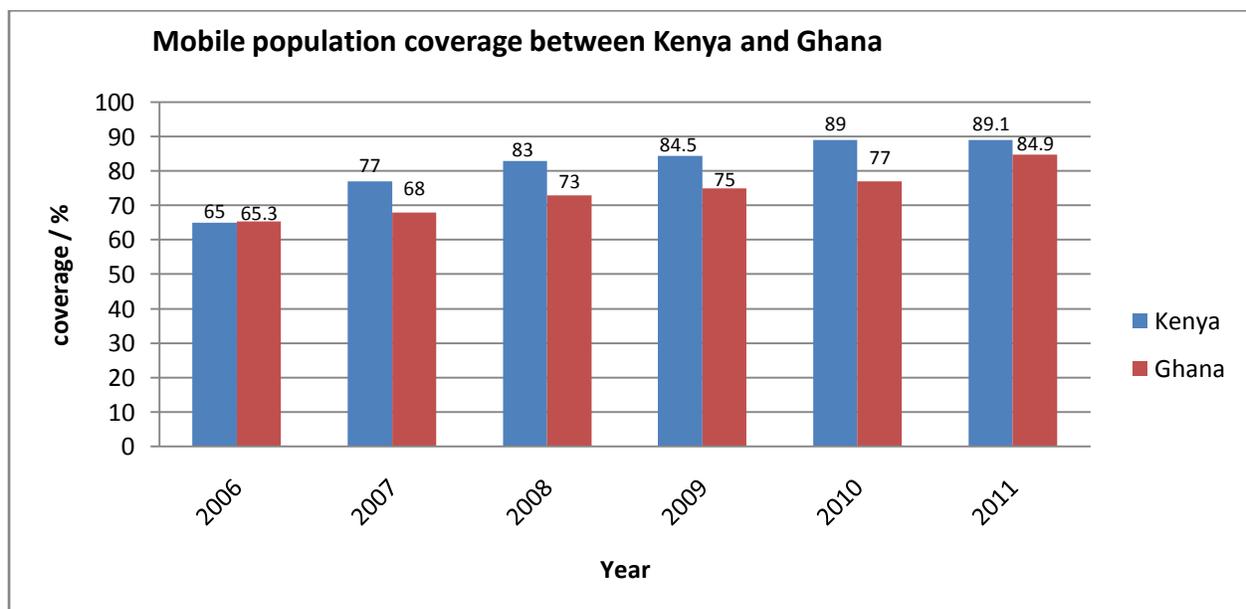
Figure 10: Mobile population coverage in Kenya and Ghana. Data source: (ITU, 2013a)

On the domestic mobile-telephone traffic, in 2007, according to figure 11, Ghana had higher domestic mobile-telephone traffic than Kenya. This means that the total number of minutes of calls made by mobile subscribers within Ghana, including the total minutes of call to fixed-telephone and total minutes of call to mobile-phone subscribers, was higher. This however

reduced along the years with Kenya having a more traffic than in Ghana since 2010. This is also understandable looking the higher subscription and coverage in Kenya than in Ghana.
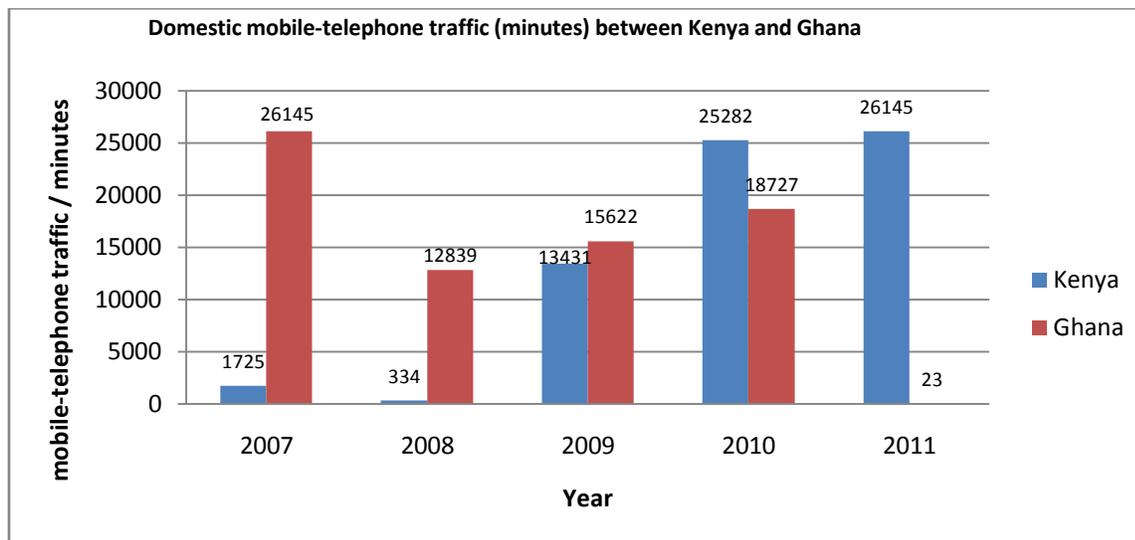


Figure 11: Domestic mobile-telephone traffic in Kenya and Ghana. Data source: (ITU, 2013a)

In contrast to the domestic mobile traffic, according to GSM Association in their 2012 Sub-Saharan Africa Mobile Observatory (GSMA, 2012b), Ghana has a higher mobile spectrum than Kenya. The extent and availability of mobile spectrum depicts how successful the development and operation of mobile broadband is in a country. However, as shown in figure 12 below, the amount of spectrum allocated to mobile services in Africa is currently among the lowest worldwide, with some countries allocating as little as 80MHz and many between 200MHz and 300MHz (GSMA, 2012b).
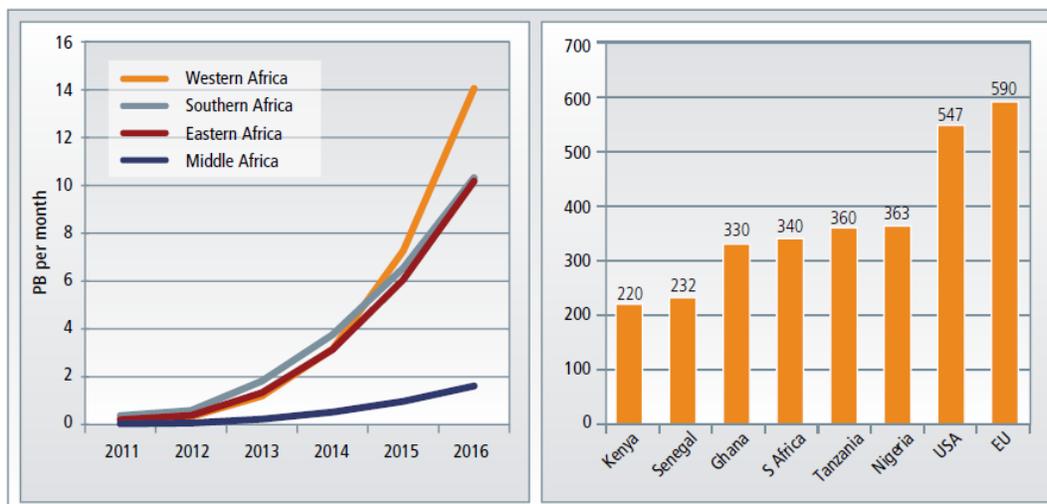


Figure 12: Mobile Spectrum among selected SSA countries. Source (GSMA, 2012b)

GSMA, 2012 further explain that everyone across the globe should have access to mobile broadband which should come at a reasonable cost and at the same time with dependable performance. GSMA agreed that governments around the world have embraced this goal and championing effect to that direction. Furthermore, success depends largely on the supply of spectrum made available for mobile services. Without sufficient spectrum, the mobile industry cannot deliver a rich and dynamic mobile future for all.

Quantitatively Kenya sends more SMS than Ghana. In 2004, a total of 153,000,000 SMSs were sent, 355000000 in 2005, 256 000 000 in 2006, 445 000 000 in 2007, 2 056 000 000 in 2008, 2 261 000 000 in 2009, 2975 in 2010, and 3611 in 2011. This means that the total number of mobile short-message service (SMS) messages sent, including those to national and international destinations composed on, and sent from, a mobile handset to another mobile handset are more in Kenya than in Ghana. This trend is interesting considering the differences in population between the two countries. It would therefore be important to consider the number of SMSs per hundred inhabitants. This would clearly show the extent to which the two countries utilize SMS. Figure 13 below shows SMS sent between Ghana and Kenya between 2004 and 2011.
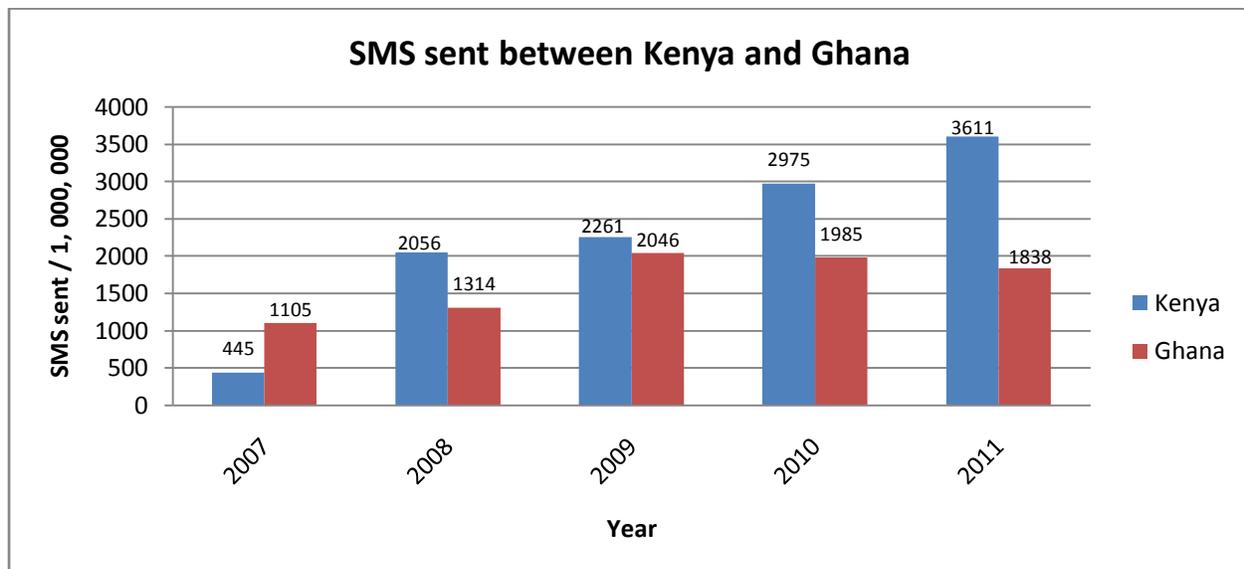


Figure 13: Total SMS sent in Kenya and Ghana. Data source: (ITU, 2013a)

Between 2003 and 2006, it was more expensive to make one minute of call on peak in Kenya than in Ghana. And still, between 2008 and 2012, it was cheaper in Ghana than in Kenya. From Table 1, it can be concluded that it is now cheaper to make a call in Ghana on peak than in Kenya.

| Mobile-cellular prepaid–1-min call (peak, on-net)/ US Dollars | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
|  | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| **Kenya** | 0.38 | 0.35 | 0.33 | 0.33 |  | 0.16 | 0.09 | 0.09 | 0.05 | 0.05 |
| **Ghana** | 0.11 | 0.08 | 0.08 | 0.06 |  | 0.06 | 0.06 | 0.06 | 0.04 | 0.04 |

Table 1: Mobile-cellular prepaid 1-min call (peak, on-net) in Kenya and Ghana. Data source: (ITU, 2013a)

The trend for off peak calls was not different until 2011. Between 2003 and 2006, it was more expensive to make one minute of call off peak in Kenya than in Ghana; as high as $0.27 in Kenya against $0.08 in Ghana. However, between 2011 and 2012, it became cheaper in Kenya than in Ghana. In 2012, it cost $0.02 for a minute of off peak call against $0.04 in Ghana. From Table 2, it can be concluded that it is now cheaper to make an off peak call in Kenya than in Ghana.

| Mobile-cellular prepaid–1-min call (off-peak, on-net)/ US Dollars | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
|  | 2003 | 2004 | 2005 | 2006 | 2008 | 2009 | 2010 | 2011 | 2012 |
| **Kenya** | 0.27 | 0.27 | 0.19 | 0.33 | 0.16 | 0.09 | 0.09 | 0.02 | 0.02 |
| **Ghana** | 0.08 | 0.05 | 0.05 | 0.06 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 |

Table 2: Mobile-cellular prepaid 1-min call (off peak, on-net) in Kenya and Ghana. Data source: (ITU, 2013a)

According to GSMA, 2013, Ghana has a mobile penetration rate of 63% in the urban centers against 30% in the rural areas(See figure 9 below). This is in agreement with the International Telecommunication Union's 2013 report on measuring the information society which ranked Ghana as the country with the highest mobile penetration rate of 34 per cent in Africa (ITU, 2013b). Figure 9 below shows the mobile penetration rate for urban and rural South Africa, Ghana, and India.
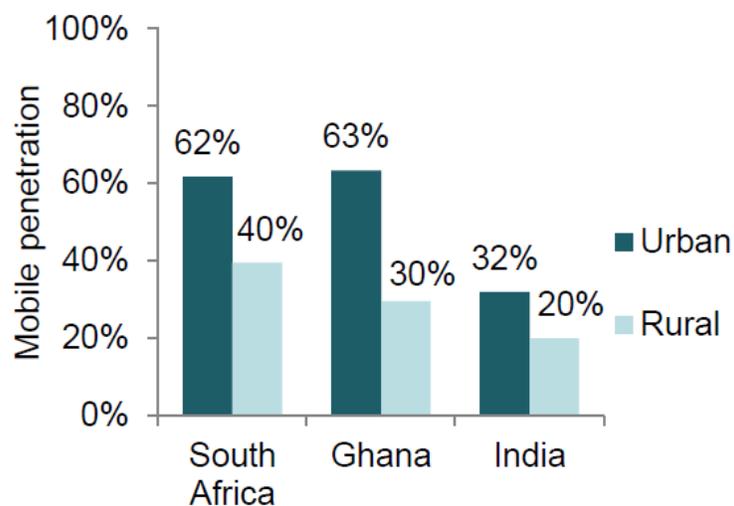


Figure 14: Mobile Penetration rate for Urban and Rural cities, (GSMA, 2013)

The increase in the mobile penetration rate has catapulted the competition among MNOs in Ghana as reported by the GSMA Intelligence. According to (GSMA, 2013), Mobile operator competition in Ghana is keenly contested and ranked 6th below Rwanda, Mexico, China, Kenya, and South Africa. According to GSMA and figure 10 below, competition has increased over the years since 2007.
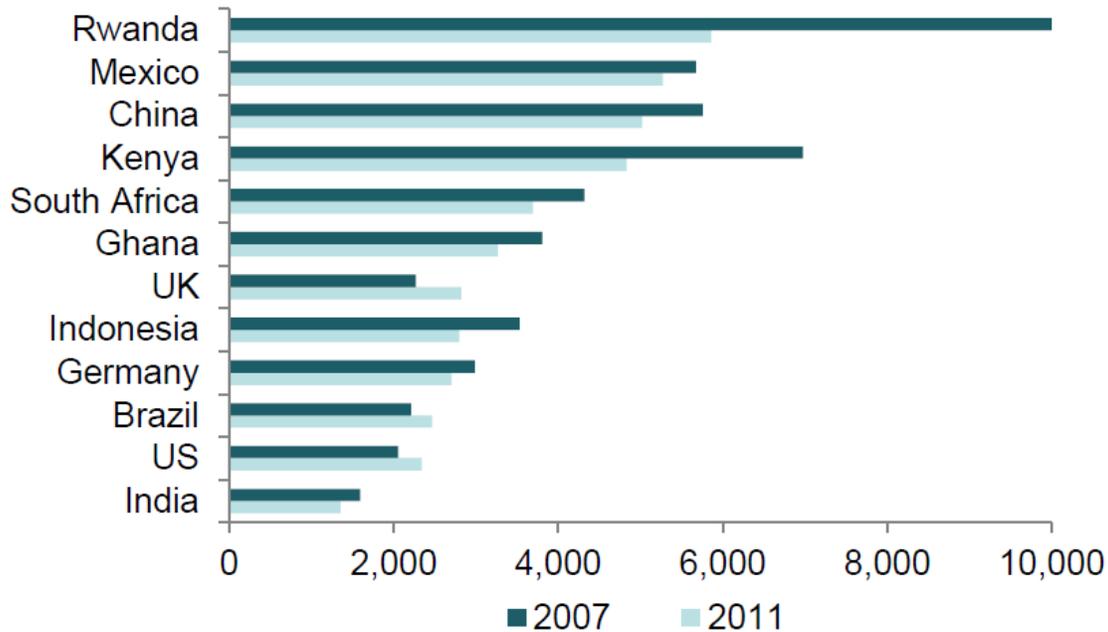


Figure 15: Mobile operator competition, (GSMA, 2013)

## 2.4. Money Transfer in Ghana

(Tobbin, 2012) states that Ghana like most emerging economies has a great number of households that depend on domestic remittance. An increase in urbanization in city centers and constant migration in Ghana means that the need for money transfer services have been quite significant. Tobbin explains that informal methods of remitting funds within Ghana to families and relatives are quite established with diverse difficulties and challenges. Furthermore, one of the key factors in the choice of remittance services everywhere is accessibility. Until recently, as explained by Tobbin the main methods of remittance in Ghana have been through the "Bus Driver". People visits the bus station of the village or town that their families are based and with a little incentive plead with the bus driver to send their remittances for them. If accepted by the bus driver, the remittance gets to the family within hours. Other informal methods were using visiting family and friends or travelling long distances to remit the funds whenever necessary. Thefts, armed robbery and accidents are a few of the challenges with these methods of remittance (Tobbin, 2012).

### 2.4.1. MTN Mobile Money

MTN Mobile Money is a MMT service operated by MTN Ghana. The service was launched in July 2009. MTNGhana, (2013) explain that MTN MobileMoney is a cash management service available on the mobile phone or internet. MTNGhana explain that it is mainly about facilitating money transfer for the Ghanaian market. The service can also be used for reloading of MTN airtime units and for payment, of utility bills, goods & services. The service is available to both mobile and non-mobile users. MTN MobileMoney is provided by MTN in partnership with banks. MobileMoney will also operate through authorized merchants who will facilitate the service on behalf of the partner banks.

MTN MobileMoney comprises of individual (subscriber) and merchant wallets. Wallets (individual & merchant) are created after the registration process is completed on the phone with the selection of a four digit MobileMoney PIN. The MobileMoney PIN is required to authorize all MobileMoney transactions. No single transaction can be completed without the MobileMoney PIN. Wallet transactions for MTN Mobile Money are in Ghana cedi (MTNGhana, 2013).

### 2.4.2. Tigo Cash

Tigo Cash is a MMT service operated by Tigo (Millicom) Ghana Limited. The service was launched in October 2010. TigoGhana, (2013) explain Tigo Cash as a mobile financial service product that allows the use of mobile phone as a mobile bank account. According to Tigo, Tigo Cash provides an easy, instant and convenient way of sending cash at anytime, anywhere, to anyone on any network. They explain that Tigo Cash can also be used to buy airtime and pay for goods and services across Ghana. Customers can deposit and withdraw cash from their mobile phone with any of their authorized Tigo Cash Agents or Customer Service Centers. Customers are not required to hold a bank account to use the service (TigoGhana, 2013).

### 2.4.3. Airtel Money

Airtel Money is another MMT service in Ghana operated by Airtel Ghana Ltd. According to (AirtelGhana, 2013), the service is used to:

1. Pay bills - utility bills
2. Pay for goods and services
3. Direct payment for savings and loans contributions
4. Buy airtime
5. Purchase Airtel data bundle
6. Send money from Airtel Money account to other Airtel money customers
7. Send money from Airtel Money account to people on other networks
8. Receive money on your Airtel Money account
9. Deposit physical cash for electronic money (e-value)
10. Withdraw cash from Airtel money account
11. Send money to and withdraw money from bank account

12. Use mobile phone to check bank balance and request for bank mini statement

### 2.4.4. TXTNPAY

Txtnpay is a mobile money transfer service operated by Afric Xpress. The service was launched in May 2009. Txtnpay is an innovative wallet that allows individuals and businesses to make and accept payments using a mobile phone Txtnpay, (2013). Furthermore, txtnpay wallet is a stored value account. One can fund it by making a deposit at a txtnpay cash point or a transfer from a bank Account. txtnpay explain that one can also receive deposits from relatives and friends into a txtnpay wallet through their money transfer service. Also, one will use the balance in his or her wallet to send money to relatives, pay bills or do shopping and buy airtime from a mobile phone. The service can also be used as a means of withdrawing money from a wallet at a txtnpay cash point. An important feature of the txtnpay service is the ability to withdraw money from ATMs.

### 2.5. The Customer Journey

For a customer to subscribe to a mobile money service there are several steps that they must go through. Customer journey shows the steps that a customer must go through in order to engage with the Mobile Money service. It represents the various and different touch points that characterize a customer's (user's) interaction with the mobile money service. It is the responsibility of the MNO to analyze the journey of the current and the prospective customer(s) to guide them through their information needs from the state of unawareness of the service to regular usage of the service. A typical customer journey for MMT in Ghana is characterized in figure 16.

| Unaware | Awareness | Consideration | Knowledge | Usage |
|---|---|---|---|---|
| People are frustrated about informal means of sending and receiving money. They are looking for alternative options | Hears about service from friends, radio, banners, etc  Sees it on web, on TV or in magazine | Ask friends for advice  Visit service centers, ask agents questions  Read web sites, newspapers, magazines for reviews and to gain understanding of the service | favorability / The interest for the product is amplified (favoritism)  Compare services by different MNOs  Compare charges, offers, products, promotions, etc | People begin to use the service; they select and use products, resolve challenges, participate in promotions |

Figure 16: Customer journey for MMT in Ghana. Author's representation

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## 2.6. The Mobile Money Transfer Procedure

The procedure of using MMT among all the MNOs in Ghana (McGrath, 2013) presents in the 2013 edition of Mobile Money for the Unbanked 101, A guide to Commercial Best Practice. The steps to deliver MMT service are depicted in figure 17 thus:
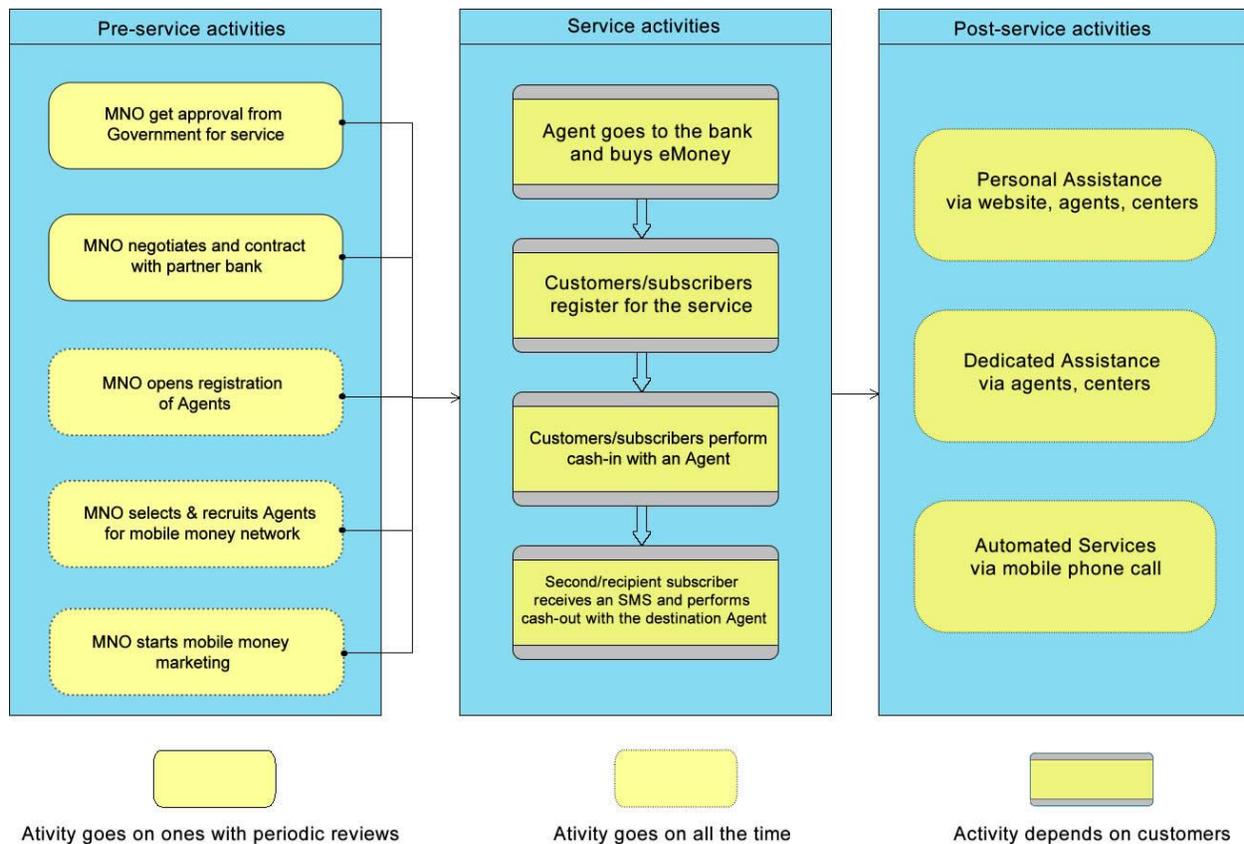


Figure 17: Steps to MMT service delivery in Ghana. Source: Author's representation

Most MNOs offer a variety of products enshrined in the mobile money service delivery. In general, they offer these products: Cash-in/Cash-out, P2P, Bill Payment, Airtime Top-Up, Merchant Payment, and Bulk Payment. Cash-in/Cash-out refers to using mobile money service as a means of saving/depositing and withdrawing just like the regular bank account; the process of depositing money into a mobile money account is called a cash-in, a cash-out is withdrawing money. Both of these are normally agent assisted. P2P is a person to person money transfer. Bill payment is using mobile money as a means of paying utility or other bills. Airtime Top-Up is topping up airtime for recharging a GSM account through a mobile money account. Merchant Payment refers to the payment for good or services at a store using a mobile money account. Bulk Payment is a one-to-many transfers such as salary disbursal is a bulk payment. This research, as one of the objective, intends to find out which of these products are used in relation to mobile money in Ghana.

### 2.7. The Ghana Payment Ecosystem and Regulations

The Ghana payment system refers to the entire matrix of institutional infrastructure arrangements and processes in Ghana for initiating and transferring monetary claims in the form of commercial and central bank liabilities (BOG, 2002). The stakeholders of Ghana's payment system are the central bank; the commercial banks, service providers and users of the system. The central bank occupies an important and unique position in the payment system. It is an overseer, operator and a participant of the payment system. The commercial banks participate in the system by making and receiving payments on their own behalf or their customers'. The service providers are the printers of payment instruments and telecommunication companies who provide the infrastructural arrangements for the payment system. Notwithstanding the unique role of each stakeholder, all of them are users of the payment system, including the banking public.

#### 2.7.1. The Legal Environment (BOG, 2002)

Ghana's payment system is supported by various laws in line with the core principles for systematically important payment systems. The laws cover payment instruments, institutions, clearing and settlement systems, and include the following:

a. Bank of Ghana (BOG) Act, 2002 Act 612. The Act makes the BOG the authority responsible for payment and settlement systems in Ghana. This is stated among the functions of BOG:
   i. The promotion, regulation and supervision of payment and settlement systems; and
   ii. The facilitation of the clearing of cheques and other credit instruments.
b. The Payment Systems Act, 2003, Act 668 is a sound legislation framework which further empowers the BOG to oversee and manage the payment systems as contained in the provisions below:
   i. to establish, operate, promote and supervise payment, funds transfer, clearing and settlement systems subject to such rules as it may publish; and
   ii. to designate any other payment, funds transfer, clearing and settlement systems operating in the country, which the Bank considers to be in the public interest to supervise.

The Act also provides for the following:

   i. principles of transparency as applicable to payment systems;
   ii. minimum obligations of participating financial institutions;
   iii. principles required to achieve irrevocability and finality of payment;
   iv. admissibility of electronic evidence in the law courts;
   v. dispute resolution; and
   vi. other miscellaneous provisions covering disputes, offences, penalties and interpretations.

The Bank of Ghana shall have overall supervisory and regulatory authority in all matters relating to banking and non-banking financial business with the purpose to achieve a sound, efficient banking system in the interest of depositors and other customers of these institutions and the economy as a whole. The regulatory and legal framework within which banks, non-bank financial institutions as well as forex bureau operate in Ghana are the following:

- Bank of Ghana Act 2002, Act 612
- Banking Act, 2004 (Act 673)
- Financial Institutions (Non-Bank) Law 1993, PNDC Law 328
- Companies Code Act 179, 1963
- Bank of Ghana Notices /Directives / Circulars / Regulations

Consequently, the Central Bank exercises its mandate to ensure that:

- depositors' funds are safe
- the solvency, good quality assets, adequate liquidity and profitability of banks are maintained;
- adherence to statutory and regulatory requirements is enforced;
- fair competition among banks
- the maintenance of an efficient payment system

### 2.7.2. Branchless Banking Models and Activities (BOG, 2008)

Branchless banking is only allowed to be undertaken by licensed deposit-taking financial institutions (bank and non-bank) or their agents. Furthermore, all customers of Financial Institutions undertaking Branchless Banking activities must be uniquely identified. Branchless banking can be done using agents like Telcos, Fuel distribution companies, Merchants, Post Office, among others. and using technologies not limited to mobile phone (like GPRS, POS terminals among others.). In each case customer account relationship must reside with some financial institutions and each transaction must hit the actual customer account.

### 2.7.3. Model in Ghana

As stated above, only the financial institutions -led model of branchless banking is allowed and may be implemented in different ways. Firstly, it can be implemented either by using agency arrangements or by creating a partnership between a financial institutions and Agent company (example Telco). Further, while mobile phone banking which makes up for large part of branchless banking can be implemented by using a number of models, to ensure maximum connectivity and outreach as well as interoperability, the **Many-to-Many Model** is the only permissible model in Ghana. Exclusive partnerships are not allowed.

This model offers the maximum connectivity and hence maximum outreach and is closer to the desired situation where all financial institutions and all telcos should be able to entertain each

other's customers (Just like the existing ATM network being developed in the country where customer of any bank will be able to use ATM of any other bank).

Under this model, financial institutions and Telecom operators are expected to join hands to offer mobile banking services to the public with central processing of transactions through the Ghana Interbank Payment and Settlement System (GhIPSS) which will:

i.   settle all transactions on real time basis or through a regulated clearing arrangement,

ii.   store all proofs of transactions and

iii.   provide a day end reconciliation to all member FINANCIAL INSTITUTIONs.

Furthermore, prior approval must be obtained from the Bank of Ghana for the deployment of new switches, ATMS, Points of Sale (POS), card or mobile phone payments products.

### 2.7.4. Permissible Activities

Under these guidelines, the following products/services may be offered.

1. Opening and maintaining a Branchless Banking Account. A branchless banking account is an account opened and operated by a customer with a bank. Banks may associate such account to a particular branch or to a centralized branchless banking unit. Account capabilities/limits are commensurate with the level of customer due diligence (CDD) and KYC procedures the customer has undergone. Risk basked KYC and CDD structure is explained in the relevant section of these guidelines.

2. Account-to-account Fund transfer: Customers may transfer funds to/from their branchless banking account from/to their other pre-registered accounts (current/saving bank accounts, loan limit accounts, credit card accounts etc.)

3. Person-to-person Fund Transfers; Customer can transfer funds from their account to branchless banking or regular accounts of other customers of same or some other bank (depending on the model capabilities).

4. Cash-in and Cash-out: Customers may deposit and withdraw funds to/from their branchless banking account using a variety of options including bank-branch counters, ATM machines and authorized agent locations.

5. Bill Payments: A branchless banking account can also be used to pay utility bills (example Gas, Electricity, Phone and others.) Merchant Payments: Customers can use a BRANCHLESS BANKING account to make payments for purchases of goods and/or services.

6. Loan Disbursement/Repayment: financial institutions, particularly Microfinance institutions may use branchless banking accounts as a means to disburse small loan amounts to their borrowers having branchless banking accounts. The same accounts may be used by customers to repay their loan installments.

### 2.7.5. Anti-Money-Laundering

All financial institutions and their agents must comply with the Anti-Money Laundering Act (2008) as well as the international standards set by the FATF. These require:

- Adequate customer due diligence (KYC) be undertaken on all new accounts and on one-off cash transactions over designated thresholds. This requires identifying the customer and verifying the customer's identity.
- Financial service providers to keep detailed transaction records for at least five years.
- Financial institutions to report suspicious transactions promptly to the AML/CFT authority.
- Special attention to threats that may arise from new technologies that may favor anonymity.
- Policies and procedures are in place to address specific risks associated with non-face to face business relationships and transactions.
- Customers using branchless banking applications should be uniquely identified. This means that financial institutions should be able to trace branchless banking transactions to particular customers. In this regard mobile phone SIM cards will have to be registered by the financial institution.

### 2.7.6. Role of Agents

Agents may perform any or all of the following functions depending on the agency agreement and agent type as detailed in the following sections:

- Opening of branchless banking Accounts.
- Cash in/Cash out.
- Bills Payments. (Both from registered branchless banking customers as well as from walk-in customers of any utility company).
- Loan disbursement/Repayment Collection. (Without involving into loan marketing/approval functions).
- Funds transfers

Branchless banking Agents cannot be involved in marketing, sales of any other products of the bank (including but not limited to consumer banking products, liability products among others).

One Agent can provide services to multiple banks provided he (the agent) has a separate service level agreement with each bank. Alternately, banks may organize their agent network using open architecture so that they may entertain other banks' customers using infrastructure provided by one bank.

Agents may not alter/change charges/fees structure provided by the bank in any way. All charges have to be pre-agreed between the bank and the agent and should be clearly communicated to the customers.

Banks/agents may choose to brand their agent network under any brand name. However use of words like Bank, financial intermediary, microfinance bank or any other word suggesting that the agent is itself a financial institution, is not allowed.

## 2.8. MPESA

Regardless of the inadequate research on Mobile Money transfer in Ghana, there have been extensive studies of the service in Kenya relating to MPESA. It is therefore important to review a sample of these studies. The general perception is that MPESA has been a success and a benchmark. M-PESA was developed by mobile phone operator Vodafone and launched commercially by its Kenyan affiliate Safaricom in March 2007 (Mas & Radcliffe, 2010). M-PESA is the concatenation of "M" for mobile and "PESA" for money in Swahili language. Similar to MMT operation in Ghana, MPESA is an electronic payment and store of value system that is accessible through mobile phones. To access the service, customers must first register at an authorized M-PESA retail outlet. They are then assigned an individual electronic money account that is linked to their phone number and accessible through a SIM card-resident application on the mobile phone. Customers can deposit and withdraw cash to/from their accounts by exchanging cash for electronic value at a network of retail stores (often referred to as agents). Once customers have money in their accounts, they can use their phones to transfer funds to other M-PESA users and even to non-registered users, pay bills, and purchase mobile airtime credit. All transactions are authorized and recorded in real time using secure SMS.

As at March 2008, a total of 2,075,527 customers were subscribed to MPESA. This figure has rocketed to 14,008,319 subscribers in April 2011 (Safaricom, 2011). Today MPESA has expanded into other services apart from the regular sending and receiving money between individuals. The business to consumer (Bulk Payments Services) enables organizations to send money by M-PESA to many people who may be widely dispersed (Safaricom, 2013). The service targets organizations that would like to do promotional payments, field staff disbursements, salary disbursements, dividend payments, among others. Safaricom, 2013 explain that bulk payment service is easy to use, cost effective and secure as it eliminates the need to carry cash to the areas of disbursement and that the service has been taken up by organizations with field based staff such as East African Breweries, social payment organizations like Concern Worldwide among others.

Other services include M-Ticketing, a process whereby customers can order, pay for, obtain and validate tickets from any location and at any time using mobile phones or other mobile handsets (Safaricom, 2013). With this service, Safaricom explain the procedure thus: a subscriber will visit an MPESA Agent to purchase a Ticket, for example Hotel Stay. MPESA Agent may book

for the subscriber or subscriber may book on their own using mobile phone. The Agent ID is inserted into the booking process for commission identification purpose. If Agent makes booking, ID is automatically recorded. A payment request SMS will be sent to the subscriber Mobile Phone with Booking ID and Paybill Number. Subscriber will make Payment via MPESA Paybill and as per SMS notification. If subscriber is not MPESA registered, agent will register subscriber promptly via normal MPESA process. Subscriber will receive the regular MPESA TX Receipt and provide the same to the Agent for ticketing. Agent will enter the MPESA TX Receipt into the Booking System against the Booking ID. System will verify and issue the ticket. Subscriber will receive an SMS with ticket details. Agent will/can print the Ticket and provide the same to the subscriber as hardcopy if the subscriber so wishes. At the point of ticket utilization, service providers will require a computer to check ticket validity. A USSD/SMS/WAP service will also be provided to check ticket validity from a mobile phone. On Ticket verification, subscriber is allowed to utilize ticket for the respective service purchased.

A typical usage of the M-Ticketing service is by Vodacom in Tanzania, launched in November 2012, where air passengers travelling on the domestic airline, Fast Jet, can buy their tickets using the M-PESA money transfer system (Pesatimes, 2013).

According to Safaricom, 2013 Lipa Karo Na M-PESA is an M-PESA Pay Bill service special for school fees collection. Upon signing up, a school is issued with an M-PESA Business Number. PesaPal is a provider of schools management information systems. PesaPal for schools is built on a simple Web-based interface that enables any school to receive and track payments for special activities such as school trips, activity fees, and fund raisers among others.

Mas & Radcliffe, (2010) attributes these enabling conditions for a successful mobile money deployment, including: strong latent demand for domestic remittances, poor quality of available financial services, a banking regulator which permitted Safaricom to experiment with different business models and distribution channels, and a mobile communications market characterized by Safaricom's dominant market position and low commissions on airtime sales. However, Mas & Ngweno, (2009) summarized three key aspects of M-PESA's success:

1. Creating awareness and building trust through branding
2. Creating a consistent user experience while building an extensive channel of retail agents offering cash in/cash out services
3. A customer pricing and agent commission structure that focus on key drivers of customer willingness to pay and incentivized early adoption.

## 3. Research Methodology

The aim of this research is to examine Mobile Money Transfers in Ghana and to find out whether the service is successful in Ghana just as the Kenya's MPESA by Safaricom. The research is intended to find answers and make conclusions in three main perspectives of questions viz: Socioeconomic Characteristics of users, Customer experience with MMT in Ghana and the agents' operations.

This chapter explains the details of how answers to the research questions are obtained. It is the "*something*" that is done to come to a conclusion and make meaningful judgment regarding the thesis statement/research questions. According to Hoftstee, (2006), research method is a way of considering the thesis statement. He explains further that, it is the general technique(s) that is employed to examine the thesis statement, for example, interviews, a case study content analysis or an experiment, among others. on the other hand, Hoftstee, (2006) explain research design as the way one chooses to design the study, that is, how to arrive at a conclusion about the thesis. He pointed out that the research technique is not focused on any specific problem; it can be applied to many different problems. According to Adams, Khan, Raeside, & White, (2007), a research method is a specific "way of conducting and implementing research", research methodology refers to the "science and philosophy behind all research".

### 3.1. Quantitative, Qualitative and Research philosophy

There are two main broad research methodologies used in business and social sciences – quantitative and qualitative research. Quantitative Research refers to the type of research that is based on the methodological principles of positivism and neopositivism, and adheres to the standards of a strict research design developed prior to the actual research (Adams et al., 2007). Adams et al., (2007), explain that it is applied for quantitative measurement and hence statistical analysis is used. Quantitative research is used in almost every sphere of life, such as in clinical, biological, epidemiological, sociological and business research.

According to Saunders, Thornhill, & Lewis (2009), with the positivism philosophy, you work within an observable social reality and that the end product of such a research can be law-like generalizations similar to those produced by physical and natural scientist. They explain further that, only the phenomena that you observe will lead to the production of credible data. Again, to generate strategy to collect these data one is likely to use existing theory to develop hypotheses. These hypotheses will be tested and confirmed, in whole or part, or refuted leading to further development of theory which then may be tested by further research. With this philosophy, there is a process of systematic research design, quantitative measurement of data and statistical analysis.

On the other hand, qualitative research as explained by Adams et al., (2007) uses a number of methodological approaches based on diverse theoretical principles such as Phenomenology,

Hermeneutics and Social Interactionism. It employs methods of data collection and analysis that are non-quantitative, aims towards the exploration of social relations, and describes reality as experienced by the respondents. Saunders et al., (2009) explain that interpretivism which is the main philosophy of qualitative research comes from the intellectual traditions of phenomenology and symbolic interactionism.  They explain that phenomenology refers to the way in which humans make sense of the world around us. In symbolic interactionism we are in continual process of interpreting the social world around us in that we interpret the actions of others with whom we interact and this interpretation leads to adjustment of our own meanings and actions.

The research philosophy of this research was therefore based on both the Positivism and the Interpretivism philosophies. As outlined by Saunders et al., (2009) in the Table 9 below, All points which are listed for "Positivism" and "Interpretivism" are true for our research philosophy and approach.

|  | Positivism | Realism | Interpretivism | Pragmatism |
|---|---|---|---|---|
| Ontology: the researcher's view of the nature of reality or being | External, objective and independent of social actors | Is objective. Exists independently of human thoughts and beliefs or knowledge of their existence (realist), but is interpreted through social conditioning (critical realist) | Socially constructed, subjective, may change, multiple | External, multiple, view chosen to best enable answering of research question |
| Epistemology: the researcher's view regarding what constitutes acceptable knowledge | Only observable phenomena can provide credible data, facts. Focus on causality and law like generalisations, reducing phenomena to simplest elements | Observable phenomena provide credible data, facts. Insufficient data means inaccuracies in sensations (direct realism). Alternatively, phenomena create sensations which are open to misinterpretation (critical realism). Focus on | Subjective meanings and social phenomena. Focus upon the details of situation, a reality behind these details, subjective meanings motivating actions | Either or both observable phenomena and subjective meanings can provide acceptable knowledge dependent upon the research question. Focus on practical applied research, integrating different perspectives to |

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| | **Positivism** | **Realism** | **Interpretivism** | **Pragmatism** |
|---|---|---|---|---|
| | | explaining within a context or contexts | | help interpret the data |
| Axiology: the researcher's view of the role of values in research | Research is undertaken in a value-free way, the researcher is independent of the data and maintains an objective stance | Research is value laden; the researcher is biased by world views, cultural experiences and upbringing. These will impact on the research | Research is value bound, the researcher is part of what is being researched, cannot be separated and so will be subjective | Values play a large role in interpreting results, the researcher adopting both objective and subjective points of view |
| Data collection techniques most often used | Highly structured, large samples, measurement, quantitative, but can use qualitative | Methods chosen must fit the subject matter, quantitative or qualitative | Small samples, in-depth investigations, qualitative | Mixed or multiple method designs, quantitative and qualitative |

Table 3: Comparison of four research philosophies in management research, Saunders et al., (2009)

These two philosophies were used because the research focused on the social reality of mobile money transfer on which we make observations were made to see the success or otherwise of the service. From this observation leading to data collection, a law-like generalization was made. The observation and credible data collected was be made from the socioeconomic characteristics of users of MMT, their experience with the service as well as the agents operation. Again, there exists knowledge about MMT in Kenya (which was used as a benchmark) which helped to state the thesis statement. This statement was tested and confirmed, in whole or part, or refuted leading to further development of knowledge which then may be tested by other researchers.

The Interpretivism came in as result of the belief that the customers (respondents) interacted with MMT as such they better understood that social reality and were the best people to make sense of it and judge the success or otherwise of the service. This interaction is in continuum and therefore can lead to adjustment or change in the future.

This research which aimed at studying Mobile Money Transfer in Ghana used both the quantitative and the qualitative methods. These methods were chosen as a result of the two philosophies adopted for the study. The positivism philosophy is more inclined to quantitative method while the interpretivism philosophy is more related to qualitative method. Again, beside the quantitative method, the qualitative method will allowed us to identify the true characteristics

of respondent related to various social factors, such as the challenges faced by MMT agents, method of saving money before MMT, the means of sending and/or receiving money before mobile phone access, among others, which a more quantitative method would probably fail to do. Moreover, the qualitative method was more flexible and allowed the researcher to interact with the respondents and understand their world from their own point of view. This understanding formed the basis of data collection and deduced an emphatic stance at conclusion to validate the thesis statement or otherwise. In addition, with qualitative methods, the relationship between the researcher and the participant is often "less formal" and participants have the opportunity to respond more elaborately and in greater detail than is typically the case with quantitative methods.

The data collected by the methods are from the respondents' own point of view as such the researcher has no influence in the result. Such a procedure on one hand will make collection results in numerical and standardized data. The data is more reliable and as such a representative conclusion made based on meanings derived from numbers which was characteristic of quantitative method and analysis made through the use of diagrams and statistics.

### 3.1. Inductive and Deductive Approach

Saunders et al., (2009) in their book "Research Methods for Business Students" explained that deductive and the inductive approaches are the main research approaches that can be distinguished. They explain that a research using an inductive approach is likely to be particularly concerned with the context in which such events are taking place. Therefore, the study of small sample of subjects might be more appropriate than the larger number as with deductive approach.

While in the deductive approach a theory or hypothesis (hypotheses) is developed and tested following a research strategy the inductive approach starts with the gathering of data and develops from the analysis of these data its theory. The deductive approach is more usual in natural sciences seeming to have a tendency to positivism while the inductive approach tends more to interpretivism. Table 10 below illustrates the main differences between the inductive and deductive approaches by Saunders et al., (2009).

| Deduction emphasizes | Induction emphasizes |
|---|---|
| • scientific principles<br>• moving from theory to data<br>• the need to explain causal relationships between variables<br>• the collection of quantitative data<br>• the application of controls to ensure validity of data<br>• the operationalisation of concepts to ensure clarity of definition<br>• a highly structured approach<br>• researcher independence of what is being researched<br>• the necessity to select samples of sufficient size in order to generalise | • gaining an understanding of the meanings humans attach to events<br>• a close understanding of the research context<br>• the collection of qualitative data<br>• a more flexible structure to permit changes of research emphasis as the research progresses<br>• a realisation that the researcher is part of the research process<br>• less concern with the need to generalise |

Table 4: Major differences between deductive and inductive approaches to research

It will be misleading to create the impression that there are rigid divisions between deduction and induction. Not only is it perfectly possible to combine deduction and induction within the same research, but also it is advantageous (Saunders et al., 2009). A studious analysis of the table above revealed practicability of both approaches to this research. Therefore, both approaches were used. The reason being that, there was an existing idea and theory about Mobile Money Transfer (take for example, the success of Kenya's MPESA) and therefore this research collected data to access the theory within the Ghanaian context. This is deductive approach. On the other hand, the research was planned to explore collected data and to develop theories from them that related to Mobile Money Transfer. The data from the research may reveal new trends; these trends would be used to formulate theories; this is inductive reasoning.

### 3.2. Assumptions

This research on the Mobile Money Transfer in Ghana agreed with the following assumptions as outline by Creswell, (2003).

1. Meanings are constructed by human beings as they engage with the world they are interpreting. This research based on this assumption with structured but open-ended (through comments) questions which allowed participants to express their views freely.

2. Humans engage with their world and make sense of it based on their historical and social perspective-we are all born into a world of meaning bestowed upon us by our culture and experience. Thus, the researcher sought to understand the context or setting of the

participants regarding their experience with Mobile Money Transfer by visiting their environment and gathering information personally. The interpretation of what was found was shaped by the researchers' own experiences and analysis emanating from the gathered data.

3. The basic generation of meaning is always social, arising in and out of interaction with a human community. The conclusions are strictly based on the analyzed data collected from the interaction with the respondents.

### 3.3. Research Design

The extensive nature of Mobile Money Transfer makes it diverse. A research in this area therefore requires a thorough understanding of the approach and a reliable method to address the research statement. Having chosen both the quantitative and qualitative research methodologies using the interpretivist and Positivism philosophies, the next step was to choose the exact procedure for implementing it. There were several procedures; however, as a result of a number of considerations and the limitation therein, the survey method was used.

**Purpose of the Research**

According to Saunders et al., (2009), the classification of research purpose most often used in research methods is the threefold one of exploratory, descriptive and explanatory. In this research, the exploratory study was used. Exploratory study was used in order to find out what was happening with regards to Mobile Money Transfer in Ghana; whether the service was as successful as Kenya's M-PESA. It was aimed to seek new insights; to ask questions on MMT and to assess the service in the Ghanaian context. This was particularly useful to clarify the success of MMT and have a better understanding of the service in Ghana. At the moment we were unsure of the precise nature of MMT in Ghana.

Saunders et al., (2009), in their book Research Methods for Business Students Fifth Edition, explain that there are three principal ways of conducting exploratory research: a search of the literature, interviewing 'experts' in the subject, and conducting focus group interviews. Review of literature has already been done, survey using questionnaire as a data collection technique, was conducted with the customers and agents of MMT in the Ashanti region of Ghana.

### 3.4. Research Strategy

The research strategy of this research was the survey strategy. The reason for the survey strategy in this research was that it is usually associated with the deductive approach in which this research to a large extent bases. The survey strategy, according to Saunders et al., (2009), is a good strategy to answer who, what, where, how much and how many type of questions which were characteristic of this research. It is also a good strategy for exploratory studies which was

the fulcrum of this research. Again, Surveys allow the collection of a large amount of data from a sizeable population by taking a sample as a microcosm in a highly economical way which is easy to explain and to understand. Also, the survey strategy allows the collection quantitative and qualitative data which can be analyzed quantitatively using descriptive and inferential statistics (Saunders et al., 2009).

## 3.5. Time Horizon

As a result of the limited time associated with this research; the research had a maximum of six months within which to find answers, cross-sectional studies was used as the time horizon. The study of a particular phenomenon (or phenomena) at a particular time (Saunders et al., 2009); involve observation of all of a population, or a sample, at one specific point in time. It is the appropriate study often employed with the survey strategy. In symbolic interactionism, which forms the bases of the interpretivist philosophy, we are in a continual process of interpreting the social world around us in that we interpret the actions of others with whom we interact and this interpretation leads to adjustment of our own meanings and actions (Saunders et al., 2009). This statement interprets that, culture is in constant state of creation and re-creation; therefore, the views of today may not be the same as tomorrow. The data collected in this research was cross-sectional and as such conclusions were based. For details of the research timeline, see appendix V and VI

## 3.6. Ethical Consideration

The Mobile Network agents formed an important part of this research. They were surveyed. These agents were in competition per MNOs and therefore had their trade secrets and competitive intelligence.  They were in constant process of defining, gathering, analyzing, and distributing intelligence about products, customers, competitors and any aspect of the environment needed to support their executives and managers in making strategic decisions for their organizations.

Performing an investigation as an external researcher was met with disinclination to disclose competitive intelligent information. It was therefore important to address their organizational concerns by assuring them of the confidence, reliability and also competence of the interview and data. The agents were assured that the information they were giving would be handled in an appropriate way. And that meant the research had to be done in accordance with a code of conduct. Notable conducts that were used in this research was the Code of Ethics of the American Educational Research Association(AERA, 2011)and the EU code of conduct for socio-economic research (Dench, Iphofen, & Huws, 2004); the ethical guidelines of these conducts were strictly followed. Following these guidelines it was of crucial importance to communicate in a way that the agents and respondents were convinced that privacy was respected and confidence was guaranteed.

In order to gain access to the agents and customers, a personal face-to-face appeal was made to them and those who accepted were surveyed. The attached questionnaires; appendix I and II were given to the customers and agents respectively. The questionnaires in brief outlined the purpose of the research, how the agents/customers might be able to help, and what was likely to be involved in participating.

According to Saunders et al., (2009), Within business and management research, there are two dominant philosophical ethical standpoints: deontology and teleology. They explain that, the deontological view argues that the ends served by the research can never justify the use of research which is unethical. This view translates never to use, for example, deception to obtain research data, even if deception is necessary to ensure the data is valid and reliable.

In contrast, the teleological view argues that the ends served by your research justify the means (Saunders et al., 2009). This view translates, for example, as in order to achieve an important aim, it is acceptable to do something bad. In this research, the deontological argument was used.

## 3.7. Population and Sampling Method

The population of this research was all Mobile Money Transfer users in Ghana. However, it would be impracticable to survey the entire population as a result of budget constraints, time constraints, and the quick nature of the research. For this reason, a sample was needed. According to Saunders et al., (2009), Sampling also saves time, an important consideration when tight deadline is held. The organization of data collection is more manageable as fewer people are involved. They explain that, with fewer data to enter, the results will be available more quickly. The sample for the research was taken from some communities in the Ashanti region of Ghana. The communities were Ahenkro, Offinso, Buoho, and Kodie. These communities were selected to have a better representation and not to restrict the research scope to only one community. These communities can be described as urban poor.

Saunders et al., (2009), explain that sampling techniques available can be divided into two types: probability or representative sampling and non-probability or judgmental sampling. With probability samples the chance, or probability, of each respondent being selected from the population (sample) is known and is usually equal for all respondents. This means that it is possible to answer research questions and to achieve objectives that require you to estimate statistically the characteristics of the population from the sample. Consequently, probability sampling is often associated with the survey research strategy.

Saunders et al., (2009), further explain that with non-probability samples, the probability of each respondent being selected from the total population is not known and it is impossible to answer research questions or to address objectives that require you to make statistical inferences about the characteristics of the population.

In this research, random sampling was used, the reason being that it is impossible or impractical to compile a list of the respondents composing the sample (Creswell, 2003). Households in the communities served as the sampling units, and the observation units are the MMT users living in the households. A random sample was then taken of these observation units.

### 3.8. Data collection

Data was collected over a period of one month from 20th November, 2013 to 20th December, 2013 in the stated communities in the Ashanti region of Ghana. Four attendants were recruited and remunerated to help in the data collection process. They were John Murphy, a final year undergraduate student information Technology, Diana Fosu, finance assistant worker at the University of Education, Kumasi, Silvia Pimpong, senior administrator, and Mrs. Millicent Adasa Nkrumah, a lecturer. Each of the four was assigned to a community.

The respondents were surveyed from the communities. There was no pre-generated list as a result of the widespread nature of the respondents; we did not know exactly where to get in touch with them; rather it was more exploratory in nature and whenever we encountered a person who had used MMT we first appealed to him/her and after agreeing he/she was surveyed. A major technique used was to stay with the agents and anyone who came to use the service was approached. At the end of the period, we ended up with a total of one hundred and fifteen customers with forty six agents. The characteristics of the respondents are discussed under 4.2.

### 3.9. Secondary Data

Secondary data is the data that have already been collected for some other purpose. Secondary data was used extensively in this research including both raw data and published reviews. MNOs had large range of secondary data such as sales of goods or services, newspaper and other reports, takeover bids and companies' share prices, surveys, published official statistics. Others included data from consumer research organizations, trade organizations, as well as so many others. All these data were considered and used in this research.

### 3.10.    Limitations

The research encountered a number of limitations. In the first place the duration of the research was very short as it affected the sample size. A research of this nature needed wider coverage in all regions of Ghana. However, we believe MMT as a service offers the same trends and experience independent of the number of people as such the data was representative and certain that it was generally applicable to all other MMT users in Ghana. The Ashanti region and the communities were selected because the researcher grew up in the region and knew the communities very well.

There was a problem in getting data collection attendants; the four mentioned were personal friends who had to devour their busy schedule to help in the data collection process since it was becoming extremely difficult to find qualified attendants.

Financial constraint was another limitation. More attendants could have been sourced, the number of questionnaires could have been increased, the number of communities could have been increased, however, fund was woefully inadequate considering the fact that the researcher is a student and currently unemployed.

## 4. Results and Discussion

The problem statement, research objectives, the review of literature, and the methodology of the research have so been understood. This chapter presents the result of the research from the survey conducted using questionnaire. The intention is to understand the extent of mobile money transfer in Ghana from the perspective of customers (users) referred to as respondents in the paper. The questionnaire (Appendix I) was divided into three parts namely:

1. The socioeconomic characteristics of respondents
2. MMT operation (customer experience with MMT)
3. Agents operations

The first part looks at the respondents' age, sex, household, educational level, occupation, among others. The second part looks at the respondents' subscription/registration with MMT, withdrawing money from MMT, time frame until withdrawal is possible, reported experiences with agents, satisfied/secured with MMT, their satisfaction/security with MMT, the MNO they normally use for MMT, their transactions, as well as interconnection between MMT. The last part of the questionnaire was answered by MMT agents and was intended to find out Individual Characteristics of the agents (age, sex, and educational level), the procedure to becoming a MMT agent, the extent of Mobile Money training, the MNOs they work with, the MNOs customers usually subscribe/use, complaints, among others.

### 4.1 Response Rate

In this section, results, based on the guiding questions are presented. Discussions on specific items follow immediately after the item's results presentation. We are however hopeful that the results provides data that can be used as a starting point for further investigations.

With a total of one hundred and forty five questionnaires (145) in the study, the target was 90% response because they were sent directly to the customers and the agents, but this was not possible. Instead 79% was realized. Out of the 145 respondents, 115 completed the questions. The respondents were those who have sent money through MMT at least ones. This was considered as an excellent rate of response since the sample size certainly allowed solid conclusions on the topic. The following subsections go through all the feedback questions and interpret the results therein.
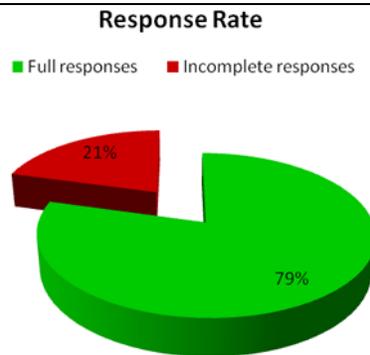
**Response Rate**



Figure 18: Response rate of the research

The questionnaire employed various question formats, including single choice lists, multiple choice as well as free text questions. The results from the respondents were transformed into numerical values according to the number options selected by the respondents. The resulting absolute values allowed analysis and inferences outlined below.

## 4.2 Socioeconomic characteristics of respondents

### 4.2.1  Sex distribution

Figure 19a and b shows the sex distribution of the respondents and recipients of MMT respectively. There were 47 respondents representing 41% females with 68 representing 59% males. The recipient side saw opposite trend with 59% female recipients with 41% male recipients. This suggests that more males send money via MMT to more females.
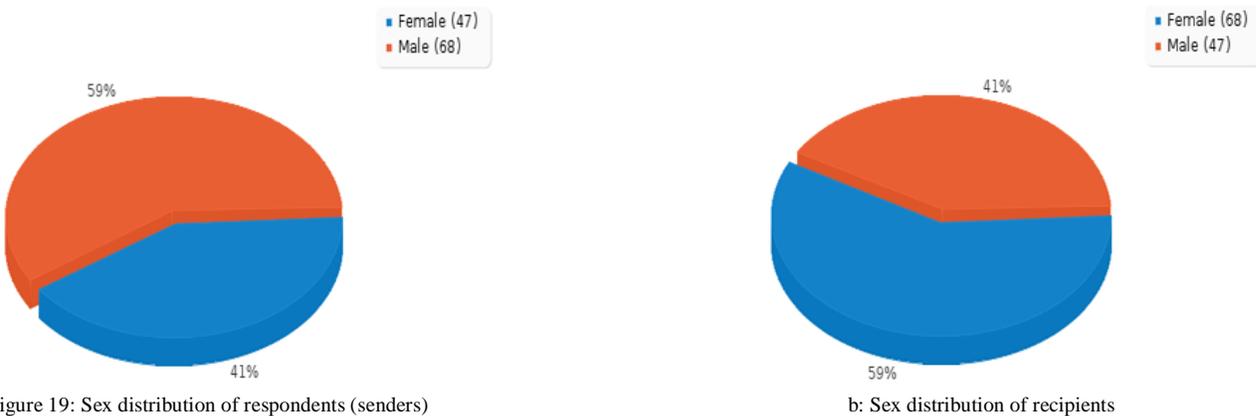


Figure 19: Sex distribution of respondents (senders)                    b: Sex distribution of recipients

The above result is reflective of the fact that the proportion of males who were economically active in Ghana is 54.7% slightly higher than females (53.7%) (GSS, 2012) and therefore the male population stand a better chance of sending money more than the female population. Females, on the other hand, were more likely to be unemployed (5.5%) than males (4.6%) (GSS, 2012).

The result reflects the survey by IFC, (2011a) where more than 60% of MMT users were males but contrasts the MMT users in Brazil, as noted by IFC, (2011), where there were slightly more female users.

### 4.2.2   Age distribution

The figure 21 shows the age distribution of the respondents. This was important to find out the age structure of the senders and recipient of MMT in Ghana; from which age category were the senders and to which age category were the recipients? It was found that 39% of the respondents were in the age group 26 – 30, none was below 18, 23% were in 18 – 25, 20% in 31 – 35, 6% 36– 40, 5% in 41- 45, 5% 46 – 50 with only 2% above 51.
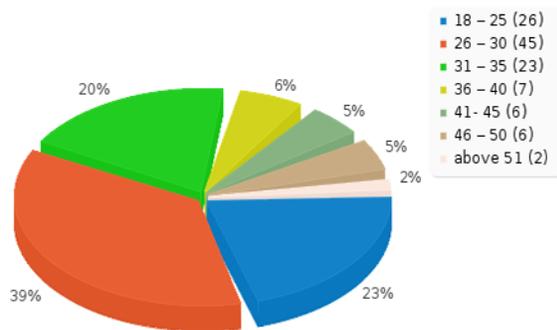


Figure 20: Age distribution of senders          Figure 21: Age distribution of recipients
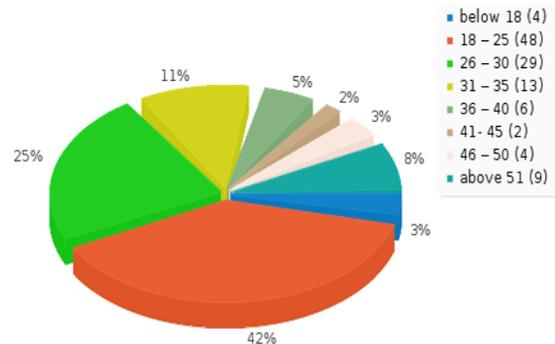
It must be emphasized that the most recent recipient of MMT was considered from the point of view of the respondents who were the senders. As shown in figure 21, the age distribution of recipients saw a downward MMT flow to the younger age group; it appeared that mobile money was sent to the younger age group from the more elderly ones. Whereas there was no sender below age 18, 3% of the recipients were below 18 years, 42% were in 18-25 age group, 25% in 26-35, 11% in 31-35, 5% in 36-40, 2% in 41-45, 3% in 46-50 while 8% were above 51 years. Comparing the age groups of the senders to those of the recipients realized that there were decreasing numbers of recipients per a corresponding sender age group for some age groups. This point is discussed below.

For the sender age group 26-30 there were 45 senders representing 39% who sent money via MMT. For same age group at the recipient end there were 29 recipients representing 25% who received money via MMT. For the sender age group 31-35 there were 23 senders representing 20% while 13 recipients representing 11% received money via MMT for the same age category at the recipient end. Again, there were 7 senders (6%) in the age group 36-40 at the sender side with 6 (5%) recipients. The same trend continued for the age groups 41-45 and 46-50. Furthermore, there were 2 (2%) senders with 9 (8%) recipients for the same age group.

The younger and older age groups saw a different trend of increasing numbers of recipients per a corresponding age group in the same category. No sender was below 18 years however, 4

recipients were below 18 years. Again, 26 (23%) senders were in the age range 18-25 while there were 48 (42%) recipients in the same age range.

The above analysis points to the fact that mobile money was sent to the unproductive younger and older people in Ghana. The 2010 population and housing census of Ghana stipulate that more than 50% of Ghanaians were below 25 years; 47.2% were in primary school, 17.8% in JHS, 8.6% were in SHS (GSS, 2012). The census also showed that students form a large proportion of the economically not active population (66.6%). These people are usually in school or engaged in some form of training and therefore economically unproductive. They were considered unproductive, unoccupied, and economically inactive because they did not work and was not part of the labour force and therefore needed to be supported. This point is reflective of the increasing number of recipients who were below the age range 18-25.

The result above reflects the survey by IFC, (2011b) in Brazil and IFC, (2011a) in Nigeria where more than 60% of the users were below 45 years and therefore confirms that more young people send mobile money than the elderly.

### 4.2.3 Occupation

There were so many occupation categories of the respondents; as such there was the need to group them on high level. The respondents were therefore grouped in formal and non-formal occupations. Formal occupation consisted of people who work under the government and receive a regular source of income usually at the end of the month in Ghana. They included pre-tertiary teachers, nurses, secretaries, accountants, among others.  The informal category consisted of people in low income and engaged in informal activities that are usually self-employed and engage in petty trade; they are independent and not monitored by the government. They included such people as traders, road side sellers, shop keepers, taxi drivers (in Ghana Taxi driving is not regulated by the government), bakers, food sellers, beauticians, among others. As shown in figure 22, 60% of the respondents were in the formal occupation category with 40% in the informal occupation category.
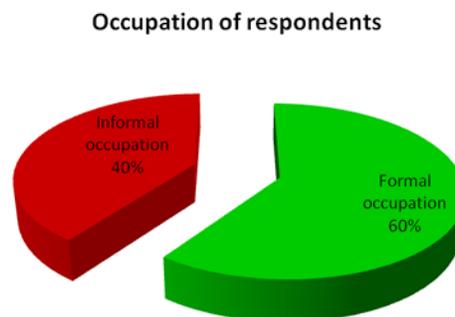


Figure 22: Occupation of respondents

### 4.2.4  Educational level

The higher percentage of formal occupation of the respondents was interesting and therefore there was the need to further explore the educational background of this category which revealed that, as shown in figure 23, 46% of the respondents were bachelor degree holders; people who had completed their first degree course at the university and working. 19% were HND[1] holders, 7% Diploma[2] holders, 9% advanced[3] certificate holders, 6% general certificate[4] holders, while 13% were Master's degree holders.

**Formal occupation of respondents**
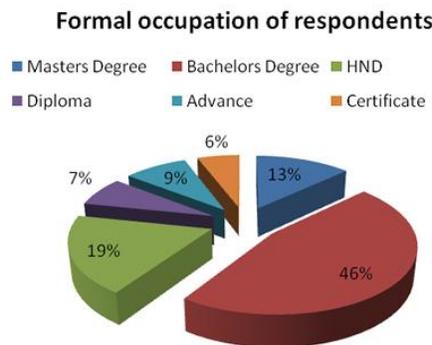


Figure 23: Formal occupation of respondents

The result in figure 23 agreed with the situation in Nigeria where, as reported by IFC, (2011a), more than 70% of MMT senders were bachelor degree holders. However, the situation was different in Brazil where more than 65% of the users had completed secondary education with only 10% bachelor degree holders.

On the other hand, the educational levels of recipients were found to be lower than the senders. As shown in figure 24, 81 out of the 115 respondents said they sent money to people whose educational background was lower than them. Majority of the recipients were those in the senior high schools (SHS[5]); they constituted 23%. 20% were JHS students, 13% were in the informal sector, 9% bachelor degree holders, 12% HND holders, 9% diploma holder, 6% certificate holder, while none was in the Master's degree category.

**Educational level or recipients**
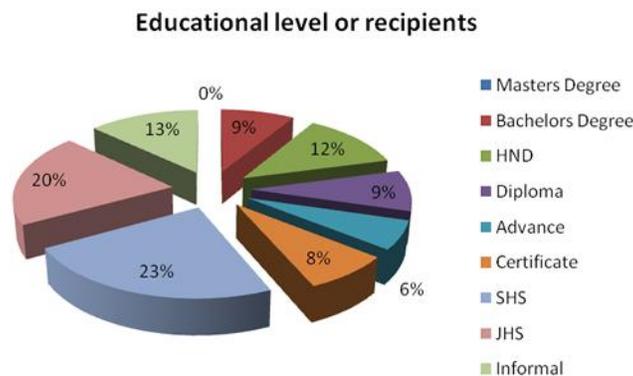


Figure 24: Educational level of recipients of MMT

[1] In Ghana Polytechnic education is a higher education of 3-4 years responsible for training in scientific and technical subjects; they award the HND certificate; they are lower than a bachelor degree.

2 In Ghana a Diploma certificate can be awarded by all tertiary institutions and is of 3-years duration; they are lower than the HND certificate

3 Advanced certificate is lower than a Diploma certificate and is of 1-2 years duration

4 General certificate is lower than advanced certificate and is usually of 1-year duration

5 In Ghana, after 6-years of basic education, the next level is 3-years Junior High School education, followed by 3-year Senior High School education

It is interesting to note that as shown in figure 25, the flow of MMT seemed to come from people with higher education to those with lower education. There were more senders from Master's and bachelor degrees holders than recipients of the same educational background. The ratio of senders to recipients for the master degree level was 9:0, and 32:10 for bachelors' degree holders. In contrast, there were more recipients for at the lower level educational category where SHS and JHS recipients were more. Whereas there were no JHS and SHS senders, 27 recipients were in JHS with 23 in the SHS category. Again, this result was reflective of the population demographics of Ghana as the active and productive class was those with higher form of education and therefore they were in a better position to support the young and unproductive class.
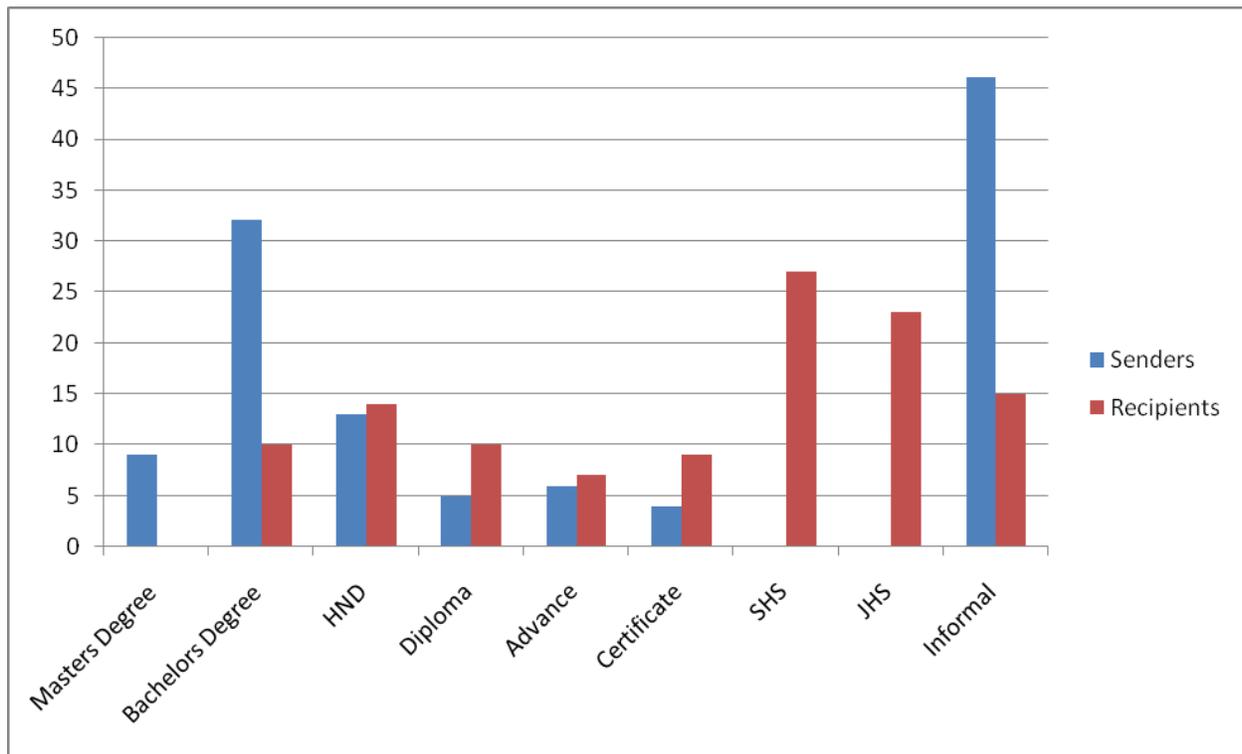


Figure 25: Educational level of senders and recipients of MMT

The result in figure 26 is in agreement with that in figure 25. From figure 26 most of the respondents said they sent mobile money to their siblings (who were assumed to be in lower level schools, JHS or SHS), hence the large numbers of JHS/SHS recipients in figure 25. 10% sent money to their mothers, 3% to their fathers, 42% to their siblings, 5% to their children, 14% to friends, and 10% to spouses while 11% sent to other family members. 5% used MMT for work related transactions.

The conclusion here was that siblings were more recipients of mobile money; mothers received more mobile money than fathers; and spouses received more mobile money than children.
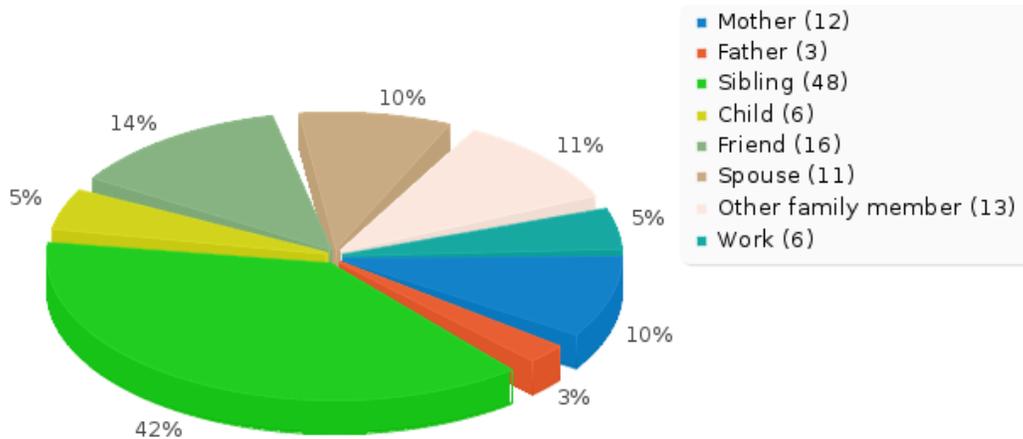
Figure 26: Relationship between senders and recipients of MMT

### 4.2.5 Number of times MMT is used by respondents

The respondents were asked how often they sent money via MMT in a month. This question was intended to find out the extent of use of the service in Ghana; whether it was widely used in Ghana with regards to the widespread use in Kenya. As shown in figure 27, 37% of the respondents said they used the service once, 17% used it twice, and 7% used it thrice, while 39% used MMT more than thrice in a month. This suggests that MMT was quite popular in Ghana just as in Kenya.
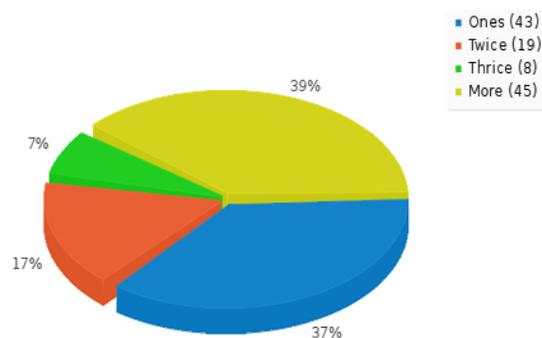


Figure 27: Extent of MMT use in Ghana

The flow of MMT seemed more popular in the urban areas more than in the rural areas. The respondents were asked what characterized the destination of their most recent transactions. This question was intended to clearly ascertain where MMT was coming from and going to. As shown in figure 28, 72% sent money to the urban areas with 28% in the rural areas.
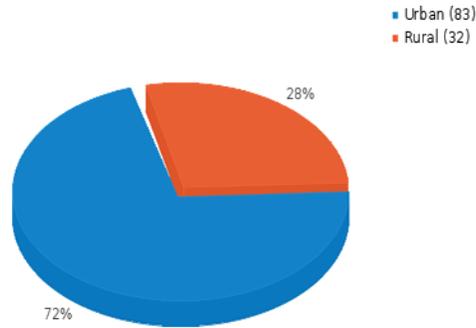
Figure 28: Destination of MMT

### 4.2.6 Means of sending money before MMT

This section ascertains the means by which the respondents sent and received mobile money before the introduction of MMT in Ghana. The question asked was: What were the means of sending and/or receiving money before mobile phone access? As shown in figure 29, it is interesting to note that unlike other countries in Africa, 55% of the respondents said they used banks, 17% did so by bus drivers, 29% used friends/relatives, while 28% used other service such as Post Office.
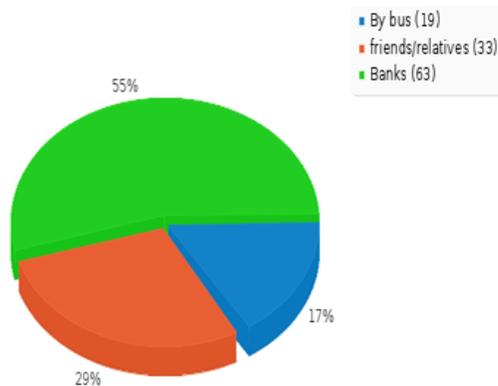


Figure 29: Means of sending money before MMT

### 4.2.7 Extent of mobile phone use per household

Figure 30 shows the household distribution of the respondents and mobile phone use. They were asked to state how many people constituted their household and how many per category that owned a mobile phone or could use one. This question was intended to ascertain the extent of use of mobile phones per household. The number of people per household formed the basis for measuring the popularity of the use of mobile phones in Ghana.
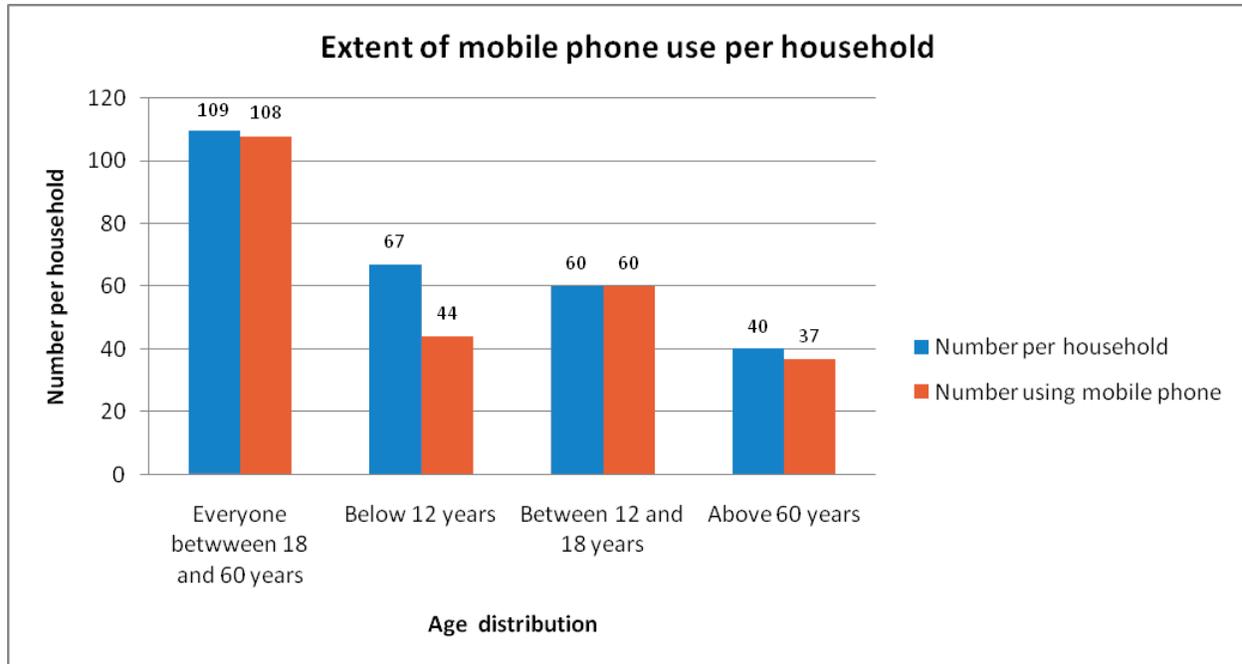
Figure 30: Household distribution and mobile phone use

There was 99% usage of mobile phones for everyone between 18 and 60 years; the ratio of the number of people to the number who owned or could use mobile phone in this age range was 109:108. The popularity and use of mobile phone for people below 12 years seemed reduced as 66% owned or could use mobile phone (there were 67:44 ratios in this range). However, mobile phone usage was quite popular for people between 12 and 18 years as there was a 100% usage with 92.5% usage for people above 60 years.

Cumulatively, 90% of each household either owned or could use a mobile phone. This result was interesting and pointed to the popularity of mobile phone in Ghana which is clearly reflective to the global statistics of mobile phone use in Ghana and Kenya as shown in figure 9 in the literature review. The point here is that mobile phone use was more popular in Ghana than in Kenya per hundred inhabitants and were used to a greater extent by adults. It was therefore postulated that this tremendous popularity and use of mobile phone should catapult MMT in Ghana in the future.

### 4.2.8   Bank account status

The Economist in their examination of banking in the developing world reported that in developing countries, 46% of adult men have a bank account, but only 37% of women (Economist, 2012). The same source reported that Ghana has three times as many banks per head of the adult population as Benin does; the exact figure was not mentioned. The international

monetary fund (IMF) reported that 41 percent of adults in developing countries have bank account (Demirguc-Kunt & Klapper, 2012).

In this research, it was equally important to find out the banking status of the respondents and to compare the situation globally. As shown in figure 31a, 96% of the respondents had a bank account while only 4% said they had no bank account. This is reflective of the result in figure 29 where most of the respondents said they used banks before the introduction of MMT. Again, unlike most African countries banking transaction seemed more frequent and popular in Ghana as 86% of the respondents used banks to save money before they registered with MMT, 1.7% saved with credit unions, 4% with Saving and loans companies, 11% with Susu collectors and 9% preferred to save money in their homes.
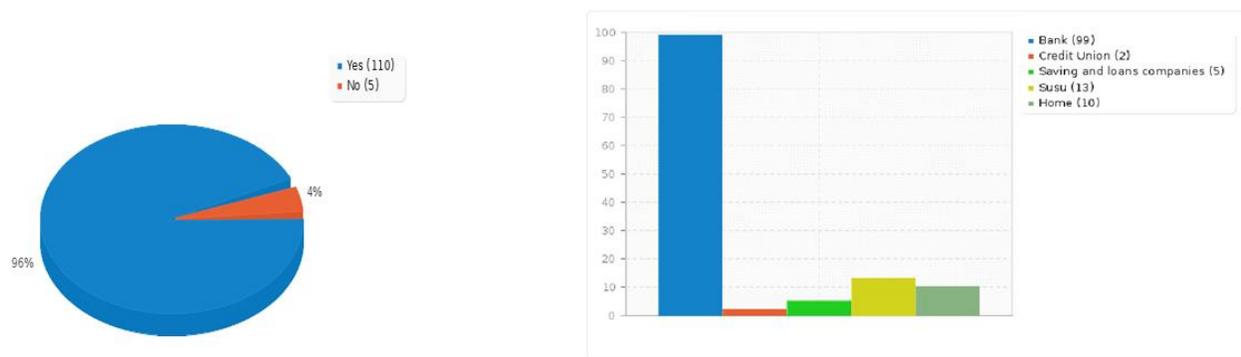
Figure 31: Bank account status (a, left) and means of saving of respondents (b, right)

Despite the high bank account status among the respondents, there seemed to be agreement with the survey by Tobbin, (2012) which stated that majority of participants said they trusted the mobile network operators over the banks since there exist a high usage of MMT in Ghana as depicted in figure 27.

## 4.3 MMT operation

### 4.3.1   MMT product used

This question was asked to find out about the products and their popularity of MMT in Ghana. There were different products provided by MNOs for use by MMT customers in Ghana. However, as shown in figure 32, Cash-in/Cash-out was the most popular and often used product; 65% of the respondent said they ever used the product. 51% used P2P, 16% used bill Payment, 57% used airtime Top-Up, and 3% used merchant Payment, while only 1% ever used bulk Payment. The result of merchant and bulk Payment was quite reflective considering the fact that only 5% used MMT for work related purposes as shown in figure 26.
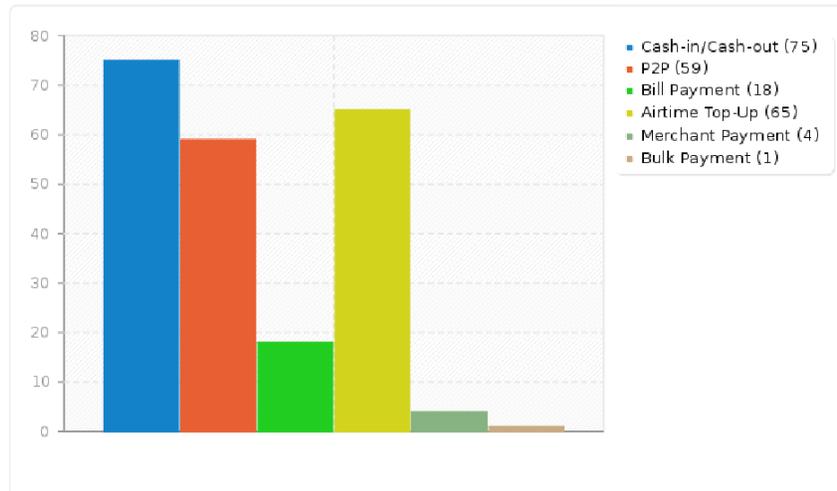
Figure 32: MMT products used


Whereas the study by IFC, (2011) on mobile money in Brazil, as shown in figure 32b, outlined widespread use of mobile money in public transport, G2P payments, as well as payroll, it appeared that such products/services were missing in Ghana. Again, merchant and bulk payments were not very popular in Ghana. Unlike in Kenya where M-Ticketing is widely used, the service was not widespread in Ghana. MNOs can collaborate with other service providers to tap into these areas. It is worth mentioning that IFC, (2011b) found mobile money in public transport and G2P payments unlikely opportunity in Nigeria due to lack of economies of scale or other constraints. The possibility or otherwise of this is unknown in Ghana.
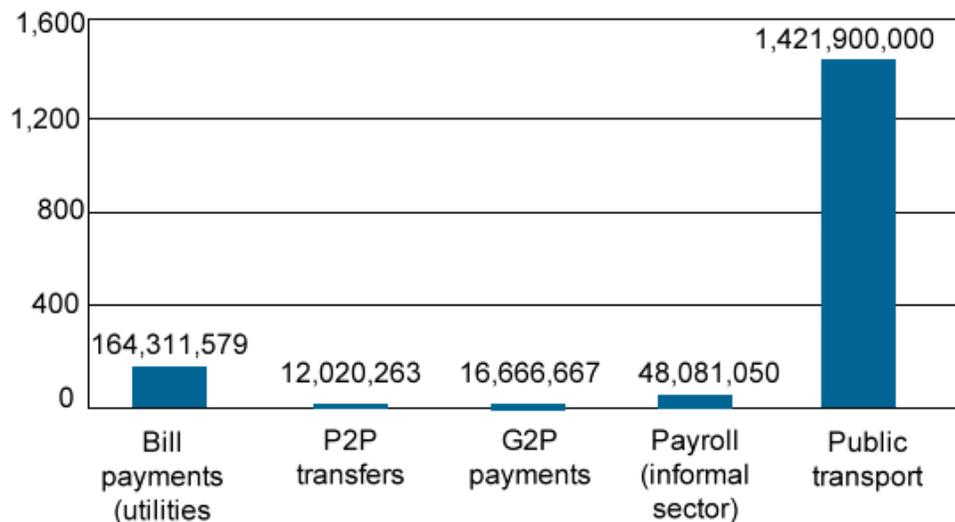


Figure 32b: Transactions in Key Mobile Money Market Segments in Brazil. Source: (IFC, 2011b)

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### 4.3.2   Subscription/registration of MMT

One of the factors that were likely to promote and at the same time inhibit the success of MMT was the subscription/registration process. To better understand the nature of MMT in Ghana, there was the need to find out how easy or difficult the subscription/registration process was from the point of view of the users. The respondents were asked whether there were difficulties in subscription/registration to mobile money transfer. As shown in figure 33, 4% strongly agreed that there were difficulties, 37% agreed, 10% neither agreed nor disagreed/not sure/uncertain, and 30% disagreed that there were difficulties, while 17% strongly disagreed.
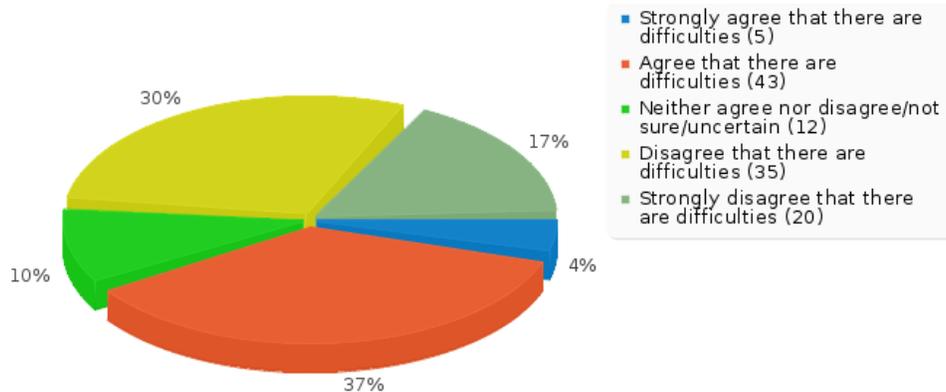
Figure 33: Subscription/registration of MMT

### 4.3.3   Withdrawing money

Most MMT users are often frustrated when it comes to withdrawing money with MMT. To support or defuse this fact, respondents were therefore asked to state whether there were delays in withdrawing money from MMT. As shown in figure 34 (left), 6% strongly agreed that there were delays, 37 % agreed, 9% neither agreed nor disagreed/not sure/uncertain, and 29% disagreed that there were delays, whiles 19% strongly disagreed. The ratio is 55 disagreeing to 50 agreeing.
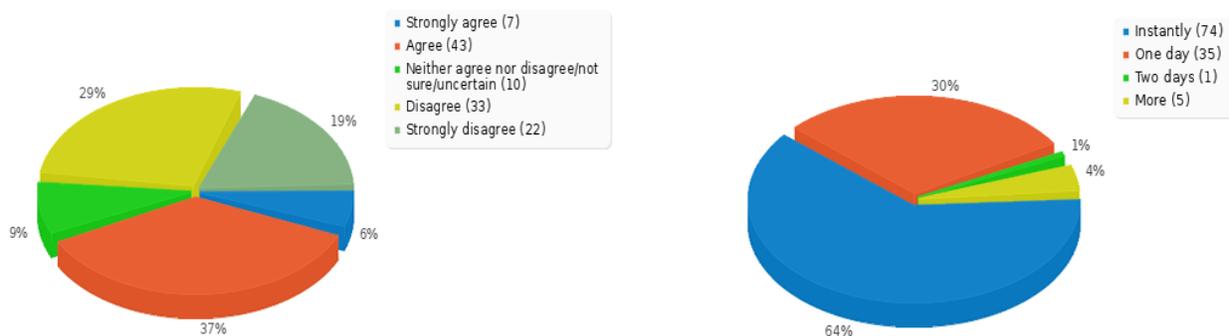
Figure 34: Withdrawing money with MMT

Again, as shown in figure 34 (right), 64 % of the respondents said the time frame until withdrawal was possible was instant and therefore no delays. However, 30 % said they were able to withdraw money in one day, 1% said two days, none of the respondents stated three days, but 4% stated more.

### 4.3.4   Reported experience with agents

The success of any MMT depends to a large extent on the agent operations. They are highly responsible for the success or otherwise of MMT. To find out how users were satisfied with the agents' operations, respondents were asked to state their reported experiences with agents and to state whether they were satisfied with their service. As shown in figure 35, 18% said they were satisfied to a large extent, 21% to quite a large extent, 50 % to some extent, 6% to quite a small extent, 3% to a small extent, while only 2% said they were not satisfied at all.
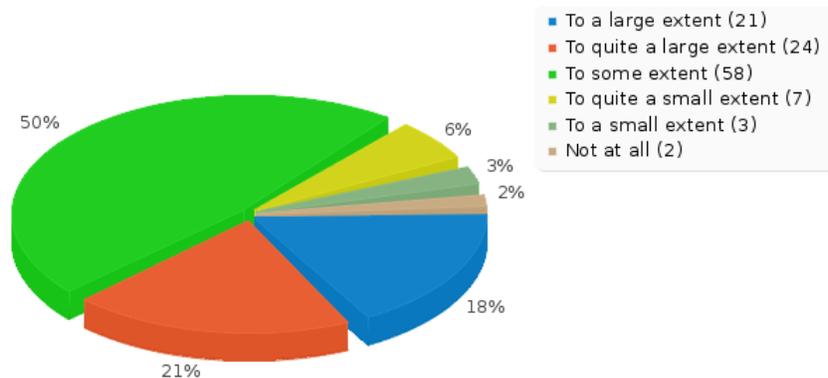


Figure 35: Reported experience with agents

### 4.3.5   Customer satisfaction with MMT

The extent of Customer satisfaction was the measure of the usefulness and the approval of the service from the point of view of the customers. It showed whether customers were content with the service and whether they would use it often in the future. The respondents were asked to state whether they were satisfied with MMT in Ghana. As shown in figure 36, it appeared that the respondents were satisfied with the MMT service as no respondent strongly disagreed, meanwhile 20 % strongly agreed, 58 % agreed, 10% neither agreed nor disagreed/not sure/uncertain, while 12 % disagreed
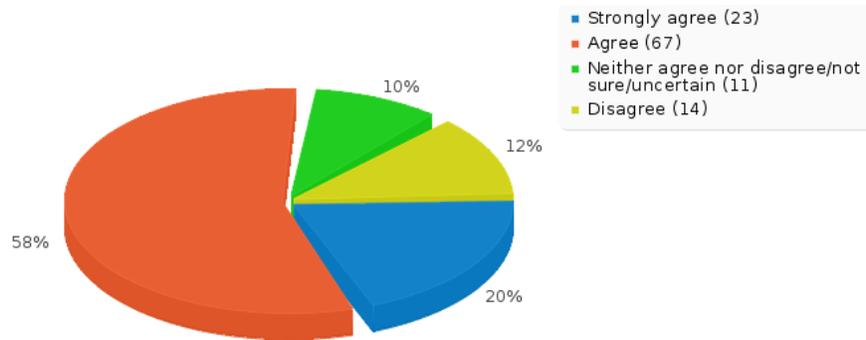
Figure 36: Customer satisfaction with MMT

The above result is similar to the paper of Larkotey et al., (2013) who explained that "even though the mobile payment system in the Ghanaian economy has not reach its peak, the satisfaction and the benefits it has been receiving by the consumers of the service, there is a consensus form by the majority of users that they will continue to use MPS and also recommend this service to others who are not using or benefiting from what they are receiving from these mobile money operators".

### 4.3.6   MMT MNOs in Ghana

As stated in the literature review there were four MMT MNOs in operation at the time of the research. It was therefore important to find out which of them was the most used. It appeared that TXTNPAY was the least popular with no mention of it by the respondents. However, MTN MobileMoney was the most patronized and very popular in Ghana. There was a very wide gap in terms of popularity with the other MMT MNOs; as shown in figure 37, 75% of the respondents said they used MTN Money, 17% used Tigo Cash, while 8% used Airtel Money.
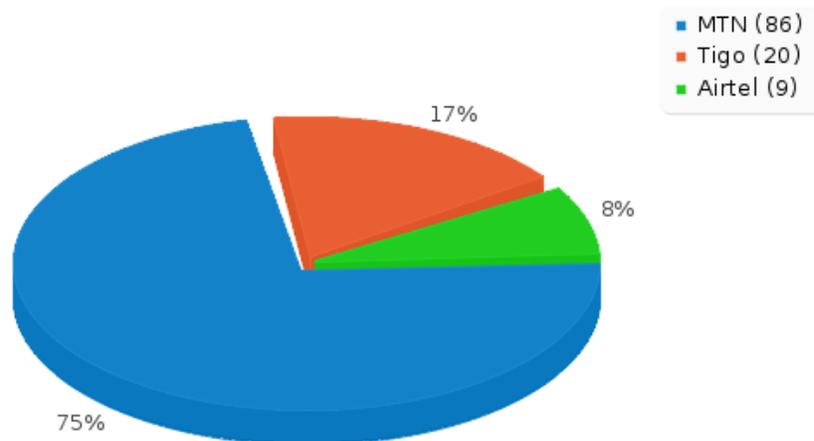


Figure 37: Extent of MMT MNOs in Ghana

### 4.3.7   On-net vs. cross net operation

On-net as used in MMT operation refers to a mobile money service originating (or terminating) on-net and has originated (or terminated) on the subscriber's service provider's (MNO) managed network. That is, using a given service provider's (MNO) facilities. Example, MTN-to-MTN transaction. Cross-net on the other hand refers to a mobile money service that is transacted between people that are on another network. Example: MTN-to-Tigo cash. The respondents were asked to describe the nature of their transactions with reference to on-net and cross-net. As shown in figure 38, it appeared that on-net was used the most as 52% of the respondent said they used on-net all the time, 12% used cross-net while 36% used both on-net and cross-net.
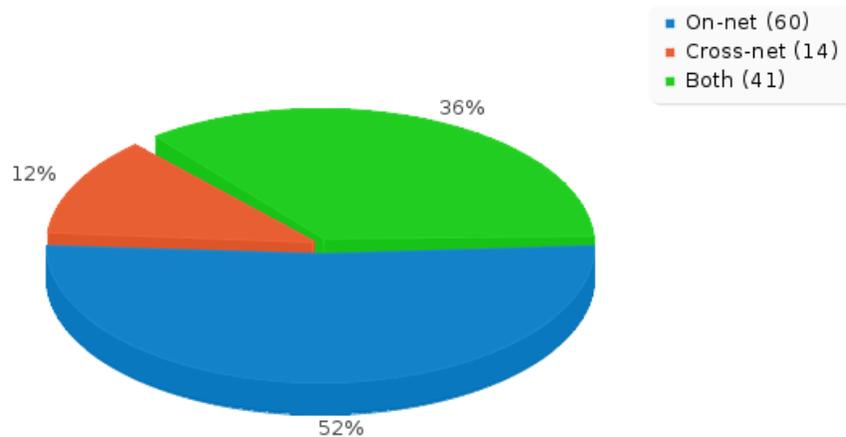


Figure 38: On-net vs. cross net operation

A follow up question was asked to find out the percentage of the respondents who used either cross-net or both as shown in figure 39, 49% sometime used cross-net, 31% often used cross-net while 20% always used cross-net. The respondents quoted price factors, better service delivery, ease of use, affiliation of the recipient, and more incentives as their reasons for using cross-net.
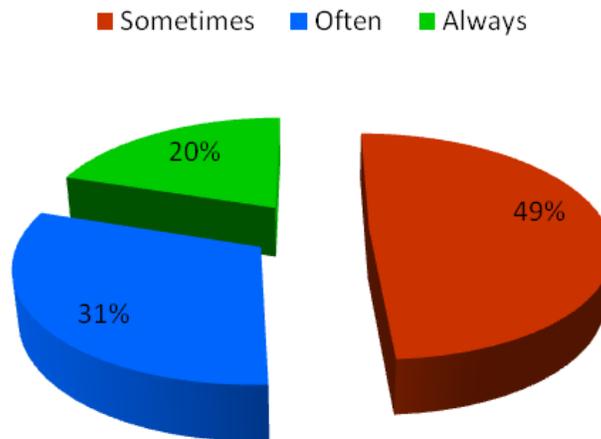


Figure 39: Extent of cross-net usage

### 4.3.8   Non-use of MMT

A probe into the reasons why most people were not using MMT in Ghana was also sought. The respondents were asked to state what they thought were the reasons for non-use of MMT by others. As shown in figure 40, Complex procedure was quoted by 9% of the respondents; delay in withdrawing money constituted 7%, bad network accounted for 33%, inadequate agents/point of registration was stated by 39%, while distrust was 12%. Other comments were banks were already offering the service as such non users consider them safer. Inadequate advertisement and illiteracy were other reasons.
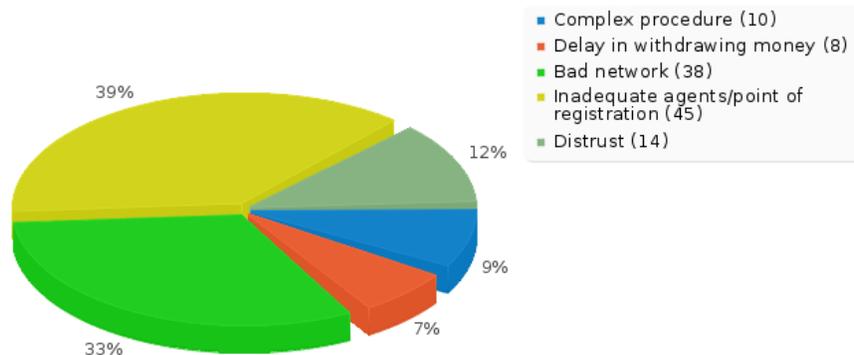


Figure 40: Reason for non use of MMT

### 4.4 Agents operation

As mentioned earlier, the third of the questionnaire was answered by a sample of agents. A total of fifty (50) questionnaires were sent. However, forty six (46) completed questionnaires were returned. The response rate was therefore 92%. The results and analysis therein are presented below.

### 4.4.1   Agents' age distribution

As shown in figure 41, most agents were below forty years. 28% were in the age range 18-25, 37% were in 26-30, 24% in 31-35, 7% in 36-40, 2% in 41-45, with the same percentage in 46-50. It can be concluded that most of the agents were quit youthful.
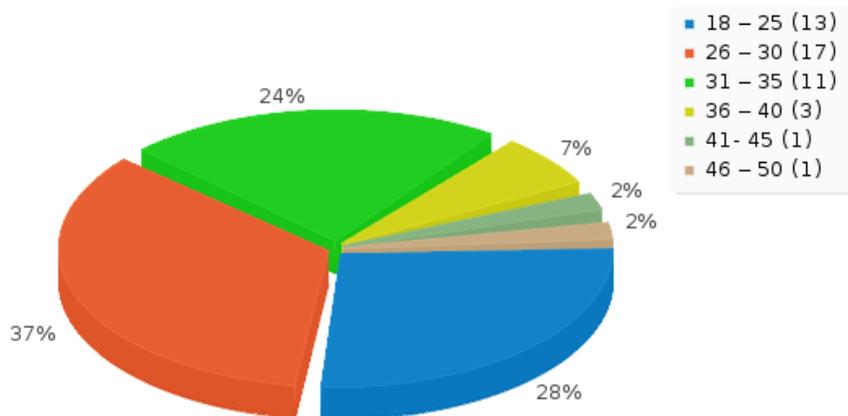
Figure 41: Age distribution of agents

### 4.4.2 Agents' sex distribution

Comparing the age distribution to the sex distribution of the agents saw that there were more male agents than female agents. As shown in figure 42, 59% of the interviewed agents were males with 41% females. This result confirms the sex distribution of economic activities in Ghana. According to the latest 2010 population and housing census of Ghana there were 54.7 economically active males more than 53.7 economically active females (GSS, 2012).
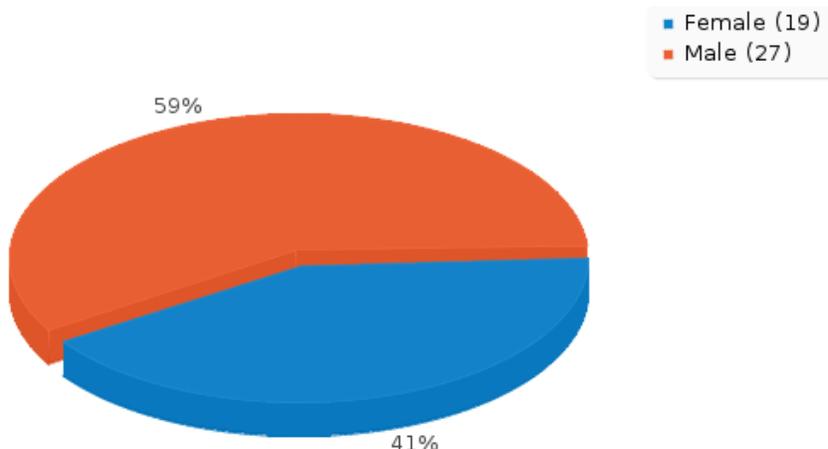


Figure 42: Sex distribution of agents

### 4.4.3 Agents' educational level

It is worth mentioning that it appeared that the educational levels of the agents were not extensive. As shown in figure 43, majority of them were Senior High School leavers; they constituted 30% percent. There were 22% Bachelor degree holders with 17% Higher National Diploma holders, 7% diploma holders, 4% advanced certificate holders, 9% general certificate holder, and 11% Junior High School leavers.
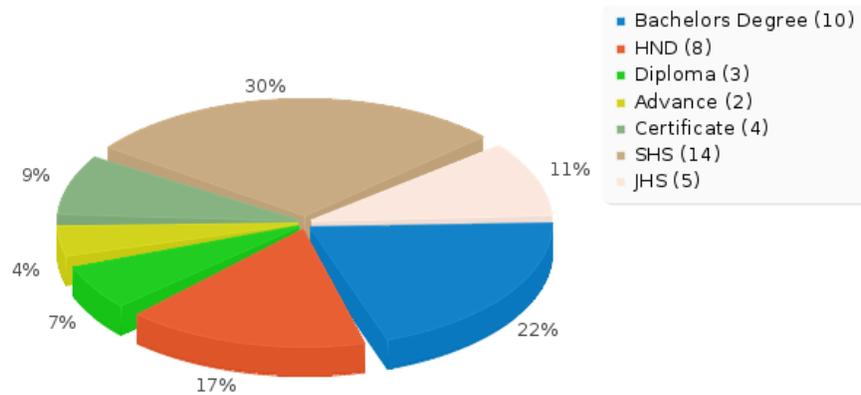
Figure 43: Educational level of agents

### 4.4.4    Agents' MMT procedure

As explained in 2.7.6 "Role of Agents" this question was intended to find out whether the procedure to becoming an MMT agent was better structured and that agents were comfortable and at ease with the procedure. As shown in figure 44, it appeared that the procedure was easy and the agents were quite satisfied. 22% of the agents said the procedure was very well structured, majority of the agent constituting 76% said the procedure was well structured. On the contrary, 2 % stated that the procedure was poorly structured.
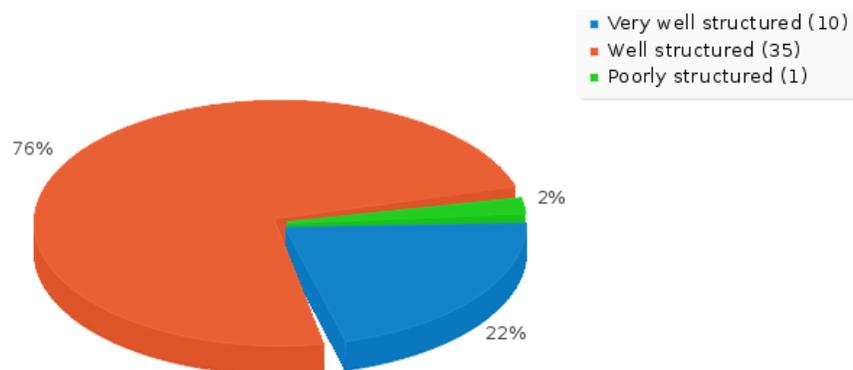


Figure 44: Agents' procedure

### 4.4.5  Agents' Extent of MMT training

Before one becomes an MMT agent he/she must attend a training to know the dos and don'ts of the service. This training is offered by the MNO and is required by all agents. The training usually consist of such things as what mobile money is, how to make money, the mobile money ecosystem, how mobile money works, the security for mobile money, customer service, agent obligations, liquidity management, among others.

To find out the extent of this training among the interviewed agents they were asked to state how often they received Mobile Money training. As shown in figure 45, 2 % responded they received training all the time/always, 15 % said very often/frequently, 59% said sometimes, 22% responded rarely/seldom while 2 % said never/not at all.
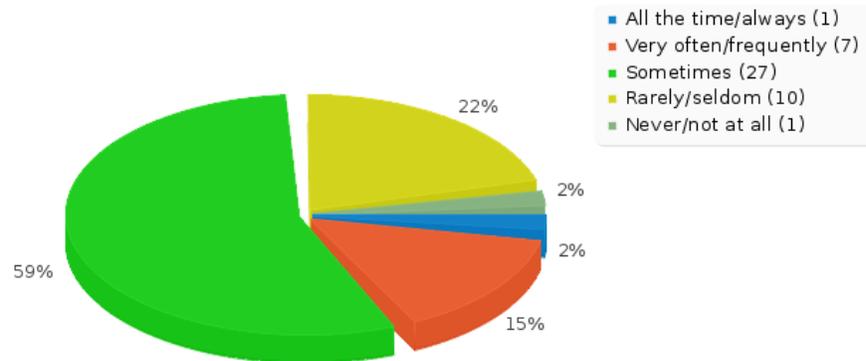


Figure 45: Extent of Agents' training

### 4.4.6   Agents' MNO affiliation and Customer MNO subscription

The Technology Acceptance Model (TAM) proposed by Davis suggests that for users to accept and use a system, their acceptability and usage of the system is determined by the factors of perceived usefulness and the perceived ease of use. These two factors were explained by Davis thus; Perceived usefulness refers to the degree to which a user considers that the use of the system will improve his/her performance. The perceived ease of use refers to the degree to which a user believes that the use of a system will be without much effort.

Therefore, from the point of view of the users of MMT, their acceptability and use of the services provided by a particular MNO would depend on the extent to which the MMT would ameliorate their difficulties in sending and receiving money without much effort. To this end we sought to find out the relationship between the perceived usefulness and the perceived ease of use of MMT as provided by the MNOs.
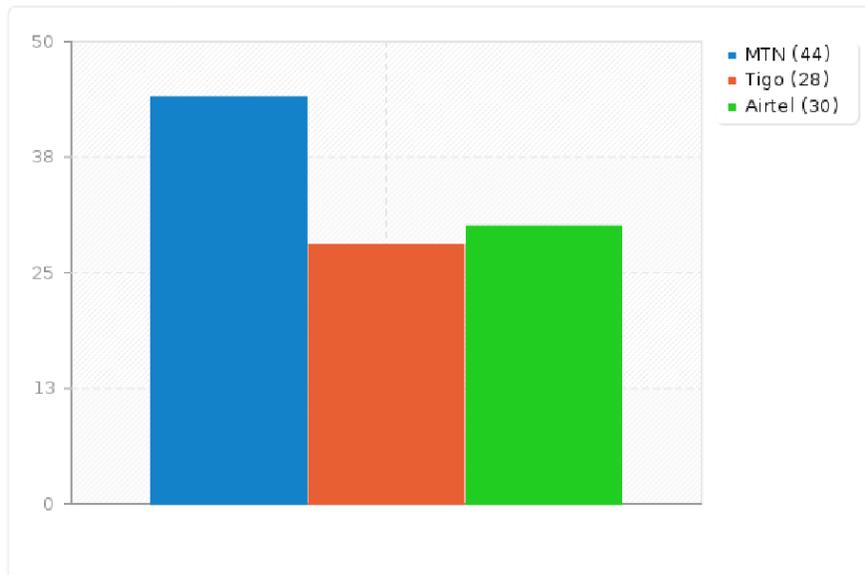
Figure 46: Agents' MNO affiliation

As shown in figure 46, it appeared that although majority of the agents worked with all the three main MMT service providers, users preferred MTN Money, as shown in figure 47, more than the other service providers. 85% of the agents responded that customers usually used MTN Money, 13% used Tigo Cash, while only 2% used Airtel Money.
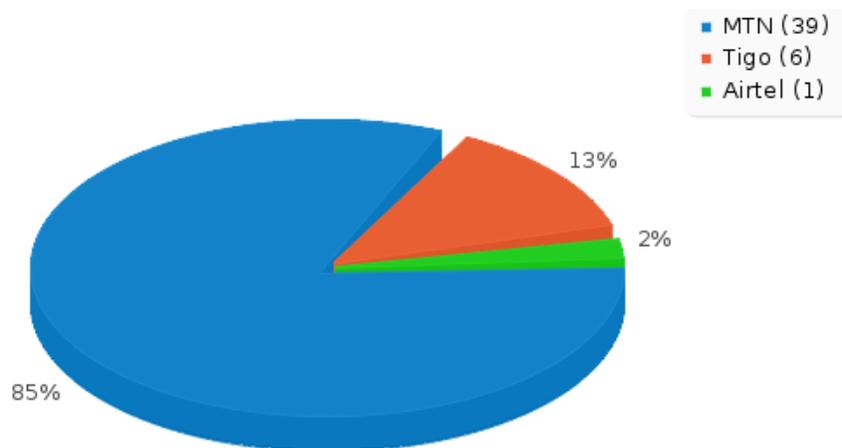


Figure 47: Customer MNO subscription

The above analysis points to the fact that the Technology Acceptance model is in favor with the MTN Money followed by Tigo Cash with Airtel Money taking the third place.

### 4.4.7   Complaints

Complaints are unfathomable as 91% of the agents said they received complaints; however it is important to ascertain the nature of complaint from the point of view of the agents since they

interact directly with the customers. The agents were asked how often they received complaints. It appeared that 7% said all the time/always, 15% said very often/frequently, 65% said sometimes, 11% said rarely/seldom while only 2% responded that they never/not at all received any complaints.

As to how they solved the complaints, 22% said they did so in house; that is they were able to solve the complaints by themselves, majority of the agents representing 78% said they channeled the complaints to the respective MNO while 26% offered a number of comments stating that the less difficult ones were handled in house with the most difficult channeled to the MNOs

Again, the agents were asked to state some of the challenges they faced in their operations. They mentioned their challenges as service charges which customers were usually not ready to accept. Poor network resulted in delayed in transactions which made customers angry and sometimes quarrel thinking the transaction was not done and that agents had squandered their money. There was an instance where one agent reported that at times he had to wait the whole day before a transaction could go through making customers very unhappy. There was the problem of lack of cooperation between MNOs and agents; as such most of the MNOs were not ready to agree with agents on some of the complaints that came from customers thinking it was the fault of the agents.

Others included delays in receiving activation codes from MNOs, again most patrons were illiterate, thus their understanding of the charges was not the best. Agents also mentioned that complaints channeled to MNOs usually delayed.

The above analysis agrees with the survey by Tobbin, (2012), which sited persistent network fluctuation, unavailability of funds from the agents, the effect of loss of mobile phone, unauthorized use and the fear of mistakenly transferring funds to someone unknown as major barriers to using the MMT in Ghana.

Again there were still operational challenges as noted by GSMA, 2012awhich stated that MMT markets have problems on how to build, offer incentives and manage their agent network, or how to acquire customers and drive mobile money usage to an appreciable level.

## 5. Summary and Conclusion

Having presented the results and the discussions therein, this chapter summarizes and concludes the findings extracted from the survey we conducted among the respondents in the four communities of Ahenkro, Offinso, Buoho, and Kodie in the Ashanti region of Ghana to find out the extent of Mobile Money Transfer.

### 5.1. The socioeconomic characteristics of respondents

There were more male users of MMT than female users. This was characteristic of the Ghanaian population demographics as the 2010 population and housing census of Ghana gave Ghanaian males as more economically active and is better to be employed; therefore they stood a better position to earn more money than their female counterparts. Again the chance of the Ghanaian female being unemployed was higher than the males.

In terms of MMT, the elderly sent mobile money to their younger counterparts. This was expected considering the fact that the elderly were assumed to be more economically active than the young. Young Ghanaians below the age of 18 are predominantly in school or other training centers and are therefore economically unproductive, unemployed, and needed to be supported by their productive elders. Besides young Ghanaians, mobile money was sent to people who were above 50 years. This was also expected considering the fact that these people are usually retired and unproductive.

Formal workers use more mobile money than their informal counterparts. Again, the educational level of the formal senders was higher than the educational level of the corresponding recipient. This was also expected since the formal senders have a regular source of income than the informal senders.

Siblings were more recipients of mobile money in Ghana; mothers received more mobile money than fathers; and spouses received more mobile money than children. MMT is used to a large extent in Ghana, just as in Kenya, as more and more people use the service more than thrice in a month. Again, unlike most countries in Africa, there were more bank accounts holders in Ghana meanwhile account holders preferred to use MMT than through banks.

Like in Kenya, the popularity and use of mobile phones in Ghana was widespread and reflected the global statistics of mobile phone use; 90% of household owned and could use mobile phone

### 5.2 MMT operation

These MMT products were used in Ghana; Cash-in/Cash-out, P2P, Bill Payment, Airtime Top-up, Merchant Payment, and Bulk Payment. Of these products Cash-in/Cash-out was the most popular and often used product while merchant and bulk Payment was the least used products. Unlike in Kenya where M-Ticketing is widely used, the service was not widespread in Ghana.

The registration/subscription process to MMT was mixed; a greater percentage of users had no difficulties in registering/subscribing to the service. However, the same percentage likewise had difficulties. The ratio was 55:48 and therefore it can be concluded that the registration/subscription process was quite mild, however, more efforts needed to be put in place by MNOs in Ghana for effective MMT.

Withdrawing money with MMT in Ghana was instant and therefore quite good. However, there were still challenges which should be addressed by the MNOs. Customers were to some extent satisfied with MMT agents. The conclusion here was that like The survey by Mas & Radcliffe, (2010) which found that 98 percent of users in Kenya were happy with the service, the users in Ghana were equally happy, however, the percentage in Ghana was 88%. Therefore, the GSM Association in their 2009 annual report (GSMA, 2010) which gave M-PESA as the most widely adopted mobile money deployment in the world is still valid. It must be emphasized that MMT in Kenya started in 2007 while Ghana started the service in 2009. It therefore hoped that the percentage would increase with the passage of time.

Unlike Tobbin, (2012) findings which noted that despite the appearance of MNOs in Ghana, these schemes had remained largely unnoticed by Ghanaians, there was high usage of the service. However, Tobbin's survey focused on the rural dwellers while this paper had focus on the urban poor. The deduction was that MMT was popular in urban centers more than among the rural dwellers.

Unlike GSMA, (2012a) who reported the lack of cross-net transfer functionality in most MMT deployments, cross-net was used in Ghana to a large extent and the main reason was that the recipient was affiliated to a different network. Again, as stated by GSMA that the introduction of interconnection serves as a motivation through which existing customers may start making cross-net transfers, there was a general agreement that interconnection would create value in MMT operation in Ghana.

Some of the reasons for the non-use of MMT in Ghana were Complex procedures, delay in withdrawing money, inadequate agents/point of registration, and distrust. Others were inadequate advertisement and illiteracy. On top of the list was inadequate agents/point of registration.

### 5.3 Agents operation

It can be concluded that most of the agents were youthful; most of them were below 40years with more male agents than female agents. This was expected as 2010 population and housing census of Ghana stipulates that there were 54.7 economically active males more than 53.7 economically active females (GSS, 2012).

There were a high proportion of agents who were Senior High School leavers. This was quite reflective as these categories had left school and were either awaiting their school certificate

results to enter into tertiary institutions or were preparing to re sit failed examination(s); they usually had difficulties in gaining employment elsewhere and therefore opted to becoming MMT agents taking advantage of mild requirement. With a mobile phone, a table, and little e-money one can easily become an MMT agent. One can start a business at the road side with no need to rent a big store even though some well-established agents did so in lager and well-furnished stores.

The agents' procedure to becoming MMT agent was found to be well structured, however, their training aspects needed to improvement. Most of the agents were affiliated to the major mobile money MNOS; MTN Money was the MNO of choice.

Complaints were most time channeled to the respective MNO. Some of the complaints received by the agents included service charges which customers were usually not ready to accept. Poor network resulted in delayed transactions which made customers angry and sometimes quarreled thinking the transaction was not done and that agents had squandered their money. There was an instance where one agent reported that at times he had to wait the whole day before a transaction could go through making customers very unhappy. There was the problem of lack of cooperation between MNOs and agents; as such most of the MNOs were not ready to agree with agents on some of the complaints that came from customers thinking it was the fault of the agents.

Others included delays in receiving activation codes from MNOs, again most patrons were illiterate, thus their understanding of the charges was not the best. Agents also mentioned that complaints channeled to MNOs usually delayed.

The above analysis agrees with the survey by Tobbin, (2012), which sited persistent network fluctuation, unavailability of funds from the agents, the effect of loss of mobile phone, unauthorized use and the fear of mistakenly transferring funds to someone unknown as major barriers to using the MMT in Ghana.

### 5.4. Overview of the answered research questions and objectives

| Research question | Objective | Confirmation/result |
|---|---|---|
| **Socioeconomic Characteristics** | | |
| 9. **What are the Individual Characteristics of respondents: age, sex, occupation, and educational attainment?** | To find out the Individual Characteristics of respondents: age, sex, and educational level | More male senders than female, more senders in the economically active group (below age 45) to the unproductive group, more formal occupation for senders, higher level of education than recipients (refer 4.2.1, 4.2.2, 4.2.3, and 4.2.4) |

| 10. What were the means of sending and/or receiving money before mobile phone access? | To find out the means of sending and/or receiving money before mobile phone access | Banks (refer 4.2.6) |
|---|---|---|
| 11. What is the share of households with at least one cell phone? | To find out the share of households with at least one cell phone | More than 90% (refer 4.2.7) |
| 12. What is the share of the unbanked population? | To find out the share of the unbanked population | Less than 5% (refer 4.2.8) |
| 13. What is the share of urban/rural population in MMT? | To find out the share of urban/rural population in MMT | More recipients (72%) in the urban centers with fewer recipients (28%) in the rural centers. (refer figure 28) |
| 14. What has been the method of saving before MMT? | To find out the method of saving before MMT | More than 90% used banks (refer figure 31) |
| 15. What has been the nature of MMT sent and received: number per month? | To find out the nature of MMT sent and received: number per month | More than 63% use MMT more than twice a month (refer 4.2.5) |
| 16. To find out the products used and to what extent are users using the service to pay bills? | To find out the extent to which user are using the service to pay bills | Cash-in/Cash-out was highly used, M-Ticketing, mobile money in public transport were not used. Using MMT to pay bills was used to a very small extent (less than 20% (refer 4.3.1) |
| **MMT operation (Customer experience with MMT)** | | |
| 1. Are there difficulties in subscription /registration? | To find out whether there are difficulties in subscription/registration | 57% agreed that there were no difficulties |
| 2. Are there delays to withdrawing money from MMT (reasons)? | To find out whether there are delays to withdrawing money from MMT | No delays agreed by 67% (refer 4.3.3) |

| | | | |
|---|---|---|---|
| 3. | What is the time frame until withdrawal is possible? | To find out the time frame until withdrawal is possible | Instant agreed by 64% (refer 4.3.3) |
| 4. | What are the reported experiences with agents? | To ascertain customers reported experiences with agents | Satisfied agreed by more than 89% (refer 4.3.4) |
| 5. | Are users satisfied/secured with MMT? | To find out whether customers are satisfied/secured with MMT | Satisfied agreed by more than 88% (refer 4.3.5) |
| 6. | Which MMT MNO is used to high extent in Ghana? | To find which MMT MNO is used to high extent in Ghana | MTN used by more than 75% (refer 4.3.6) |
| 7. | What is the extent of on-net vs. cross net operation | To find out the extent of on-net vs. cross net operation | More use of on-net agreed by more than 52% (refer 4.3.7) |
| 8. | What are the Individuals' reasons for non-use of MMT? | To find out the individuals' reasons for non-use of MMT in Ghana | inadequate agents/point of registration (refer 4.3.7) |
| **Agents operation** | | | |
| 1. | What are the characteristics of MMT agents in Ghana? | To find out the characteristics of MMT agents in Ghana | More than 98% were below 45 years, more males than females, more SHS levers (refer 4.4.1 – 4.4.3) |
| 9. | What is the extent of the structure to becoming an MMT agent? | To find out the extent of the structure to becoming an MMT agent | Well structured agreed by more than 76% (refer 4.4.4) |
| 10. | What is the extent of agents' MMT training? | To find out the extent of agents' MMT training | Somtimes agreed by more than 59% (refer 4.4.5) |
| 11. | Which MNOs does agents work with and which ones are | To find out the MNOs agents work with as well the popular/most used ones | Agents worked all MNOs, MTN was most used and popular (refer 4.4.6) |

| | | |
|---|---|---|
| **popular?** | | |
| **12. What is the extent of complaints?** | To find out the extent of complaints | 91% received complaints (refer 4.4.7) |
| **13. What are the challenges in the agents operation?** | Find out the challenges in the agents operation | Service charges<br>Poor network<br>Lack of cooperation between MNOs and agents<br>Delays in receiving activation codes from MNOs<br>Illiterate |

Table 5: Matching Research questions, objectives and their results/confirmation

### 6. Recommendations

Throughout the research, a number of experiences were gathered; these experiences would help tremendously in decision making and shape future work on the topic. After studious considerations, the following are recommended.

### 6.1. MNOs

1. We have realized that age, sex, education, location and occupation play an important role in determining the direction and flow mobile money transfer. It is recommended to MNOs in Ghana to take advantage of this in business intelligence. An example would to look at increasing the awareness of the service in the Ghanaian Senior High Schools since the result of the research identified them as a major customer in the MMT business. Again, more work in the form advertisement need to be channeled to the rural areas.

2. MNOs should increase the MMT product base to include such products as increasing the use of the service in paying school fees. Negotiations could be established with school authorities where parents/guardians can directly pay their ward's schools fees through MMT rather than students bringing their fees to urban centers to pay at banks. M-Ticketing is another area recommended. Aviation within Ghana is rising steadily as such MNOs should take advantage. Other products such as G2P payments, where Government uses MMT to pay salaries (especially to rural and poor people), could also be introduced. Incentives should be given to companies to take advantage of merchant and bulk payment systems with MMT

3. More registration/subscription centers should be established in parallel with registration/subscription education. Again there should better co-operation between MMT agents and MNOs. This could be done through dialog; the two should understand and see themselves as business partners such it important for each to support the other. One recommendation for the establishment of more agents could be massive recruitment of Senior High School leavers.

4. Increased mass media campaigns are highly recommended especially at the rural areas to create customers awareness and know how. They should be educated on what the service is, what is being offered and how it can be used. We recommend TV, Radio, Newspaper and Billboards advertisements; more personal approach could also help.

5. MNOs should increase the training and education of agents. Agents' recruitment could be outsourced by external agencies. They should actively track, monitor and manage the agent network size as the service grows. Again, we recommend that MNOs should increase agents' incentives; this would better shape agent behavior on one side and encourage customer acquisition on the other side which would promote a reliable service.

6. There should be direct agent monitoring to ensure individual agent performance and maintain high service levels. Such things as correct education of products, adherence to transaction logs, MMT regulatory compliance, general customer education, cost of transaction (overcharging), among other should be monitored.

## 6.2. Future research

1. The time frame for future researchers should be increased. A research in MMT is so broad that several factors need to be taken into consideration. The intent of this research was to compare MMT in Ghana with that in Kenya. However, an attempt to map the analyzed indicator one-on-one fell short since more time was needed to access and analyze data. Such data was either not available or was too difficult to come by.

2. The research should conducted should be repeated with a larger sample size across different regions of Ghana. Funding should be sourced by future researchers.

3. There should a more holistic approach to assessing the performance of MMT; most of the indicators needed further research. At the moment, there are no formal assessment methods for the service along the customer journey. Users of mobile money transfer goes through several stages and information requirements to utilize the service. An assessment of the stages and the information requirements is unclear. There should be a formal MMT assessment method which could be used by all MNOs independent of location.

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### 7. Appendix

### 7.1 Appendix I: Questionnaire to customers'

**Covering letter**

University of Applied SciencesNorthwestern Switzerland

Business Information Systems

Riggenbachstrasse 16, 4600 Olten- Switzerland


Dear Participant:

My name is **Kofi Frimpong Adasa Nkrumah**, a post-graduate student of the University of Applied Sciences Northwestern Switzerland. I am undertaking a research on the topic *Mobile Commerce: Mobile Money Transfer in Ghana*. The topic examines the extent of Mobile Money Transfer in Ghana as a comparison to the best in the class, Kenya.

I am inviting you to participate in this research study by completing the attached questionnaire. Your response to the survey is highly important in enabling me to obtain a full understanding of the topic. The questionnaire should take you about 10 minutes to complete. Please answer the questions by selecting an option(s) in the spaces provided. If you wish to add further comments, please feel free to do so.

Your confidentiality is highly assured and that the information you provide will be treated in the strictest confidence. Please do not include your name or address anywhere in the questionnaire. The response from you and others will be used as the main data set for the research. Analysis and inference would be made and conclusions made. To ensure that conclusions are true please answer all questions as honestly as possible.

I hope that you will find completing the questionnaire enjoyable. If you would like a summary copy of this study please complete the Request for result Form. If you have any questions or would like further information, please do not hesitate to email me at adasankrumah.kofi@students.fhnw.ch or adasankrumahkofi@gmail.com

Thank you for taking the time to assist me in my educational endeavors.

Kofi Frimpong Adasa N.

FHNW - Switzerland


**Request for Results**

Please send a copy of the study results to the address listed below.

Name: ......................................................................................................

Email Address: .........................................................................................

Please do not return this form with your questionnaire. Return to:
adasankrumah.kofi@students.fhnw.ch or adasankrumahkofi@gmail.com

## Socioeconomic Characteristics

1. What were the means of sending and/or receiving money before mobile phone access?

   [ ] By bus      [ ] friends/relatives      [ ] Banks

   Others _____

2. How many people constitute your household? Please indicate where applicable

   | | **Age Group** | **Number** |
   |---|---|---|
   | [ ] | between 18 and 60 years | [ ] |
   | [ ] | Below 12 years | [ ] |
   | [ ] | Between 12 and 18 years | [ ] |
   | [ ] | Above 60 years | [ ] |
   | | **Total** | [ ] |

3. How many people of your household owns a mobile phone or can use one? *Please indicate where applicable*

   | | **Age Group** | **Number** |
   |---|---|---|
   | [ ] | between 18 and 60 years | [ ] |
   | [ ] | Below 12 years | [ ] |
   | [ ] | Between 12 and 18 years | [ ] |
   | [ ] | Above 60 years | [ ] |
   | | **Total** | [ ] |

4. Do you have a personal bank account?

   [ ] Yes      [ ] No

5. What has been your method of saving money before MMT?

   [ ] Bank      [ ] Susu

☐ Credit Union        ☐ companies

☐ Saving and loans    ☐ House

6. Individual Characteristics of respondents:

    a. What is your age (sender)

       ☐ below 18

       ☐ 18 – 25

       ☐ 26 – 30

       ☐ 31 – 35

       ☐ 36 – 40

       ☐ 41- 45

       ☐ 46 – 50

       ☐ above 51

    b. What is the age of the recipient?

       ☐ below 18

       ☐ 18 – 25

       ☐ 26 – 30

       ☐ 31 – 35

       ☐ 36 – 40

       ☐ 41- 45

       ☐ 46 – 50

       ☐ above 51

c. What is your sex (sender)

☐ Male          ☐ Female

d. What is the Sex of the recipient?

☐ Male          ☐ Female

e. What is your educational level?

☐ Masters Degree

☐ Bachelors Degree

☐ HND

☐ Diploma

☐ Advance

☐ Certificate

☐ SHS

☐ JHS

☐ Non - formal

f. What is the educational level of the recipient?

☐ Masters Degree

☐ Bachelors Degree

☐ HND

☐ Diploma

☐ Advance

☐ Certificate

☐   SHS

☐   JHS

☐   Non - formal

7.  Nature of remittances sent and received:

    a.  How often do you use MMT per month?

       ☐   Ones     ☐   More

       ☐   Twice

       ☐   Thrice

    b.  What characterize the destination of your transaction?

       ☐   Urban

       ☐   Rural

    c.  What is the relationship between you and the recipient?

       ☐   Mother

       ☐   Father

       ☐   Sibling

       ☐   Child

       ☐   Friend

       ☐   Spouse

       ☐   Other family member

       ☐   Work

       ☐   Others …………………………

8. Which of these products do you use?

| | |
|---|---|
| ☐ | Cash-in/Cash-out |
| ☐ | P2P |
| ☐ | Bill Payment |
| ☐ | Airtime Top-Up |
| ☐ | Merchant Payment |
| ☐ | Bulk Payment |
| ☐ | Others |

…………………….

- Cash-in/Cash-out refers to using mobile money service as a means of saving/depositing and withdrawing just like the regular bank account; the process of depositing money into a mobile money account is called a cash-in, a cash-out is withdrawing money.
- P2P is a person to person money transfer.
- Bill payment is using mobile money as a means of paying utility or other bills.
- Airtime Top-Up is topping up airtime for recharging a GSM account through a mobile money account.
- Merchant Payment refers to the payment for good or services at a store using a mobile money account.
- Bulk Payment is a one-to-many transfers such as salary disbursal is a bulk payment.

**Customer experience with MMT**

9. Are there difficulties in subscription/registration?

☐ Strongly agree that there are difficulties

☐ Agree that there are difficulties

☐ Neither agree nor disagree/not sure/uncertain

☐ Disagree that there are difficulties

☐ Strongly disagree that there are difficulties

10. Are there delays to withdrawing money from MMT (reasons)?

☐ Strongly agree

☐ Agree

☐ Neither agree nor disagree/not sure/uncertain

☐ Disagree

☐ Strongly disagree

11. What is the time frame until withdrawal is possible?

| | Instantly |
|---|---|
| ☐ | Instantly |
| ☐ | One day |
| ☐ | Two days |
| ☐ | Three days |
| ☐ | More |

12. What are the reported experiences with agents? Are you satisfied with their service?

| | |
|---|---|
| ☐ | To a large extent |
| ☐ | To quite a large extent |
| ☐ | To some extent |
| ☐ | To quite a small extent |
| ☐ | To a small extent |
| ☐ | Not at all |

13. Are you satisfied/secured with MMT?

| | |
|---|---|
| ☐ | Strongly agree |
| ☐ | Agree |
| ☐ | Neither agree nor disagree/not sure/uncertain |
| ☐ | Disagree |
| ☐ | Strongly disagree |

14. Which MNO do you normally use for MMT?

| | |
|---|---|
| ☐ | MTN |
| ☐ | Tigo |
| ☐ | Airtel |
| ☐ | Others |

…………………………………...

15. Which of the following describes your transaction?

☐ On-net

☐ Cross-net

☐ Both

On-net: refers to a call originating (or terminating) on-net and has originated (or terminated) on the subscriber's service provider's managed network. That is using a given service provider's facilities. Example MTN-to-MTN transaction

Cross-net means minutes that are used to call people that are on another network. Example: MTN-to-Vodafone.

16. How often do you use cross net

☐ never

☐ sometimes

☐ often

☐ always

17. What is the reason for using cross-net?

☐ It is relatively cheaper

☐ Better service

☐ Easy to use

☐ There is incentive for cross-net

☐ Recipient is affiliated to different MNO

☐ Other

…………………………………...

18. Do you agree that interconnectionof mobile money services create much value

☐ Strongly agree

☐ Agree

☐ Neither agree nor disagree/not sure/uncertain

☐     Disagree

☐     Strongly disagree

19. What do you think are the reasons for non-use of MMT by others?

☐     Complex procedure                    ☐     Others.........................................

☐     Do not know of the service

☐     Delay in withdrawing money

☐     Bad network

☐     Inadequate agents/point of registration

☐     Distrust

### 7.2 Appendix II: Questionnaire to Agents

**Covering letter**

University of Applied SciencesNorthwestern Switzerland

Business Information Systems

Riggenbachstrasse 16, 4600 Olten- Switzerland

Dear Participant:

 My name is **Kofi Frimpong Adasa Nkrumah**, a post-graduate student of the University of Applied Sciences Northwestern Switzerland. I am undertaking a research on the topic *Mobile Commerce: Mobile Money Transfer in Ghana*. The topic examines the extent of Mobile Money Transfer in Ghana as a comparison to the best in the class, Kenya.

I am inviting you to participate in this research study by completing the attached questionnaire. Your response to the survey is highly important in enabling me to obtain a full understanding of the topic. The questionnaire should take you about 10 minutes to complete. Please answer the questions by selecting an option(s) in the spaces provided. If you wish to add further comments, please feel free to do so.

Your confidentiality is highly assured and that the information you provide will be treated in the strictest confidence. Please do not include your name or address anywhere in the questionnaire. The response from you and others will be used as the main data set for the research. Analysis and inference would be made and conclusions made. To ensure that conclusions are true please answer all questions as honestly as possible.

I hope that you will find completing the questionnaire enjoyable. If you would like a summary copy of this study please complete the Request for result Form. If you have any questions or would like further information, please do not hesitate to email me at adasankrumah.kofi@students.fhnw.ch or adasankrumahkofi@gmail.com

Thank you for taking the time to assist me in my educational endeavors.

Kofi Frimpong Adasa N.

FHNW - Switzerland

## Request for Results

Please send a copy of the study results to the address listed below.

Name: ....................................................................................................

Email Address: ...........................................................................................

Please do not return this form with your questionnaire. Return to:
adasankrumah.kofi@students.fhnw.ch or adasankrumahkofi@gmail.com

**Agent's Operations**

1. Individual Characteristics of Agents:

    a. What is your age?

    ☐ below 18

    ☐ 18 – 25

    ☐ 26 – 30

    ☐ 31 – 35

    ☐ 36 – 40

    ☐ 41- 45

    ☐ 46 – 50

    ☐ above 51

    b. What is your sex?

    ☐ Male

    ☐ Female

    c. What is your educational level?

    ☐ Masters Degree

    ☐ Bachelors Degree

    ☐ HND

    ☐ Diploma

    ☐ Advance

    ☐ Certificate

☐ SHS

☐ JHS

☐ Non – formal

2. How would you rate the procedure to becoming a MMT agent?

☐ Very well structured

☐ Well structured

☐ Poorly structured

☐ Badly structured

3. How often do you receive Mobile Money training?

☐ All the time/always

☐ Very often/frequently

☐ Sometimes

☐ Rarely/seldom

☐ Never/not at all

4. How many MNOs do you work with?

☐ MTN

☐ Tigo

☐ Airtel

☐ Others

……………………………………...

5.  Which MNOs do customers usually subscribe/use?

☐   MTN

☐   Tigo

☐   Airtel

☐   Others

………………………………………..


6.  How often do you receive complaints?

☐   All the time/always

☐   Very often/frequently

☐   Sometimes

☐   Rarely/seldom

☐   Never/not at all


7.  How do you handle these complaints?

☐   In house

☐   Channeled to MNO

☐   Others

……………………………


8.  What are some of the challenges you face in your operation?

## 7.3 Appendix III: Customer Questionnaire response sample

University of Applied SciencesNorthwestern Switzerland

Business Information Systems

Riggenbachstrasse 16, 4600 Olten- Switzerland

Dear Participant:

My name is **Kofi Frimpong Adasa Nkrumah**, a post-graduate student of the University of Applied Sciences Northwestern Switzerland. I am undertaking a research on the topic *Mobile Commerce: Mobile Money Transfer in Ghana*. The topic examines the extent of Mobile Money Transfer in Ghana as a comparison to the best in the class, Kenya.

I am inviting you to participate in this research study by completing the attached questionnaire. Your response to the survey is highly important in enabling me to obtain a full understanding of the topic. The questionnaire should take you about 10 minutes to complete. Please answer the questions by selecting an option(s) in the spaces provided. If you wish to add further comments, please feel free to do so.

Your confidentiality is highly assured and that the information you provide will be treated in the strictest confidence. Please do not include your name or address anywhere in the questionnaire. The response from you and others will be used as the main data set for the research. Analysis and inference would be made and conclusions made. To ensure that conclusions are true please answer all questions as honestly as possible.

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Thank you for taking the time to assist me in my educational endeavors.

Kofi Frimpong Adasa N.

FHNW - Switzerland

**Request for Results**

Please send a copy of the study results to the address listed below.

Name: ...................................................................................................

Email Address: ...................................................................................................

Please do not return this form with your questionnaire. Return to:
adasankrumah.kofi@students.fhnw.ch or adasankrumahkofi@gmail.com

n|w University of Applied Sciences and Arts
Northwestern Switzerland
Mobile Commerce: Mobile Money Transfer in Ghana                    Research Methodology

## Socioeconomic Characteristics

1. What were the means of sending and/or receiving money before mobile phone access?

   [ ] By bus    [✓] friends/relatives    [ ] Banks

   Others _____

2. How many people constitute your household? Please indicate where applicable

   | | Age Group | Number |
   |---|---|---|
   | [ ] | between 18 and 60 years | 2 |
   | [ ] | Below 12 years | 2 |
   | [ ] | Between 12 and 18 years | 3 |
   | [ ] | Above 60 years | |
   | | Total | 7 |

3. How many people of your household owns a mobile phone or can use one? *Please indicate where applicable*

   | | Age Group | Number |
   |---|---|---|
   | [ ] | between 18 and 60 years | 2 |
   | [ ] | Below 12 years | 2 |
   | [ ] | Between 12 and 18 years | 3 |
   | [ ] | Above 60 years | |
   | | Total | 7 |

4. Do you have a personal bank account?

   [✓] Yes    [ ] No

5. What has been your method of saving money before MMT?

   [ ] Bank              [ ] Susu

   [ ] Credit Union      [ ] companies

   [ ] Saving and loans  [ ] House

6. Individual Characteristics of respondents:

    a.  What is your age (sender)

        ☐  below 18

        ☐  18 – 25

        ☐  26 – 30

        ☐  31 – 35

        ☐  36 – 40

        ☐  41- 45

        ☑  46 – 50

        ☐  above 51

    b.  What is the age of the recipient?

        ☐  below 18

        ☐  18 – 25

        ☐  26 – 30

        ☐  31 – 35

        ☐  36 – 40

        ☑  41- 45

        ☐  46 – 50

        ☐  above 51

    c.  What is your sex (sender)

        ☑  Male        ☐  Female

    d.  What is the Sex of the recipient?

        ☐  Male        ☑  Female

e.  What is your educational level?

- [ ] Masters Degree
- [x] Bachelors Degree
- [ ] HND
- [ ] Diploma
- [ ] Advance
- [ ] Certificate
- [ ] SHS
- [ ] JHS
- [ ] Non - formal

f.  What is the educational level of the recipient?

- [ ] Masters Degree
- [x] Bachelors Degree
- [ ] HND
- [ ] Diploma
- [ ] Advance
- [ ] Certificate
- [ ] SHS
- [ ] JHS
- [ ] Non - formal

7.  Nature of remittances sent and received:

a.  How often do you use MMT per month?

- [ ] Ones
- [ ] More
- [ ] Twice
- [x] Thrice

b.   What characterize the destination of your transaction?

☑ Urban

☐ Rural

c.   What is the relationship between you and the recipient?

☐ Mother

☐ Father

☐ Sibling

☐ Child

☐ Friend

☑ Spouse

☐ Other family member

☐ Work

☐ Others …………………………..

8.   Which of these products do you use?

☐ Cash-in/Cash-out

☐ P2P

☐ Bill Payment

☑ Airtime Top-Up

☐ Merchant Payment

☐ Bulk Payment

☐ Others
…………………………..

- Cash-in/Cash-out refers to using mobile money service as a means of saving/depositing and withdrawing just like the regular bank account; the process of depositing money into a mobile money account is called a cash-in, a cash-out is withdrawing money.
- P2P is a person to person money transfer.
- Bill payment is using mobile money as a means of paying utility or other bills.
- Airtime Top-Up is topping up airtime for recharging a GSM account through a mobile money account.
- Merchant Payment refers to the payment for good or services at a store using a mobile money account.
- Bulk Payment is a one-to-many transfers such as salary disbursal is a bulk payment.

## Customer experience with MMT

9. Are there difficulties in subscription/registration?

- [ ] Strongly agree that there are difficulties
- [ ] Agree that there are difficulties
- [x] Neither agree nor disagree/not sure/uncertain
- [ ] Disagree that there are difficulties
- [ ] Strongly disagree that there are difficulties

10. Are there delays to withdrawing money from MMT (reasons)?

- [ ] Strongly agree
- [ ] Agree
- [ ] Neither agree nor disagree/not sure/uncertain
- [x] Disagree
- [ ] Strongly disagree

11. What is the time frame until withdrawal is possible?

- [x] Instantly
- [ ] One day
- [ ] Two days
- [ ] Three days
- [ ] More

12. What are the reported experiences with agents? Are you satisfied with their service?

- [ ] To a large extent
- [x] To quite a large extent
- [ ] To some extent
- [ ] To quite a small extent
- [ ] To a small extent
- [ ] Not at all

13. Are you satisfied/secured with MMT?

- [ ] Strongly agree
- [✓] Agree
- [ ] Neither agree nor disagree/not sure/uncertain
- [ ] Disagree
- [ ] Strongly disagree

14. Which MNO do you normally use for MMT?

- [✓] MTN
- [ ] Tigo
- [✓] Airtel
- [ ] Others
      ………………………………………...

15. Which of the following describes your transaction?

- [✓] On-net
- [ ] Cross-net
- [ ] Both

On-net: refers to a call originating (or terminating) on-net and has originated (or terminated) on the subscriber's service provider's managed network. That is using a given service provider's facilities. Example MTN-to-MTN transaction

Cross-net means minutes that are used to call people that are on another network. Example: MTN-to-Vodafone.

16. How often do you use cross net

- [ ] never
- [ ] sometimes
- [✓] often
- [ ] always

17. What is the reason for using cross-net?

☐ It is relatively cheaper

☐ Better service

☐ Easy to use

☐ There is incentive for cross-net

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………………………………...

18. Do you agree that interconnectionof mobile money services create much value

☐ Strongly agree

☑ Agree

☐ Neither agree nor disagree/not sure/uncertain

☐ Disagree

☐ Strongly disagree

19. What do you think are the reasons for non-use of MMT by others?

☐ Complex procedure                    ☐ Others...........................................

☐ Do not know of the service

☐ Delay in withdrawing money

☐ Bad network

☑ Inadequate agents/point of registration

☐ Distrust

## 7.4 Appendix IV: Agent's Questionnaire response sample

University of Applied SciencesNorthwestern Switzerland

Business Information Systems

Riggenbachstrasse 16, 4600 Olten- Switzerland

Dear Participant:

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Kofi Frimpong Adasa N.

FHNW - Switzerland

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Email Address: ....................................................................................

Please do not return this form with your questionnaire. Return to:
adasankrumah.kofi@students.fhnw.ch or adasankrumahkofi@gmail.com

n|w  University of Applied Sciences and Arts
     Northwestern Switzerland
Mobile Commerce: Mobile Money Transfer in Ghana                    Research Methodology

**Agent's Operations**

1. Individual Characteristics of Agents:

    a. What is your age?

       ☐ below 18

       ☐ 18 – 25

       ☐ 26 – 30

       ☐ 31 – 35

       ☐ 36 – 40

       ☐ 41- 45

       ☑ 46 – 50

       ☐ above 51

    b. What is your sex?

       ☑ Male

       ☐ Female

    c. What is your educational level?

       ☐ Masters Degree

       ☑ Bachelors Degree

       ☐ HND

       ☐ Diploma

       ☐ Advance

       ☐ Certificate

       ☐ SHS

       ☐ JHS

       ☐ Non – formal

2. How would you rate the procedure to becoming a MMT agent?

☐ Very well structured

☑ Well structured

☐ Poorly structured

☐ Badly structured

3. How often do you receive Mobile Money training?

☐ All the time/always

☐ Very often/frequently

☑ Sometimes

☐ Rarely/seldom

☐ Never/not at all

4. How many MNOs do you work with?

☑ MTN

☐ Tigo

☐ Airtel

☐ Others

   ………………………………....

5. Which MNOs do customers usually subscribe/use?

☑ MTN

☐ Tigo

☐ Airtel

☐ Others

   ………………………………....

6. How often do you receive complaints?

☐ All the time/always

☐ Very often/frequently

☑ Sometimes

☐ Rarely/seldom

☐ Never/not at all

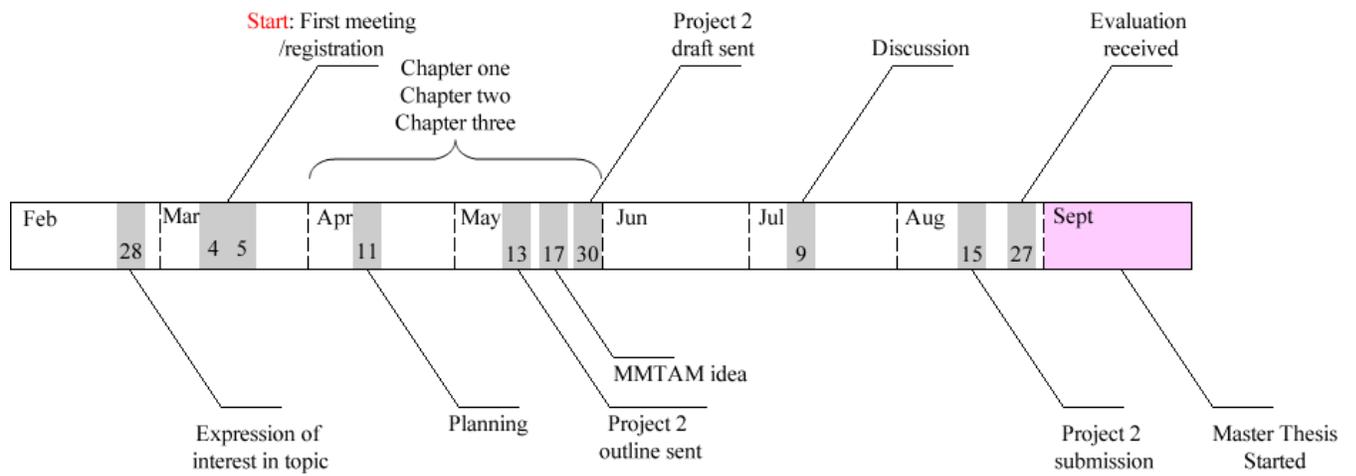7. How do you handle these complaints?

☑ In house

☐ Channeled to MNO

☐ Others
   ……………………………….

8. What are some of the challenges you face in your operation?

   No challenges

## 7.5 Appendix V: Research Timeline: Project 2

## 7.6 Appendix VI: Research Timeline: Master Thesis