USAGE OF MOBILE MONEY SERVICES
A CASE OF MOBILE NETWORK OPERATOR SYSTEMS

By

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DECLARATION

I Mwiza Norina Phiri, do hereby declare that this dissertation is my own work which is to the the best of my knowledge has not been submitted for any degree or master's programme at the University or any other tertiary institution.

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Signature Date

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APPROVAL

This dissertation authored by **Mwiza Norina Phiri** has been approved as the partial fulfilment of the requirement for the award of the Master of Engineering in Information and Communication Technology Regulation, Policy and Management.

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ABSTRACT

Mobile money which refers to the use of mobile phones to perform financial and banking functions has increasingly become popular in the world today. Not only has mobile money brought advantages of convenience, safe transactions, 24 hours access to its users, mobile money has also created a great revenue base for service providers.

Zambia was one of the first countries in Africa where Mobile Money was launched. As early as 2001, various Zambian businesses including MNO began to provide mobile money services. By 2014, the Bank of Zambia announced that the number of mobile money accounts had exceeded the traditional bank account. Adoption of mobile services has been reported to be high however active usage has not followed.

The purpose of this study is to investigate the usage of MNO mobile money services in Zambia. The study aims to determine the factors that affect the use of mobile money system and to determine way in which usage of MNO mobile money can be enhanced.

The study adopted cross-sectional survey to collect quantitative data from users of mobile money services. It also included agents and service providers' representatives from Airtel Money, MTN mobile money in Lusaka district of Zambia. Extending Technology Acceptance Model (TAM) framework, a self-administered questionnaire was prepared and circulated in Lusaka province. From the 200 questionnaires circulated, 112 useable questionnaires were returned (56% response rate) and subsequently analysed using SPSS and excel.

The study findings revealed that usage of MNO mobile money services was generally low with 21.6 % monthly users compared to other comparable nations such as Kenya and Tanzania where usage is approximately over 50% monthly.

It was found that there are significant challenges affecting market penetration, expansion and regular use of mobile money. The most prevalent challenge being limited acceptability of the service. Zambia has limited number of mobile money access and trading point compared to comparable countries such as Tanzania Kenya and Uganda. Only 2% of the contacted retailers accepted mobile money as a mode of payment and cash was the most predominately used medium of exchange. Other challenges include Liquidity problems for agents, unavailability of network coverage, regulations and system failures for mobile money payment systems

Improving the MNO agent network, improving the liquidity of agents by partnering with more stable financial institutions, reduction of cross network transaction charges, improving the stability of network, training and information to users are necessary measures to increase usage, penetration and expansion of mobile phone money services.

Key words: Mobile Money, MNO-Mobile Network Operator, Zambia, Usage, Challenges, MTN mobile money, Airtel Money

DEDICATION

To my lovely Mother Violet Nyirenda, the strongest woman I know, the real definition of an Iron Lady, firm but yet warm hearted.

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ACRONYMS AND ABBREVIATIONS

ATM: Automated Teller Machines

B2B: Business-To-Business

B2C: Business-To-Consumer

B2E: Business-To-Employee

DFS: Digital Financial Services

G2P: Government-To-Person

GDP: Gross Domestic Product

ICT: Information and Communications Technologies

IFC- International Finance Corporation

ITU: International Telecommunication Union

KYC: Know Your Customer

M-BANKING: Mobile Banking

MNO: Mobile Network Operator

MNO-Led: Mobile Network Operator-led

M-pesa: M- stands for Mobile, Mpesa stands for - Money in swahili

P2P: Person-to-Person

POS: Point of Sale

SIM: Subscriber Identity Module

SMS: Short Message Service

SPSS: Statistical Packages for the Social Sciences

TAM: Technology acceptance |Model

ZICTA: Zambia Information and Communication Authority

ZESCO: Zambia Electricity Supply Corporation

LWSC: Lusaka Water and Sewerage Company

CHAPTER ONE

INTRODUCTION

1.1 Background

The outstanding growth of the mobile sector worldwide has created a unique opportunity to provide social and financial services over the mobile network. In particular the convergence of telecommunication and banking services has created opportunities for the emergence of mobile commerce, such as mobile banking and money transfers which have immense contributions to economic development (Vaughn, 2007). Mobile Money and Mobile Banking are terms that are usually interchanged. According to the International Financial Corporation (IFC) (2011), Mobile money (m-money) refers to the use of mobile phones to perform financial and banking functions. Mobile money has also been defined as electronic money accounts that can be accessed through mobile phones (Zutt, 2010). Tobbin (2011) expands that mobile-money can embrace all the various initiatives covering long-distance remittance, micro-payments, and informal air-time bartering schemes aimed at bringing financial services to the unbanked using mobile technology.

The rise of mobile money, according to Must and Ludewig (2010), can be traced back to the rapid and worldwide penetration of mobile phones back in 1999. The exceptional reach of the mobile phone, helped by the proliferation of low-cost handsets, presented a significant opportunity to create profitable services for the unbanked or underbanked people (Ernst and Young, 2009). With over 4 billion mobile cellular subscriptions worldwide, Mobile Networks had the ability to immediately offer mobile banking to 61% of the world population (Sultana, 2009).

Mobile money has attracted more interest from the developing countries than from developed countries (ITU, 2011). According to the International Finance Cooperation (IFC, 2011) ‘the socioeconomic profile of Mobile money users was found to be linked to

their country's stage of financial development'. Globally, more than 2.5 billion adults do not have a formal bank account, most of them in developing economies (ITU Policy & Technology Watch Division, 2013). Banking infrastructure in most developing nations is not well developed hence people are forced to travel long distances to obtain their remittances.

The lack of access to formal banking in the mass market in Africa opened the door for mobile operators to build successful mobile payment services (Ernst and Young, 2012). The gap between banking penetration and mobile penetration meant that while many people do not have access to financial services, they do have a mobile phone. While prevalence of mobile phones has generated consumer convenience as well as access to financial services for the unserved, this has also opened up many opportunities for stakeholders to set foot in the rural and emerging economies (Ernst and Young, 2009).

Mobile money makes basic financial services more accessible to low-income people by minimizing time and distance to the nearest retail bank branches (CGAP, 2006). For users in the developing world, the appeal of these mobile banking, mobile-payments systems may be less about convenience and more about accessibility and affordability (Cracknell, 2004; infoDEV, 2006). Additionally, mobile money is often successful because it is considerably cheaper than other alternatives to cash (Donovan, 2012).

Among the earliest documented mobile commercial services is a Philippine mobile operator's launch of SMART money in 1999. However, by the year 2000, mobile money technology had started to spread to include several other countries and continents. For instance mobile money deployment in Africa include G-cash launched by GLOBE Telecom in 2004 (Wishart, 2006). Bharti Airtel also launched their mobile money transfer

pilot project in India in 2007 (Bosi, Celly and Joshi, 2011). By July 2012, Airtel Mobile Money had been launched in 14 countries where Airtel operated.

Measured by the number of deployments worldwide, mobile money has grown rapidly over the past few years. According to Davidson and Pénicaud (2012), a survey carried out around the world in 2009 reviewed that there were over 17 mobile money deployments worldwide. By 2012 there were 123 deployments with another 93 deployments about to be launched. By 2011 over 60 million customers had availed themselves for mobile money subscription, a picture of exceptional growth compared to other technologies and their adoption (Davidson and Penicaud, 2011).

World over, there were almost 30 million active users of mobile money services who performed 224.2 million transactions totaling $4.6 billion during the month of June 2012 Pénicaud (2013). Pénicaud further states that this growth has been driven largely by Mobile Network Operators (MNOs), which operationally run 72.0% of live deployments and 72.5% of the deployments launched in 2012.

The World Bank Global Findex report (2012) reveals that mobile money has achieved the broadest success in Sub-Saharan Africa, where 16 percent of adults report having used a mobile phone in the past 12 months to pay bills, send or receive money (World Bank: Global Findex, 2012).

One deployment that has been documented to be one of the most successful mobile money deployments in the world is Kenya's M-pesa. M-PESA attracted 7 million subscribers, which is over a third of the population that is 15 years or older in just over two years since its launch (Heyer Amrik and Mas Ignacio 2009). M-PESA saw an increase in the number of subscribers who were unbanked from 25 to 50% in the first 2 years of its existence in Kenya. Subscribers from the rural areas also increased to 41 percent. (Suri, 2010). By

2014 there were over 20 Million Subscribers with over 83,000 agents country wide. It is estimated that approximately 87 % of Kenya's GDP passed through M-PESA in 2014 (Quartz, 2016). 62% of M-pesa subscribers were reported to be active in 2014 (Kaffenberger and Michelle, 2014).

Despite the rapid adoption of the mobile money technology, not all mobile money deployments have been successful. Heyer and Mas (2009) states that scale is important, most mobile money businesses have been unsuccessful due to low usage. Usage of mobile money is becoming one of mobile businesses main areas of concern. According to Pénicaud and Katakam (2014) Active customers perform transaction and drive revenues, while inactive customers only incur costs. Pénicaud and Katakam (2014) further reports that in Côte d'Ivoire, there were over five million registered mobile money customers, yet well below a fifth of these are considered active users.

The appreciation of social and financial services over the mobile networks became evident in Zambia when the Zambian Parliament passed the Telecommunications Act 23 of May 1994. This Act ushered in a new era of private participation in the provision and operation of the Telecommunication networks and services. It is this development that led to the rise of three main network service provider namely Zamtel trading as Cell Z, Airtel and MTN. After only 5 years of the deployment of the first mobile phone in Zambia, the number of mobile phone subscriptions equaled the PSTN lines (Mark, 2009). The percentage of the Zambian population that was likely to use a phone in their lifetime increased from 5 percent to over 50 percent (Mark, 2009). Zambia Information and Communication Technology Authority (ZICTA) reports that around 64.5 percent of the households in the country had access to mobile phones determined by at least one member of the household owning a mobile phone (Chisanga et al., 2015).

According to Boor and Braguinsky, Zambia was one of the pioneers of Mobile money in Africa when Celpay was introduced in 2001. Celpay introduced a payment network connecting post offices in the country. Other entrants to the market included Mobile Transaction (MT) now called ZOONA in 2009, which targeted to aid companies in the agricultural product market make payments to the unbanked rural farm suppliers. Bank-led mobile payment system like ZANACO Bank's Xapit in 2008 and Standard Chartered Bank also introduced Mobile Banking in 2011.

Airtel mobile money was launched under the label 'Airtel Money' in September 2011. In January 2012, MTN Zambia, the second largest mobile company at the time also introduced mobile money service under the name "MTN Mobile Money. The mobile money services had the Mobile Network Operator (MNO) as the Key Player. MNO already have customer loyalty of voice subscribers hence can easily take off (IFC, 2015).

As at March 2015 there where over 9,107,538 mobile phone subscribers while 5,243,129 had mobile money subscriptions representing 57.6% of the mobile phone subscribers (Chisanga et al., 2015).

Zambia like many other developing nations has high levels of unbanked adult population. A research by Finscope (2009) reviewed that over 92.8% of the Zambian adults received their income by cash. At the time of the research only 5% of the Zambian adult population received their income through bank accounts. In 2014, the Bank of Zambia also reviewed that 37.3% of the Zambian adult population was financially included which means that over 72.7% was unbanked (Matsilele, 2014). Money transfers were predominately through bank transfers and was a privilege of the banked. The unbanked mostly depended on post office or other informal methods of money transfer.

Since the launch of mobile money, companies such a Zambia Electricity Supply Company (ZESCO), Lusaka Water and Sewerage, DSTV and many other companies have incorporated the use of mobile money in the payment of bills by customers.

Mobile money subscriptions have rapidly increased since 2011. Airtel Zambia for example in July of 2013 announced that the number of subscriptions had reached 1.8 million with about 500,000 transactions monthly (TechTrends Zambia, 2014). By May of 2014, the subscriptions increased to 3.1 million with about 450,000 transactions monthly. The Central Bank's statistics showed that the country's mobile money accounts had reached 3.4 million compared to 2 million bank accounts by 2014 (Telecompaper.com, 2014). As at 31 March 2016, Zambia had 5.92 million mobile money registered accounts compared to 2.90 million registered bank accounts.

1.2 Related Works

Zambia was the first country in Africa where Digital Financial Services (DFS) was launched, yet the growth of DFS is stymied (Ministry of Finance, 2017). According to a report on Zambia by InfoDev (2014), superficially, mobile money in Zambia is very attractive. But these high numbers disguise the fact that very few subscribers are active users. The Times of Zambia Newspaper reports that there are only about 2-5 per cent of registered mobile money active users in Zambia. According to the Zambia National Financial Inclusion Strategy report (2017), only 250,000 (2.2% of the adult population) of the 8.5 million unique mobile subscribers were active monthly mobile money users as of 2015. Further that by comparison, in 2015, 31% of adults in Uganda had used mobile money in the last 90 days, and in Tanzania 53% had an active mobile money account (Ministry of Finance, 2017). A survey carried out in 2010 by the AudienceScapes revealed that even after 9 years of mobile money in the country only 23% of mobile subscriber used mobile money service.

'Cash payment remain the most predominately used retail payment method in shops and between individuals and have shown a growing trend over the last few years' (Finscope 2009).

1.3 Research Problem

Despite the expansion of the usage of ICTs in Zambia, usage of mobile money service seems to be relatively low. There is vast research that was done in many African countries to understand the performance of mobile money. However little research has been done to understand mobile money performance on the Zambian market.

Zambia was the first country in Africa where DFS was launched, yet the growth of DFS is stymied. The number of active users compared to other comparable countries has been reported to be relatively low.

1.4 Research Aim

This study therefore is aimed at investigating the influencing factors affecting the usage of mobile money transfer services in Zambia.

1.5 Research Objectives

The objectives of the research include:

1. Determine types of mobile money services in Zambia.
2. Analyze mobile money services usage patterns in Zambia.
3. Determine benefits users are deriving from using mobile money.
4. Investigate the challenges faced by users of Mobile money.
5. Establish the factors involved in mobile money services usage.

1.6 Research Questions

1. What are the types of mobile money services in Zambia?
2. What are the Mobile Money services usage patterns in Zambia?
3. What benefits are users deriving from using mobile money Services?
4. What challenges are faced by users of Mobile Money?
5. What are the factors affecting the usage of mobile money services?

1.7 Scope of Study

The study was carried in Lusaka the capital city of Zambia. Lusaka is highly urbanized and has the largest number of Mobile Money users and Agents. The Mobile Money user population is highly stratified across a wide social economic strata.

1.8 Significance of Study

The study is aimed at investigating the usage of MNO mobile money services. The outcomes and results of this research will be of great value to the Mobile money industry and also to other researchers. The study will provide recommendations for MNOs about changes needed in order to accelerate usage of the services offered.

1.9 Limitations to the Study

The research was done mostly from the users' perspective and thus contained limited information from the service providers of mobile money services. The difficulty in accessing information from service providers was a limiting factor. Due to financial and time constraints, the study was confined to Lusaka residents and agents.

1.10 Structure of Study

This study is divided into five parts. Chapter One provides the context of the study; defines its terminology, sets out its aim, states its supportive objectives and research questions, and its significance. It also states the scope of the study and the methodology employed.

Chapter Two is the Literature Review. It evaluates what other authors have written about mobile money in Zambia, Africa and world over. It also defines associated terminologies, and further reviews different technology adoption and usage models. Chapter Three, defines the method that was used to conduct the research. Chapter Four outlines the findings and discussion of the findings. Chapter Five gives the conclusions and the recommendation from the research.

CHAPTER TWO

LITERATURE REVIEW

This chapter give a general review of literature and develops ideas that are important in understanding usage of mobile money by mobile money operators.

2.1 Mobile Money

The definition of Mobile Money is different across different sectors as it covers a vast scope of intersecting application. According to the International Financial Commission (IFC), Mobile money (m-money) refers to the use of mobile phones to perform financial and banking functions (IFC, 2011). Monetary services and transactions are all made on a mobile phone and may or may not be tied directly to a personal bank account.

On the other hand, the European Commission defines electronic money as a digital equivalent of cash, stored on an electronic device or remotely at a server. Electronic money (e-money) can involve payments using credit cards; debit cards, Automated Teller Machine cards (ATM), store card and even the mobile phone. The major distinguishing factor between mobile money and e-money is that mobile money is restricted to systems that store money using Subscriber Identity Module (SIM) as an identifier and make all banking and financial function using a mobile phone or device.

2.1.1 Mobile Money Business Models

There is no universal form of m-banking; rather, purposes and structures vary from country to country (Donner and Tellez, 2008). Various business models exist in the mobile money business; some are offered entirely by banks, others entirely by telecommunications providers, and still others involve a partnership between a bank and a telecommunications provider (Porteous, 2006). However, regulatory factors, play a

strong role in determining which services can be delivered via which institutional arrangements (Mortimer Schutts, 2007).

a) Mobile Network Operator (MNO) – Centric Model

In the MNO- Centric Model, the Mobile Network Operator (MNO) is the key player and acts like a 'Bank'. The MNO is responsible for the installation of applications on the user's handsets and providing merchants with Point of Service Devices. The MNO- Centric Model places all regulatory responsibility on the MNO. According to IFC (2011), the advantages of this model are that there are few players hence only the MNO is responsible for the full roll-out of mobile money. Secondly MNO already have customer loyalty of voice subscribers hence can easily take off. However, these models can have cost implications on the MNO if the m-money does not successfully take off as the setup cost and managing the agent network is expensive (IFC, 2011).

Mobile Network Operator models thrive in developing markets because of their ability to reach large numbers of unbanked people in physically remote locations beyond the presence of bank and landline infrastructures (Merrit, 2010). The MNO Centric Model is most successful in countries with low financial infrastructure and high unmet demand. Safaricom's M-PESA and Austria's Mobilkorn represent successful models where the mobile operator controls and manages the payment system (Boer and de Boer, 2010). Since the MNO controls the communication and distribution infrastructure it can easily be used as a substitute to the underdeveloped financial infrastructure (IFC, 2011).

b) The Bank-Centric Model

In the Bank-led model, the Bank provides mobile services and controls the customer connections. A Mobile Network Operator usually provides the channel for basic transfers

conducted by the bank. The Bank-Centric model is apparently suitable to the environments characterized by a full system of financial intermediation; it appears as a way to create efficient monetary links between users without any technological limitation' (Yakub et al., 2013). This means that the model will work most efficiently in countries with more developed banking infrastructure and a moderately small unbanked population.

c) Collaboration Models

Collaboration Models involves partnerships among banks, MNOs, and other stakeholders in the mobile money value chain. The advantages of this model are that costs of operation are usually lower because they are shared among the different participants in the areas of expertise (IFC, 2011). However, because of the large number of stakeholders, collaborative models are usually difficult to manage. According to the Ernst and young advisory services, careless collaborations could lead to poor business economics and short-lived services that will leave the field open to other parties (Ernst and young, Advisory services, 2009). Secondly since there many shareholders in the model, prices might be hiked to allow for attractive revenue sharing among the stakeholders.

These models have variations, and they evolve over time. MNOs are likely to increase partnership with banks and possibly develop into a collaborative model (IFC, 2013).

The vast majority of fast-growing deployments, or "sprinters," are operated by MNOs, which operationally run 72.0% of live deployments and 72.5% of the deployments launched in 2012 (Pénicaud Claire, 2013).

2.2 Benefits of Mobile Money Systems

Mobile money systems have become popular because of the various benefits they offer to users and to the mobile money service providers. Outlined below are various benefits that researchers have observed.

2.2.1 Benefits of mobile money systems to users

Various researchers have revealed that mobile money systems have become popular because of the numerous benefits they give to the users. A research by Bill and Melinda Gates Foundation (2017) on Eco cash one of Zimbabwe's leading mobile money businesses reviewed that most users of the service used it because of the affordability, and convenience with which money could be sent over distance, in comparison to wire transfer, delivering in person, or entrusting an envelope with a bus driver.

Similarly, another research by Heyer and Mas (2009) gave an example of how mobile money has helped a South African farm worker who previously had to travel for hours spending considerable sums of money to purchase airtime. Mobile money is useful as a retail payment platform because it has extensive reach into large segments of the population.

Mobile money makes basic financial services more accessible to low-income people by minimizing time and distance to the nearest retail bank branches (CGAP, 2006). For users in the developing world, the appeal of these mobile banking, mobile-payments systems may be less about convenience and more about accessibility and affordability (Cracknell, 2004; infoDEV, 2006).

In an international comparison of 26 banks, McKay and Pickens (2010) found that branchless banking (including mobile money) was 19 percent cheaper on average than alternative services.

Ivatury and Mas (2009) further highlighted how mobile money was generally cheaper than other services. In the Philippines for example, a typical transaction through a bank branch costs about US$ 2.50 and only costs US$ 0.50 if it were automated by using a mobile phone.

Mobile money has created commercial opportunities for entrepreneurial customers to derive a supplementary source of income (Jenkins, 2008).

2.2.2 Benefits of mobile money to MNOs

Mobile money business has also been seen to benefit even the MNO. Mobile money has proven to be rewarding for deployments that have reached scale (Pénicaud and Katakam, 2014). The research by Pénicaud and Katakam (2014) reported that five operators within the research sample reported that mobile money contributed to over 5% of their revenues. Further that savings from airtime distribution represented an indirect benefit for MNOs. In the research, 10 deployments reported that they sell more than 10% of their airtime over mobile money. Kenya's mobile money service MPESA's (one of the mobile money deployments in the world that have reached scale) total contribution to the company's total revenues for example was 12.6% in September 2012 and 18.7% in September 2013.

GSMA (2015) also reports that some MNOs have experienced significant indirect benefits from mobile money, such as churn reduction and savings on airtime distribution. The research by GSMA reviewed that six operators in the research sample sell more than 10% of their airtime on mobile money.

2.3 Challenges in Mobile Money Systems

Several researchers have highlighted the challenges faced by both the users of mobile money and the service providers as revealed in the sections below.

2.3.1 Challenges faced by users of Mobile Money Systems

Different researchers have highlighted several reasons why most users are dissatisfied with the mobile money services. Among the most common include agents network for mobile money, float problems, and network errors.

A research by Intermedia (2013) on the uses, barriers and opportunity of Tanzania's mobile money in 2013 reviewed that the top major barriers to use included insufficient knowledge, technical issues and Agent network problems. According to the research seventy-two percent of all registered m-money users experienced agent-related problems in the past 12 months. The top three problems were the same across all providers: the agent was absent, did not have any/did not have enough e-float, and did not have any/did not have enough cash. Further Among the top three reasons for not using m-money, 13 percent of nonusers cited lack of awareness about the services and 12 percent named insufficient understanding of m-money. Different technical issues were also found to be a barrier to use. These included among the top five reasons for not being able to withdraw money, three were due to problems with agents: the agent's system was down (28 percent of respondents), the agent was not available (26 percent) or the agent did not have enough cash (22 percent). One-half of the respondents (49 percent) were unable to withdraw money because the provider's network was down.

In another related research by Singh et al., (2013), assessing the impact and challenges of mobile money transfer services in Ghanaian telecom industries, reviewed that 60% of the

subscribers are still facing the connection problem while using service in Ghana and only 30% were satisfied with connectivity and service.

Security of the mobile money service is one other common constraint highlighted by many researchers as one of the barriers to mobile money adoption and use. According to Ernst and Young's Advisory Services (2009), Fraud and money laundering are of great concern with the emergence of global mobile money remittances, which are outside traditional financial institution regulations. In another research on mobile money usage, Chan and Chong (2013) revealed that perceived security influenced some mobile commerce activities such as transaction and location-based services but did not influence entertainment and content delivery activities.

2.4 Usage of Mobile Money

In the developing world, m-money is mainly used as a replacement for less-secure cash, especially in countries with a poor financial infrastructure (IFC, 2011). Mobile money is used strategically to enable people without bank accounts to carry out financial transactions (ITU, 2013). Most mobile money transactions are airtime top-ups, but P2P transfers represent most of the value transacted (Pénicaud, 2014). Remittances and remote payments are the most common uses of mobile money in developing countries (Venkatesen et al., 2013). However, airtime top-ups remain the most commonly used mobile money service in the world which accounts for 61% of total transactions.

Similarly, a report by the GSMA (2015) revealed similar results where airtime top-ups were the most actively used transaction. According to the report, airtime top-ups represented 45% of all global mobile money transactions followed by cash-ins at 19% and cash-outs at 17% while P2P transfers represented 16 % of the transactions.

Intermedia (2013) states that the rate of m-money use is highest among urban and banked households, and households living above the poverty line. According to the study, early adopters are likely to belong to members of urban and banked households, and households living on $2 to $4 a day (6 percent of each group). The research reviewed that over 26% of the unbanked had a mobile money user in their household.

Research has also reviewed that the unbanked also are adopting mobile money. A research on Uganda by Orotin et al. (2014) reviewed that over 2 million adults who were previously unbanked are accessing financial services using their mobile phones.

Similarly, according to Global Mobile Statistics (2012), eight branchless banking providers, namely; Safaricom M-PESA in Kenya, Banco Postal in Brazil, FINO in India, Globe GCash and Smart Money in Phillipines, Vodacom M-PESA in Tanzania, WING in Cambodia, and WIZZIT in South Korea, had 3.73 million active registered users, of which 1.39 million (or 37 percent) were previously unbanked.

The economics of M-PESA also reveals that between 2007 and 2009, the percent of M-PESA users who were unbanked doubled from 25 to 50 percent and the number living in rural areas also increased from 29 to 40 percent (Suri and Jack, 2011).

The ITU (2013) reported that Mobile money adoption was lower in more developed countries. According to ITU (2013), most people in developed nations have bank accounts and the mobile phone is evolving as just another payment channel for existing financial products and services and for customers with bank accounts.

2.5 Successful mobile money deployments

Among developing countries, Kenya is perceived as the most successful m-money country; Japan is considered the most successful m-money developed country (IFC,

2011). Japan is the ideal model for use of e-money in developed countries: it has the most widespread use, with the largest number of subscribers (IFC, 2011).

At the close of 2008, M-pesa in Kenya made headlines by becoming the first mobile money service to cross the one million active account mark (GSMA, 2017). Even though Mpesa in Tanzania's uptake was initially slow, it became the second mobile money market to reach the one million active account milestones (GSMA, 2017).

M-PESA attracted 7 million subscribers, which is over a third of the population 15 years or older in just over two years of its launch (Heyer Amrik and Mas Ignacio, 2009).

By 2014 there were over 20 Million subscribers with over 83, 000 agents country wide. It was estimated that approximately 87 % of Kenya's GDP passed through M-PESA in 2014 (Quartz, 2016). 62% of M-pesa subscribers were reported to be active in 2014 (Kaffenberger and Michelle, 2014). According to Donovan (2012), M-PESA reported Mobile Money revenues for the first half of 2011 of K Sh 7.9 billion ($90 million). M-PESA offers P2P, bulk payments, deposits, withdrawal, Hakikisha (allowing customers to confirm the name of cash transfer recipients to curb erroneous transactions), ATM withdraws, M-PESA statement to emails. M-PESA initial marketing campaigns slogan was 'send money home'. M-PESA is mainly used as a tool to send money to family and friends that are unbanked.

Japan on the other hand has some of the most advanced and diverse mobile applications in the world (Ezell, 2009). Mobile money in Japan was provided through a joint venture of an MNO called NTT DOCOMO and Sony Technologies. NTT DOCOMO and SONY are both world leaders in software development. The result of the joint venture was that Osaifu-Keitai, a mobile wallet platform enabling quick, contactless transactions for 20

applications (including several credit cards, personal identification, airline tickets, and cash) was launched in 2004 by NTT DOCOMO.

As of September 2008, 78 million mobile phones in Japan had FeliCa-enabled electronic wallet capability, with 17 million mobile phone subscribers using their mobile phones to make contactless transactions (IFC, 2011).

In Japan, transactions such as paying for subway fares, taxi rides, car parking, movie tickets, vending machines, buying ay kiosks, item auctioning and even airport check-ins are done on their mobile phones which also serve as boarding passes.

2.5.1 Success Factors in mobile money deployment

Different scholars have taken interest in studying why some mobile money deployments are successful while others have performed poorly. Pénicaud Claire (2013) describes the mobile money industry as a challenging industry. The works of Pénicaud revealed firstly that 8 of the 41 launches in 2012 were re-launches of existing mobile money services. A re-launch according to Pénicaud usually happens when the provider revamps its marketing, product offerings, or distribution strategy. Secondly it was revealed in the research that four mobile money services closed or merged with other deployments in 2012 (Pénicaud Claire, 2013).

Most researchers have agreed that Mobile money success is defined by how many active users a mobile money business has. According to Pénicaud and Katakam (2014), Active customers perform transaction and drive revenues, while inactive customers only incur costs. Heyer Amrik and Mas Ignacio (2009) states that scale is important, and that most mobile money businesses have been unsuccessful due to low usage. Donovan agrees and expounds that Mobile money can prove commercially significant for service providers,

when it reaches scale. Although the transaction fees that mobile money providers charge are individually quite small, in total, they can represent an important revenue source. Fixed cost used to maintain and setup the mobile money business are fixed whether or not subscribers are using the service. Registration is in most cases free hence each registration incurs a possible cost that can only be retrieved if the recouped mobile account makes transactions.

Pénicaud reports that in Côte d'Ivoire, for example, there are over five million registered Mobile money customers, yet well below a fifth of these are considered active users. Further that in West Africa a mobile operator has two million registered mobile money subscribers but only 15,000 are active. Agents are getting individuals signed up but active usage has not generally followed.

According to a report on Zambia by InfoDev, Superficially, Mobile money in Zambia is very attractive. But these high numbers disguise the fact that very few subscribers are active users' (InfoDev, 2014.). The Times of Zambia Newspaper (times.co.zm, 2015) reports that there were only about 2-5 per cent of registered Mobile Money active users in Zambia. A survey carried out in 2010 by the AudienceScapes revealed that even after 9 years of mobile money in the country only 23% of mobile subscribers used mobile money service (Montez, 2010).

A research by Bill and Melinda Gates foundation in 2016 on mobile money in Zimbabwe revealed that despite the widespread adoption of mobile money accounts, digital currency has not yet reached a critical mass for everyday purchases. According to the findings, most merchants, Small and medium-scale pass on cash-out fees to customers, in addition to the fee for the transfer, reducing the incentive to use mobile money and causing cash to remain

the primary medium for day-to-day transactions (Bill and Melinda Gates foundation, 2017).

Donovan (2012) on the other hand highlights that regulation has the potential to hinder or encourage mobile money success. According to Donovan, since mobile money straddles finance and telecommunications, it faces regulation originating within two different sectors. For mobile money to develop, regulations must encourage inclusiveness, while minimizing fraud and risk (Donovan, 2012).

Di Casti (2013) research also state the importance of enabling regulation to the success of mobile money. In the research, it was reviewed that 12 of the 14 fastest growing mobile money services were in markets with enabling regulatory frameworks.

The GSMA (2017) defines an 'enabling regulatory environment' for mobile money as one where the following criteria are met: (1) MNOs or their subsidiaries are able to obtain a licence directly to offer electronic money; (2) prudential requirements are proportional to the risks presented by the mobile money business; (3) mobile money providers are able to offer their services using a network of third party agents; (4) know your Customer requirements are tiered and risk-based to support the growth of low-value accounts; (5) regulations allow for a market-led approach to interoperability.

A research by Naghavi et al. (2016) concluded that enabling regulation was shown to be important predictor of success in mobile money services. The research found that though enabling regulation predicts a fewer mobile money services in a market, it predicts greater mobile money penetration and transaction value. It found that services located in countries that had enabling regulation enjoyed significantly greater transaction volume.

Evans and Pirchio (2015), also found that heavy regulation, particularly limitations on the role non-banks can play, disproportionate know-your-customer requirements, and excessive restrictions on the agent network, was generally fatal to mobile money services.

In Zambia, Celpay faced difficulty to conduct peer-to-peer transfers because of the Know-Your-Customer (KYC) regulations by the Zambian Central Bank that required mobile banking customers to own a regular banking account (Boor and Braguinsky, 2013).

M-pesa's success in Kenya is also often ascribed to regulatory flexibility and the waiving or non-existence of banking laws that prevent mobile operators from managing deposit accounts (Kalba, 2013).

A report by Ratan (2008) also suggests that the potential market size for domestic remittances is related to urbanization ratios. High urbanization causes split families which in turn increases the need for remittances between the urban migrants and the people they leave in the rural areas. Countries with mid-range urbanization ratios, especially those that are urbanizing at a rapid rate, are likely to exhibit strong rural-urban ties requiring transfer of value between them (Heyer and Mas, 2009).

According to the International Finance Cooperation (IFC) 'The socioeconomic profile of m-money users was found to be linked to their country's stage of financial development' (IFC 2011). Pénicaud Claire (2013) also agrees that Socio-economic factors and the level of infrastructure in a market certainly have an influence on how a mobile money provider will develop its service; however, argues that, they do not determine or predict the degree of its success. According to Pénicaud (2013), Mobile money can succeed in markets with diverse demographic and socio-economic circumstances, provided operators design the service to fit local needs. Further, most rapidly growing mobile money deployments have certain commonalities around certain internal factors, such as the level of investment made

into each service, their organizational structure, marketing strategy, or distribution system, which is believed have much more influence over the success of these deployments.

Pénicaud Claire (2013) also states that the level of financial inclusion within a market has no clear linkage to whether a mobile money service will succeed. However, Mobile money providers operating in countries with lower levels of financial inclusion may find customer education more challenging, as the level of understanding of financial services will be lower.

A research on mobile money in Uganda by Hamilton (2012), highlighted that the mobile money success in Uganda was attributed to the rapid expansion in use of the mobile phone, and following, the rapid expansion in access to mobile money services. Mobile penetration was at the time of the research 44% of the population, and 97% of the population is covered by one or more of the mobile network operator (MNOs) networks.

According to GSMA (2016) providers which are first in a market—have a subsequent competitive advantage in this space or if instead subsequent entrants see more success.

2.6 Mobile Money in Africa

Since the year 2000, Africa has had an annual average growth of 30% in mobile telephone usage. A report by African Mobile Observatory, 2011 reported an increasing mobile coverage on the continent at more than 620 million mobile phone subscribers in Africa; and the number was forecasted to reach 735 million by the end of 2012 (African Mobile Observatory, 2011).

Lachaal and Zhang (2012) traces the use of the mobile phone for financial transactions as early as 2002 when Celpay introduced a business-to-business (B2B) payment service in Zambia. Celpay's focus was on connecting smaller businesses and their partners to create

more efficient transactions. Other pioneers in the use of the mobile phone for financial transactions are First National Bank which started a bank-led mobile money system in 2005. The high levels of unbanked population and financial literacy of most African countries rendered the bank-led models less popular among most African countries (Yakub et al., 2013).

According to the World Bank Global Findex report (2012), Mobile money has achieved the broadest success in Sub-Saharan Africa, where 16 per cent of adult report having used a mobile phone in the past 12 months to pay bills, send or receive money.

Out of 140 mobile money deployments worldwide, it is estimated that only eleven of those have reached 1 million registered customers and the number of those with over 1 million active customers is even smaller (Hamilton, 2012). Kenya, Uganda and Tanzania as some of the countries where mobile money usage has skyrocketed (Hamilton, 2012).

Kenya is regarded to be Africa's leading case of mobile money. Kenya's M-PESA attracted 7 million subscribers, which is over a third of the population 15 years or older in just over two years since its launch (Heyer Amrik and Mas Ignacio, 2009). M-PESA saw an increase in the number of subscribers who were unbanked from 25 to 50% in the first 2 years of its existence in Kenya. Subscribers from the rural areas also increased from 41 percent (Suri, 2010).

Other MNO-led Mobile money deployments also emerged all over Africa. M-PESA was also deployed in Tanzania, South Africa, and Pakistan while Airtel launched Airtel Money in over 15 countries worldwide.

According to the Kenyan ICT Authority, 'no mobile wallet has replicated the lightening-fast and widespread adoption of M-pesa in Kenya — not even M-pesa's own forays into other markets like Tanzania, Afghanistan, and India (ICT Authority, 2015).

2.6.1 Mobile Money in Kenya: A case of M-PESA in Kenya

M-PESA attracted 7 million subscribers, which is over a third of the population 15 years or older in just over two years of its launch (Heyer Amrik and Mas Ignacio, 2009). By 2014 there were over 20 Million subscribers with over 83, 000 agents country wide. It was estimated that approximately 87 % of Kenya's GDP passed through M-PESA in 2014 (Quartz, 2016). 62% of M-pesa subscribers were reported to be active in 2014 (Kaffenberger and Michelle, 2014). According to Donovan (2012) M-PESA, reported mobile money revenues for the first half of 2011 of K Sh 7.9 billion (90 million US dollars).

Kas Kalba (2013) attributed the success of M-pesa to the Market dominance of Safaricom, which provides on-net connection to more than 60% of the country's mobile subscribers. Wolfgang Fengler (2012) also agree that M-pesa's strong position and national presence helped it to reach scale. Kenya unlike other African countries had few mobile market players hence market share was not widely shared among the operators and was less fragmented. Even when there is interoperability across the networks, many mobile money users are not aware of this or do not know how to execute mobile money transactions across networks (Kas Kalba, 2013). This could mean that customers will usually adopt and relate to products of the network they subscribe to even when there is interoperability among networks. As a result of the high network dominance, M-pesa's could easily reach scale. This is what scholars have termed as the Network Effect, the value the customer of

a payment system gets because of the number of people connected to and actively using it.

Other scholars attributed the success of M-pesa to the way Safaricom managed and grow its agent network. According to Fengler (2012), the true secret of M-PESA's success is the management of the agent network. The agent network grew from about 300 initially to almost 80,000. Agents are important in the success of mobile money business. Amrik and Ignacio (2009) outlines that people will only become interested in mobile money if they are able to use it with many agents. On the other hand, Agents will only sign in as agents if there are many customers. There is therefore need to balance the agent and customer network to ensure the success of the mobile money business. Amrik and Ignacio further states that, 'The longer this impasse is allowed to stand, the more difficult it is to overcome'. Since Safaricon had large market share, its potential for a high customer base was high hence it needed to carefully manage its agent network to ensure a success mobile money take off.

Finally, M-pesa's success in Kenya is also often ascribed to regulatory flexibility and the waiving or non-existence of banking laws that prevent mobile operators from managing deposit accounts (Kalba, 2013). The Central Bank in particular played a very progressive role and allowed "regulation to follow innovation", while reassuring the market of its oversight. The regulator agreed that mobile money agents needed only limited requirements to enter the business, as they were not providing banking services, while the operator behaved as if it was regulated and periodically reported financial and usage data as Banks do (Kalba, 2013).

2.6.2 M-PESA in Tanzania

After the successful deployment of M-pesa in Kenya, M-pesa was also launched in other countries including Tanzania. In Tanzania, M-PESA was launched by an MNO called Vodacom. M-pesa in Tanzania however did not release the same amount of success as in Kenya. The AudienceScapes data showed that 11.5 percent of Tanzanian adults had used an m-money service compared with a 54.6 percent rate of use among Kenyans two years after M-PESA launched in both countries (Montez and Goldstein, 2010). Different scholars have written on why they think M-pesa, being the same product could not perform the same in two similar and neighboring countries.

Even though the two neighboring countries have similar population of about 40 million, the structure of the rural urban ties in Tanzania and Kenya are different. According to Camner et al. (2009), Kenyan government encouraged urbanization by promoting urban economic development while Tanzania maintained a decentralized economy. As a result, most families in Kenya were split because of rural urban migration which has led to urban to rural remittance in Kenya, accounting to for up to 70% of all domestic remittances (Oucho, 1996). Tanzania on the other hand does not have a dominant pattern of remittances (Camner et al., 2009).

A report on Tanzania by the IFC attributes the low market penetration in Tanzania to the low market share that Vodacom had in Tanzania (41%) compared to Safaricon's M-PESA in Kenya (79%) which translates to 13 million customers for Safaricom as opposed to only 5.9 million for Vodacom (IFC, 2015). Further that there was little market research conducted in Tanzania prior to the uptake (IFC, 2015). There was need to understand the Tanzanian market conditions and make a product that could fit the Tanzanian market. As a result of the low market research, initial product campaigns targeted the wrong audience.

According to the IFC early adverts showed images of people buying textbooks in city bookstores which incorrectly positioned the service as something to be used by the upper class.

The two countries were also at different levels in their economic development and access to financial services at the time of the deployment of M-pesa. According to Camner et al. (2009), Technology Adoption Unprepared - prior to the launch of M-PESA many Tanzanian mobile phone users were only familiar with the basic operations of a mobile such as texting and making voice calls.

2.7 Mobile Money in Zambia

Zambia is one of the most urbanized countries in the Sub-Saharan Africa with about 39.5% of people living in the urban areas (CSO, 2010). With a population standing at over 13 million people, Zambia is one of Africa's fastest growing economies (The Economist, 2013).

Following the post-independence Economic liberalization in the mid-90s; the Zambia Parliament passed the Telecommunications Act 23 of May 1994. This Act ushered in a new era of private participation in the provision and operation of the Telecommunication networks and services. It is this development that led to the rise of the three-main Mobile network service provider namely Zamtel trading as Cell Z, Bahati Airtel trading as Airtel and MTN.

After only 5 years of the deployment of the first mobile phone in Zambia, the number of mobile phone subscriptions equaled the PSTN lines (Mark, 2009). The percentage of the Zambian population that was likely to use a phone in their lifetime increased from 5% to over 50 percent (Mark, 2009). Zambia Information and Communication Technology

Authority (ZICTA) reports that around 64.5 percent of the households in the country has access to mobile phones determined by at least one member of the household owning a mobile phone (Chisanga et al., 2015).

As at March 2015 there were over 9,107,538 mobile phone subscribers while 5,243,129 had mobile money subscriptions representing 57.6% of the mobile phone subscribers (Chisanga et al., 2015).

Zambia like many other developing nations has high levels of unbanked population. A research by Finscope in 2009 reviewed that over 92.8% of the Zambian adults received their income by cash. At the time of the research only 5% of the Zambian adult population received their income through bank accounts. In 2014, the Bank of Zambia also reviewed that 37.3% of the Zambian adult population was financially included which means that over 72.7% was unbanked (Matsilele, 2014). Money transfers were predominately through bank transfers and was a privilege of the banked. The unbanked mostly depended on post office or other informal methods of money transfer. According to Dermish et al. (2012), the gap between mobile phone penetration and access to basic payment services and the speed with which this technology reaches the Zambian population demonstrates a huge opportunity for payment service providers to use this medium as a delivery channel (Dermish et al., 2012). Physical coverage of financial services are highly concentrated in Lusaka and a few other urban centers (Dermish et al., 2012).

Mobile money services in Zambia fall under two regulatory bodies. This is because Mobile money falls between two divergent sectors, Telecommunications and Financial sectors. The Bank of Zambia could not regulate the MNOs, Airtel or MTN as they were not financial institutions and did not fall under their mandate. In order to regulate these services, BOZ required Airtel and MTN to register these services as separate entities

(ZICTA and CSO, 2014). This motivated the creation of Airtel Money, owned by Airtel Zambia and MTN Money, owned by MTN Zambia as separate entities. These Mobile money services were hence regulated under the Payment Systems Act of the BOZ. Since mobile money services rely on networks that are regulated by ZICTA it was also therefore important that ZICTA, in collaboration with the Bank of Zambia sets parameters that will govern the conduct of this service. On November 24, 2014, ZICTA and the Bank of Zambia signed a memorandum of understanding (MoU) outlining how the two institutions will work together in the supervision and regulation of areas of common interest (Daily-mail.co.zm, 2014). The aim of the collaboration was to provide an enabling regulatory environment that fosters innovation and financial inclusion.

According to Boor and Braguinsky (2013), Zambia was one of the pioneers of Mobile money in Africa when Celpay was introduced in 2001. Celpay was a service that was introduced by the then leading MNO Celtel in partnership with six major Banks to offer remote payment transfers in different parts of the country. Its focus was on connecting smaller businesses and their partners to create more efficient transactions. Celpay faced difficulty to conduct peer-to-peer transfers because of the Know-Your-Customer (KYC) regulations by the Zambian Central Bank that required mobile banking customers to own a regular banking account (Boor and Braguinsky, 2013).

Dermish et al. (2012) writes that Celpay successfully offered business-to-business transactions with businesses such as Zambian Breweries Plc, Total, BP, MNO's for token-less airtime. Celpay did not focus on person-to-person (P2P) transfers and the store of value but its core business were its 4,000 corporate clients (Dermish et al., 2012). The company estimated that about 30,000 customers payed bills using Celpay with K100 billion (USD 19,000) processed each month.

Other mobile payment companies were Bank-led mobile banking systems like ZANACO Bank's Xapit in 2008 and Standard Chartered Bank's Mobile Banking in 2011.

The Bank of Zambia in September 2011, granted Airtel, which was the largest MNO at the time to introduce mobile money payment under the label Airtel Money (Dermish et al., 2012). The platform is available for use across Zambia and offers services such as money transfers across the Airtel network only, bill payments for subscriptions to Digital Satellite Television (DSTV), electricity to Zambia Electricity Supply Company (ZESCO) and water to Lusaka Water and Sewerage Company (Dermish et al., 2012).

In January 2012, MTN Zambia, the second largest mobile company at the time was also licensed to introduce mobile money service under the name "MTN Mobile Money (Dermish et al., 2012). The service that was introduce were similar to those of Airtel money however MTN money allowed money transfers across all networks, money transfer to someone who does not have a phone. The platform was also available for use across Zambia and included; MTN airtime purchase; bill payments for subscriptions to DSTV and electricity to ZESCO.

At the time of the Airtel money launch, Airtel had the largest share of mobile phone subscribers with about 51.8 percent of the total subscribers (Chisanga et al., 2015). MTN had 33.1 percent while Zamtel had 15.1 percent. In 2015, MTN was leading with about 45.7% of the market share. However, Airtel was still leading the mobile money market with 4,185, 470 subscriptions compared to MTN' s 1,070,549.

According to the National Financial Inclusion Strategy for 2017-2022 report by the Ministry of Finance Zambia (2017), Zambia had 5.92 million mobile money registered accounts compared to 2.90 million registered bank account as at 31 March 2016. Further that in 2015, only 250,000 (2.2% of the adult population) of the 8.5 million unique mobile

subscribers were active monthly mobile money users. By comparison, 31% of adults in Uganda had used mobile money in the last 90 days, and in Tanzania 53% had an active mobile money account, in 2015.

Data from the International Monetary Fund (IMF)'s 2016 Financial Access Survey shows that Zambia has a lower overall density of financial access points (per 10,000 adults) than that of South Africa, Botswana, Kenya, and Zimbabwe. Mobile Money Agents per 100,000 adults in Uganda was found at 540, Tanzania at 924 while Zambia had 219 (IMF FAS, 2015).

Other E-money services in Zambia

MNOs compete with various mobile money substitute products. A substitute product is a product from another industry that offers similar benefits to the consumer as the product produced by the firms within the industry.

According to the Helix Institute 2016 Report, Zambia's marketplace is unique in Sub-Saharan Africa in that a third-party provider (Zoona)—not a mobile network operator (MNO)—had the largest agent network. Compared with other countries, Zambia's agents have the highest level of exclusivity and one of the lowest levels of profitability. According to the report Zoona currently holds the largest share of market presence standing at 33%, followed by MTN at 27% and Airtel 27% of the market share.

ZOONA formerly called MT (Mobile Transaction) was established in 2009 to aid rural farmers receive payments for their agricultural products. ZOONA offers a wider range of products: P2P money transfers, salary payments (bulk payments in general), bill payments, electronic vouchers (e.g. for purchases at schools and agricultural supplies), supplier payments, microfinance repayments and disbursements (Dermish et al., 2012).

Shoprite stores, one of Zambia's largest supermarket offers a money transfer service called Shoprite money transfer in partnership with Stanbic bank. According to Novi Insight, 2014, Shoprite blows everyone away by having a flat fee regardless of the amount being transferred. The analysis by Novi Insight, 2014 further reviewed that for the other players, fees vary from 4% to as high as 30% of the transferred amount making it generally cheaper than other money transfer services. Additionally, Shoprite has a very strong, well established brand and its stores have a wide variety of products which are better priced than most competing supermarkets. The opening of each new outlet expands the reach of their money transfer services as well as the convenience for people who live in the more remote parts of the country (Novi Insight, 2014).

Other popular mobile payment services include Xapit by Zambia National Commercial Bank (ZANACO), Mobile Banking by Standard Chartered and e-wallet by FNB.

Finscope in 2015 reported that cash payment remains the most predominately used retail payment method in shops and between individuals and have shown a growing trend over the last few years (Finscope, 2015).

A research by infoDev (2014), reviewed that only half of Zambians are aware of the concept of mobile money. Awareness dips among lower income, less educated and rural Zambians, who are even farther away from other formal financial services. Further that just over half of Zambians are aware of Mobile money and only one-quarter of those have used it; 24% of those who know about mobile money, have used it. According to the research Airtel Money agents have struggled with liquidity and potential customers have been turned away. Active users are less than 10 percent of the 1.2 million subscribers. Similarly, MTN Mobile Money has around 700,000 subscribers but active users constitute 7 percent of the total (49,000 subscribers).

2.8 Customer Adoption and Usage Models

The adoption and usage of new technology and service in mobile money industry has been tackled for years by academics. Many models have been drawn such as the TAM (Technology Acceptance Model) and its derivatives, the UTAUT (Unified Theory of Acceptance and Use of Technology), Rogers's innovation adoption curve. Different scholars have written on what factors they believe affect the usage behavior for different technological inventions. Outline below is the TAM (Technology Acceptance Model) suggested by Davis Fred et al. (1989) which is the theoretical framework of this research.

2.8.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) which was suggested by Davis Fred et al. (1989), suggest that user's motivation to adopt an information system can be explained by three factors, Perceived Ease of Use, Attitude towards using the system and Perceived usefulness.

Perceived Ease of Use which refers to the degree to which the prospective user expects the target system to be free of effort. Perceived usefulness: the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis et al., 1989). The attitude towards using the system according to Davis et al. (1989) was the major determinant of whether the user will actually use or reject the system. Perceived usefulness is related to productivity, but perceived ease-of-use is related to effort (Venkatesh, 1999) These two principles are believed to influence an individual's attitude which in turn results in his/her behavioural intention, which finally influences his/her actual usage of Information Technology (Davis, 1989). The Figure 1 outlines the TAM Model.

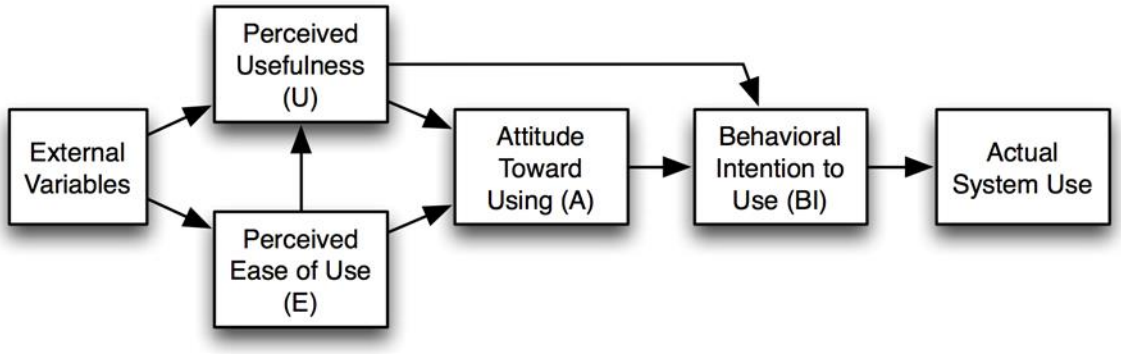

Figure 1: Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) is one of the most widely used models due to its understandability and simplicity (Legris, et al., 2003).

In 1975, Schultz and Slevin carried out a study and found that perceived usefulness provided a reliable prediction of self-predicted use of a decision model. Robey (1979) replicated the work of Schultz and Slevin and confirmed a high relationship between Perceived Ease of Use and actual System use.

Grandon and Pearson (2004) also tested TAM in the small business context in the USA. They identified four factors that influence electronic commerce adoption: organizational readiness, external pressure, perceived ease of use, and perceived usefulness

Yucel and Gulbahar (2013) further revealed fifty papers, which were published in thirty-two journals and nine conferences between the years 1999 and 2010. The objective of their research was firstly to investigate TAM variables that were found effective and ineffective from a critical point of view, secondly to highlight the top use of the effective variables; and thirdly to compose the study fields of TAM. The results showed that the

main variables of “Technology Acceptance Model” were remained as the most effective ones though numerous attempts have been made to add other variables to existing ones.

According to Mathieson, (1991) and Davis and Venkatesh (1996), TAM has been tested widely with different samples in different situations and proposed to be a valid and reliable model explaining information system acceptance and use.

2.8. 3 Conceptual Framework

Based on the literature review, a model indicating the adoption of mobile money services was developed (Figure 2). The model consists of six factors that are considered to have an effect on adoption of mobile money service

This paper will extend the TAM model to help understand the various variables at play in the acceptance and usage of a technology.

The study will also investigate whether there is a need for the mobile money service in the country. The relative advantage and the need are the independent variables that determine the Perceived usefulness of the Technology. Simplicity and Service quality will determine the Perceived ease of use. Perceived Usefulness (PU) and Perceived Ease of Use (PE) will determine the user’s attitude towards use and attitude towards use will determine actual use. (Figure 2).

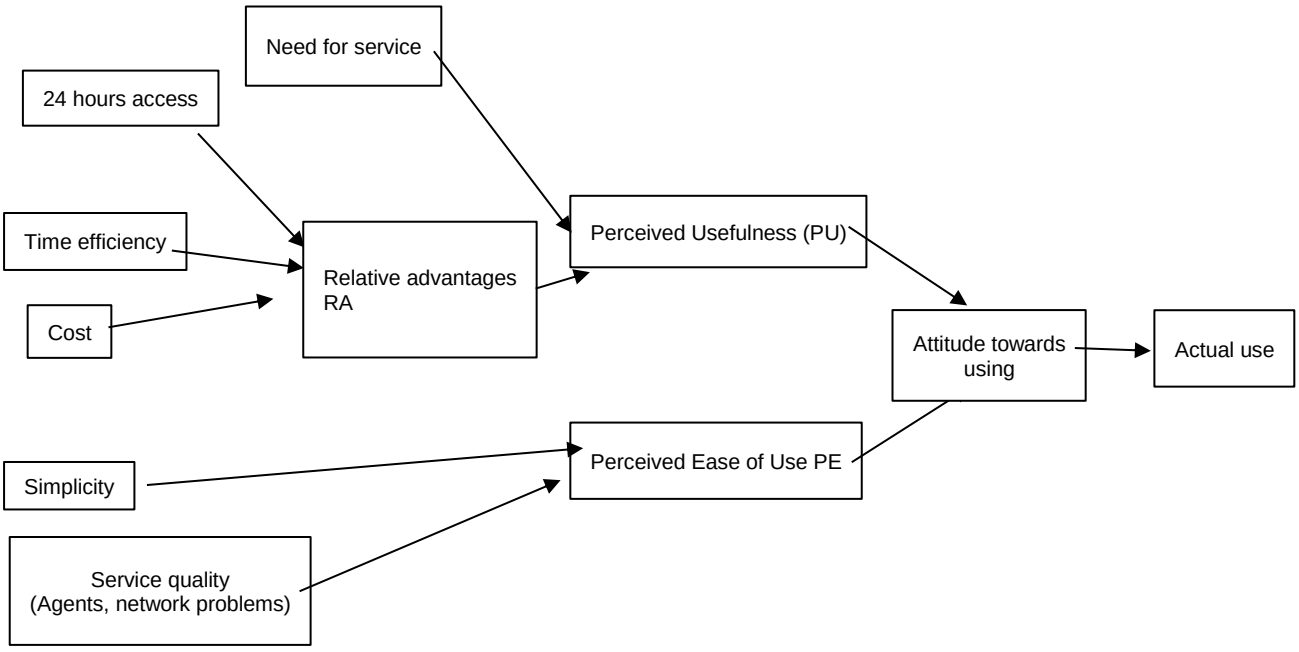

Figure 2: The Conceptual Framework

PU can be defined in a mobile payment context as the degree at which the consumer believes that the Mobile Money transfer will enhance his transaction (Chen, 2008).

Relative advantages (RA) can be defined as the degree to which an innovation is considered to be better than the practice it supersedes. Various literature has supported the fact that RA has been found to be one of the best predictors of the adoption of an innovation. It is therefore believed that when users perceived higher relative advantages, they perceive a higher level of systemic usefulness (Lee et al., 2011). According to Luarn and Lin (2005), the ultimate reason people exploit mobile money transfer is that they find them useful.

Some of the relative advantages that have been outlined by different scholars include

1. *Low transaction cost*- According to Donovan (2012) Mobile money is often successful because it is considerably cheaper than other alternatives to cash. In an international comparison of 26 banks, McKay and Pickens (2010) found that branchless banking (including mobile money) was 19 percent cheaper on average than alternative services. Conversely, where transaction costs are high, as in Botswana where the cost per transaction is a minimum of 8 pula ($1.07), mobile money has been slow to take root (Donovan 2012).

2. *Time efficiency*- Mobile money ability to save time. According to Nicholaus and Venkatakrishnan (2013) in the study to examine the challenges facing mobile money transfer services and their expansion in Singida, Tanzania. Some of the advantages respondents outline included elimination of manual paper works, reducing waiting in queues, saving time as transactions could be made anywhere at any time. The research recommended the reduction of Transaction charges to increase usage, penetration and expansion of mobile phone money services.

3. *Proximity*- According to Goss et al. (2011), Proximity is also crucial to provide ready access to funds and allow the frequency of use, affordability, and safety demanded by poor households.

4. *Security*- According to Goss et al. (2011), mobile money offers security that cash does not and could serve as a replacement for debit and credit cards. According to Donovan (2012) since mobile money is less visible than cash, mobile money also has consequences for privacy and autonomy.

Need for the service-. Mobile money has been reported to flourish in societies that have high need for remittances and informal transaction.

Perceived Ease of Use PE. Davies et al. (1989) defines as the degree to which an individual believes that using a particular system would be free of effort. According to Tobbin (2010), PE includes factors like it includes registration procedures, ease of use of the payment procedure, easy access to customer services, minimal steps required to make a payment, appropriate screen size and input capabilities Also, the availability of the Mobile Money transfer agents. In order to prevent the ‘‘under-used’’ system problem, Mobile Money transfer must be both easy to learn and easy to use (Luarn and Lin, 2005).

Mobility, According to Beth Jenkins (2009) Convenience of remote payment, remittance, and other financial services. Ability to transact at the convenience of a mobile phone and without the need to go to the bank.

2.9 Chapter Summary

Mobile money refers to the use of mobile phones to perform financial and banking functions. Various business models exist in the mobile money business; some mobile money services are offered entirely by banks, others entirely by telecommunications providers, and others involve a partnership between a bank and a telecommunications provider.

Mobile money systems have become popular because of the various benefits they offer to users and to the mobile money service providers. Most researchers have reviewed that affordability, convenience, security, 24 hours access are among the important benefits that users derive from mobile money.

Mobile money has been reported to be commonly used for P2P services, Airtime recharges, money transfers and savings. Different researchers have highlighted several reasons why most users are dissatisfied with the mobile money services. Among the most

common include agent networks for mobile money, float problems, fraud, and network errors. Most successful mobile money deployments were seen to have certain commonalities including enabling regulation, active usage, well managed agency networks and good market research.

Zambia has three major market players in mobile money: Airtel and MTN which are MNO led mobile money system and ZOONA an over the counter mobile money service. Other market players include Swift Cash, Zanaco Express, Xapit and many other bank-led mobile money services.

Different scholars have written on what factors they believe affect the usage behavior for different technological inventions. The Technology Acceptance Model (TAM) which was suggested by Davis Fred et al. (1989) suggest that user's motivation to adopt an information system can be explained by three factors, Perceived Ease of Use, Attitude towards using the system and Perceived usefulness.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter gives highlights of design for the research, study population, sample size, sampling design and methods. It also highlights the data sources, data collection instruments and methods. Lastly it explains data processing, presentation and analysis methods used in the research.

3.2 Research Design

A combination of cross sectional, longitudinal and qualitative phenomenological research design was adopted for this study. **Cross-sectional surveys** are used to gather qualitative data from users of mobile money services. **Longitudinal surveys** were used to gather data over a period from past journals, company statistics, brochures and newspapers.

3.3 Study Location

The study location that was chosen for the study is Lusaka district. Lusaka province has over 17.8% of the Zambian population with over 85.6% of its population living in the urban areas (CSO, 2014). Lusaka District had the largest percent share of the total provincial population with 79.7 percent (1,747,152) (CSO, 2012). Lusaka district was chosen because it has the largest number of mobile money agents and users, and also varied socio-economic features and distributions of mobile phone money operators, agents and users in the country, making it a best choice for this study. All the four Mobile Money Operators have their head offices in Lusaka. The head offices for the three mobile network operators are all in Lusaka.

3.4 **Sampling and Sample Size**

Purposive sampling was used when selecting oral interviews participants and when distributing questionnaires. The research focused on participants that had experience with mobile money so that they would share their experiences, usage patterns, motivations perceptions and behaviors.

Questionnaires were distributed to various mobile money agent points and be given at random to participants that are using mobile money services. Both high cost residential areas and low cost were targeted. Town center agents were also used as they had the best combination of respondents from diverse education, social and economic backgrounds. The criteria used to select the participants of this study were as follows: (a) Mobile Network Operators (MNO) which were currently offering platforms for Mobile Money in Zambia (b) Mobile Money Agents who were currently offering mobile money services, and (c) Users who were currently using mobile money services.

The size of the population included in the research (Sample size) was 200 customers, and 10 mobile money agents. 200 questionnaires were distributed to mobile money customers and 10 mobile money agents were interviewed. To ensure legitimacy and reliability and also representativeness of the sample, respondents were selected among mobile money consumers from different ages, educational levels, residence of rural and urban areas and both female and males. The sample was chosen proportionately amongst MNOs providing mobile money transfer services in Lusaka district, namely Airtel (Airtel Money) and MTN. Based on information from Zambia Information and Communication Technology Authority (ZICTA) as of December 2015, the market share for MTN was 45.7% and was 39.8% for Airtel. Zamtel was not covered as it was still in its infancy at the time of the

research and had poor market share as very few customers were found using its Zamtel Kwacha in the district.

3.5 Sources of Data

The study used two main sources of data as identified below:

3.5.1 Primary Source

The *primary data is data* collected afresh and for the first time, and thus happen to be original in character (Kothari, 2004). Primary data was acquired through interviews with respondents, observations and questionnaires.

3.5.2 Secondary Source

Secondary data are data sets that are already in existence, such as census data (Harrell and Bradley, 2009). Secondary data was obtained from Bank of Zambia (BOZ) reports Zambia Information and Communication Authority (ZICTA), MNOs brochures and websites, reports from other banks, textbooks, journals, Students research work, newspapers and many other secondary sources.

3.6 Data Collection Tools/Methods

The following were the data collection tools and methods used in the research:

3.6.1 Questionnaires

Questionnaires were used to collect primary data through a number of questions, which were given to a cross section of respondents. The questions were closed ended with the questionnaire mainly based on predetermined and standardized questions. Questions focused on the use of MNO mobile money offered by MTN and AIRTEL and also other

mobile money substitute services such as ZOONA, Western Union Money Gram and other services. The questionnaires had two sections. The first section focused on gathering demographic information about respondents which include age sex and education. The second section focused on gathering information concerning respondents' mobile money usage, benefits derived, and challenges associated with mobile money services.

3.6.2 Interviews

A technique called bracketing was used to formulate interview questions. Bracketing in this study entailed asking MNOs, mobile money agents and users to share their lived experiences with Mobile Phone Money based on the open-ended interview guides. This technique enabled the researcher to understand the subject.

Structured interviews were also carried out to interview MNO Agents. Structured - Follows a set of specific questions, which are worked through systematically. This type of interviewing style is used to collect information that can be comparable.

3.6.3 Observation

For this study the researcher had direct experience with mobile money systems in order to gain personal experience on the service. The researcher had to subscribe to MTN money, Airtel Money and using of ZOONA and Shoprite money transfer service. Elements that were of interest to the researcher among others included mobile money agent behavior and challenges, customer services, availability and awareness. Observation of different scenarios and nonverbal responses from respondents were also used to collect information**.**

3.7 Data Processing, Presentation and Analysis

Data was processed, presented and analyzed as outlined below:

3.7.1 Data processing

Data collected was coded and used as input to a statistical software package to enable analysis of the data. Data analysis packages like Microsoft Excel and SPSS were used for data processing. SPSS (Statistical Package for Social Scientists) is among the most widely used program for statistical analysis in social science (MacDonald et al., 2008). SPSS is especially useful when analyzing Quantitative data. Data obtained from questionnaires was coded and enter into SPSS for analysis. Microsoft Excel 2010 was used mostly for data presentation and on data that required the use of functions.

3.7.2 Data Presentation and Analysis

Data analysis is further defined as a process that implies editing, coding, classification and tabulation of collected data (Kothari, 2004). Tables and graphs were used to present the data. Trends and fluctuations in the data were used to determine results of research questions.

3.8 Chapter summary

A combination of cross sectional, longitudinal and qualitative phenomenological research design was adopted for this study. The study location that was chosen for the study is Lusaka district. Purposive sampling was used when selecting oral interviews participants and when distributing questionnaires. The size of the population included in the research (Sample size) was 200 customers, and 10 mobile money agents. Two main sources of data were used in the research, Secondary data sources such as Central bank reports, MNO

brochures and ZICTA publications. Primary data was acquired through interviews with respondents, observations and questionnaires. The data collected was analyzed and processed using SPSS and Microsoft Excel.

CHAPTER FOUR

PRESENTATION OF DATA FINDINGS AND ANALYSIS

4.1 Introduction

This research needed to investigate the usage of MNO-Led mobile money services in Zambia after the adoption of the services. The study investigated the following in more detail: the state of the mobile money industry; mobile money services, mobile money usage patterns and the challenges in expanding the mobile money usage.

Observations, questionnaires and interviews were used to collect the data. 200 questionnaires were distributed, and 112 usable questionnaires were returned making a response rate of 56 percent. This response rate was excellent and conforms to, Mugenda and Mugenda's (2003) argument that a statistically significant response rate should be at least 50%.

4.2 Demographics of Respondents

Demographical data was collected to understand the characteristics of the population. Data such as age distribution, banking status and mobile money subscriptions were analyzed.

4.2.1 Age distribution of respondents

In order to establish the most prevalent age group that had accepted taking part in this study respondents were asked to state their age. The results are presented in Figure 3 below.

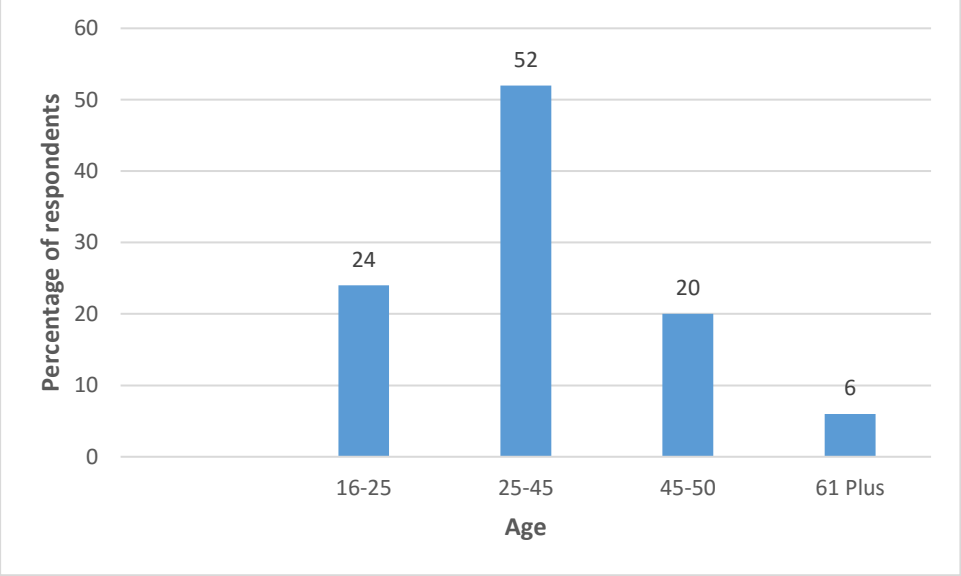

Figure 3: Age distribution of respondents

The age group that had actively adopted mobile money is between 25-45 years. This age group according to the 2014 Labour Survey Report on Zambia, accounts for 52.5% of the employed population of Zambia (CSO, 2015). The age group between 15-19 was on the other hand regarded to be the most economically inactive population with over 66.4% of the group inactive. The age group over 50 accounted for less than 2.4% of the economic activities in the country.

4.2.2 Distributions by network

Zambia has two major MNO mobile money services providers. Note that at the time of the research Zamtel had not introduced it mobile money service hence it was not analyzed in the research.

Respondents were asked to state which mobile money service provider they use when carrying out mobile money transactions. 56.9% of the respondents had Airtel as their mobile money provider. 22.5% where both MTN and Airtel while 20.60% had MTN as their service provider as demostrated in Figure 4.

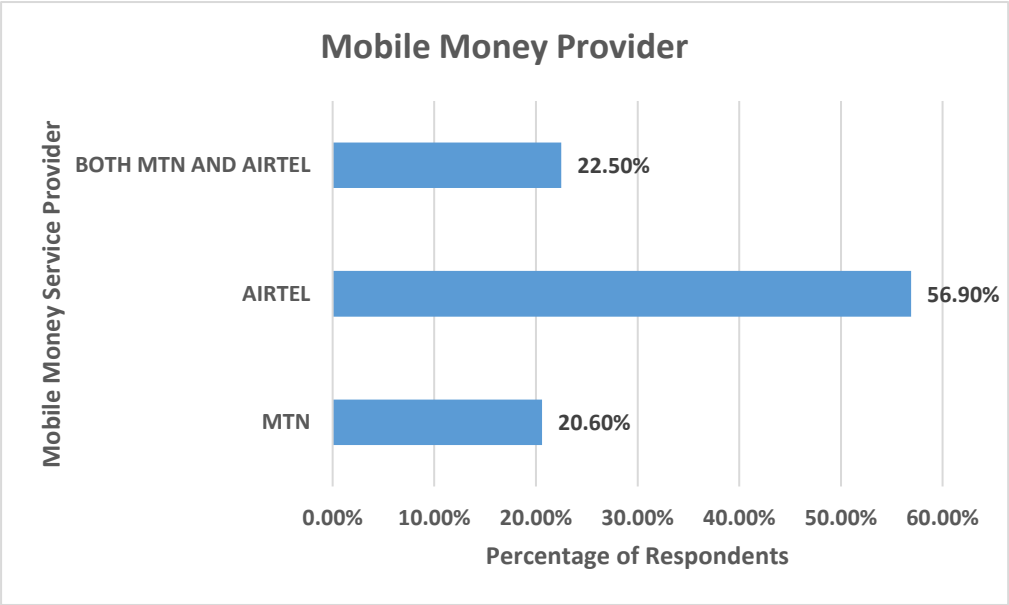

Figure 4: ***Distributions by network***

When mobile money was introduced in Zambia in 2011, Airtel had the widest coverage covering over 42.7% of the population while MTN had 39.1%. By March 2015, Airtel had the largest mobile money subscription base with over 4,185,470 subscriptions representing 112.5% of its mobile phone subscriptions, while MTN was reported to have over 1,070,549 representing 19% of its mobile phone subscriptions (Chisanga et al., 2015).

From the statistics provided by ZICTA, it can be noted that Airtel had the largest market share at the time of introduction of Mobile money in Zambia. Market dominance according to Kas Kalba (2013) attributed to the success of Mpesa in Kenya. Airtel money could have been adopted by most users as the Airtel network could have been the widest spread.

However, as of the first quarter of 2017 MTN had the largest share of mobile phone subscribers with 45% followed by Airtel with 39.8% with CelZ being the lowest at 14.5%.

The total number of mobile phone subscribers was 16,405,229 with only 12,429,675 of these subscribers active.

According to the statistics provided by ZICTA, the Network coverage for Airtel has remained the same as of the first quarter of 2017 while MTN has increased its coverage to 44.1% with Zamtel still covering only 27% of the population.

The market share for mobile Network operators in terms of mobile phone subscriptions in Zambia is evenly distributed. There is no market leader with a significantly large market share.

Airtel's high subscription could also have been attributed to what GSMA (2016) called the first-mover advantage. According to GSMA (2016), providers which are first in a market—have a subsequent competitive advantage in this space or if instead subsequent entrants see more success.

There is no interoperation among the market players and most interoperation attracts a significant charge. Airtel for example will charge K 3 for a transfer of over K 1200 to another Airtel money account while transfer to a non-registered number for the same amount will cost K35. There are no transfers from Airtel Money accounts to MTN mobile money accounts. This means that a person on MTN for example can only reach 51.8 percent of the MTN mobile phones of which only 1,070,549 have mobile money accounts representing 19.9 percent of all MTN subscribers. To avoid the charges users can be forced to switch between the products depending on who they are transferring money to.

4.2.3 Banking status

63.7% of the respondents are formally banked and have bank accounts while 36.3% have no formal banking (Figure 5). This could indicate that the banked are adopting mobile money more than the unbanked.

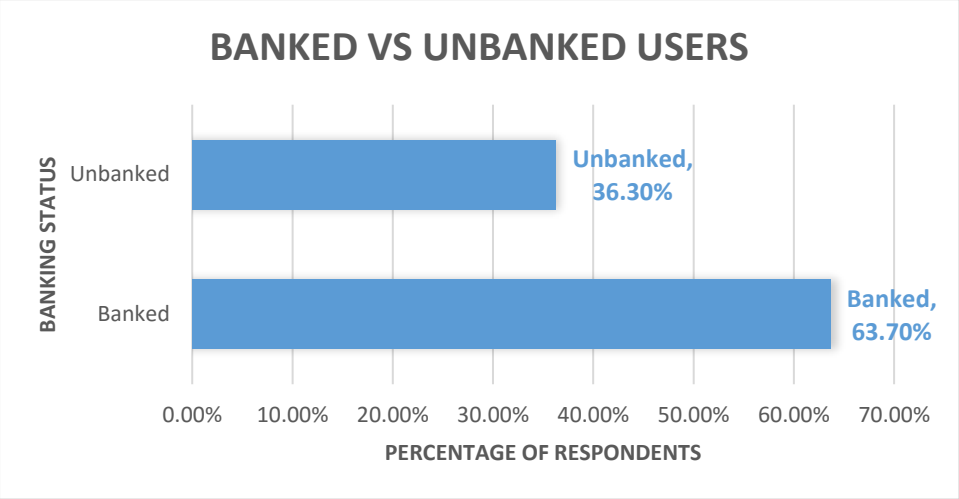

Figure 5: Distributions by banking status

Literature reviewed showed that in most countries mobile money is usually adopted more by the banked and not the unbanked. This result supports a statement in a research on Tanzania by the Intermedia (2013) which stated that Early adopters are likely to belong to members of urban and banked households, and households living on $2 to $4 a day (6 percent of each group). One reason could be that the banked are more financially literate than the unbanked hence they tend to be more accepting of the service. However, one thing to be noted is that mobile money has had population which was previously financially excluded start enjoying banking services. In Uganda for example, over 2 million adults who were previously unbanked are accessing financial services using their mobile phones (Orotin et al., 2014).

Zambia has high levels of unbanked population, according to the Central Bank of Zambia over 73% of the Zambian adult population was unbanked in 2012 when mobile money was introduced. According to Ernst and Young (2012), the lack of access to formal banking in the mass market in Africa opened the door for mobile operators to build successful mobile payment services. Further when market campaigns in Tanzania were target on the up class and banked population mobile money take-off was relatively slow. When the marketing for mobile money was revisited and targeted at the unbanked, Tanzania's mobile money Mpesa became the second country in the world after Kenya's Mpesa to reach over 1 million active user accounts. The unbanked market should therefore be captured as they have the potential to be the users of the mobile money system.

Literature shows that the banked usually have other more advanced payment options. For mobile money to appeal to the banked there is need for more innovative mobile money payment options. In Kenya for example as mobile money became more advance, the mobile money services providers extended the service to include ATM withdraws, point of services terminals, international transfers and savings through collaborations with Banks. In more developed nations like Japan and the USA, where payment infrastructure is well developed, mobile money could only compete favorably by creating innovative applications that could appeal to even the banked. The use of contact less mobile money application which the use NFC technology has made mobile money popular to be used to pay for transport fares, use mobile phone to check into airports, make purchases simply by putting the mobile phone close to a point of service device.

However, in order to achieve innovative mobile money applications, a nation needs to have a wide spread number of smart phones that are compatible with the technology otherwise the technology will not reach scale. According to the National ICT survey report

by ZICTA in 2015 only13.5 percent of the individuals that own mobile phones have smart phones.

4.3 Mobile Money Services in Zambia

In order to understand the various options available for mobile money users, the various services offered by MNOs and other mobile payment services were analyzed. Information was gathered through Interviews with Airtel and MTN staff and agents and brochures and MTN and Airtel official websites. MTN and Airtel have similar services such as Person to person transactions, Airtime recharge, and bill payment. Though in its infancy, Airtel has introduced international mobile payment to Congo DRC and Rwanda. Further MTN has partnered with ECOBANK to introduce ATM cash withdrawals and introduced MTN Kongola a credit facility that allows customers to borrow money to their mobile money accounts.

MNOs are not the only players in the mobile payment business. Other mobile payment solutions or substitutes exist in Zambia which offer similar or even more advanced services to those offered by MNOs.

Zoona, an over the counter service has been offering P2P transfers since 2009. It was in 2016 reported to have the widest market presence amongst all market players with support offices in South Africa and operations in Zambia, Malawi, and Mozambique. Zoona was in 2017 extended to offer bill payments, saving accounts called Zoona Sunga.

Mobile banking offered by most Commercial Banks offer person to person money transfers. Commercial banks like Barclays, Standard Chartered and FNB allow the customers to make free money transfers within the bank, money transfers to other banks, Airtime recharge, bill payments using their mobile phones. FNB and Barclays extends

their services to the non-members and unbanked using the ewallet service. With the ewallet service, customers transfer money from their accounts to any mobile phone number. The recipient can withdraw the transferred money at any ATM without using a ATM card from their respective bank. Most services offered by the MNO mobile money services are offered by banks. Table1 summarizes the services offered.

Table 1: Mobile money services by provider

Airtel Money Features	**MTN money features**	**ZOONA**	**Mobile banking features**
• Person to Person transactions • Airtime topup • Bill payment • Link Mobile money to bank account • Bulk payment • International payment to Congo DRC and Rwanda	• Person to Person transactions • Airtime topup • Bill payment • Bulk Payment • Credit facilities (MTN Kongola) • ATM cash withdraws	• Person to person transactions. • Bill payment.	• Mobile banking • Free money transfer within the bank. • Airtime recharge • Account to account transfers. • Bill payment • ewallet

Shoprite one of Zambia's biggest supermarket with over 25 stores country wide also introduced a money transfer service. With this money transfer service, customers can transfer money to any part of the country where the Shoprite supermarket exist.

Other money transfer services that exist that compete with mobile money include over the counter electronic money services such as Western Union, Money gram, Swift cash.

More and more services are migrating from manual systems to digital system. Pénicaud (2013) states that; to succeed in the mobile money services space, operators must remain

sensitive to the evolving nature of the mobile payments opportunity and execute their service strategies by leveraging existing strengths and growing new competencies to support a phased expansion. It is therefore important for MNOs to be in constant check of opportunities and threats in their environment in order for them to maximize the benefits of mobile money systems.

4.3.2 Comparison of MNO Mobile Money Services with Substitutes

Respondents who had used other mobile payment options were also asked to rate the different mobile money and money transfer services in terms of agent liquidity, cost saving, time saving, widely accepted and 24 hours access. Respondents were required to state the major advantage of each substitutes. 25% of the respondents stated that Shoprite money was highly liquid, while 23% and 11% stated that bank transfers and ZOONA were highly liquid respectively. When it comes to cost saving, 65% stated that using Shoprite money helped them save cost while 20% and 2% stated bank transfers and ZOONA respectively. 28% of the respondents stated that ZOONA was time saving while Shoprite and Bank transfers had 2% and 17% respective and 17% respectively. Over 49% of the respondents stated that ZOONA was widely accepted while 8% and 12% stated Shoprite money and Bank transfers respectively. 26% of the respondents selected Bank transfers as the only substitute that gave 24hrs access. Figure 6 highlights the comparisons of the various benefits obtained from different mobile money services and substitutes..

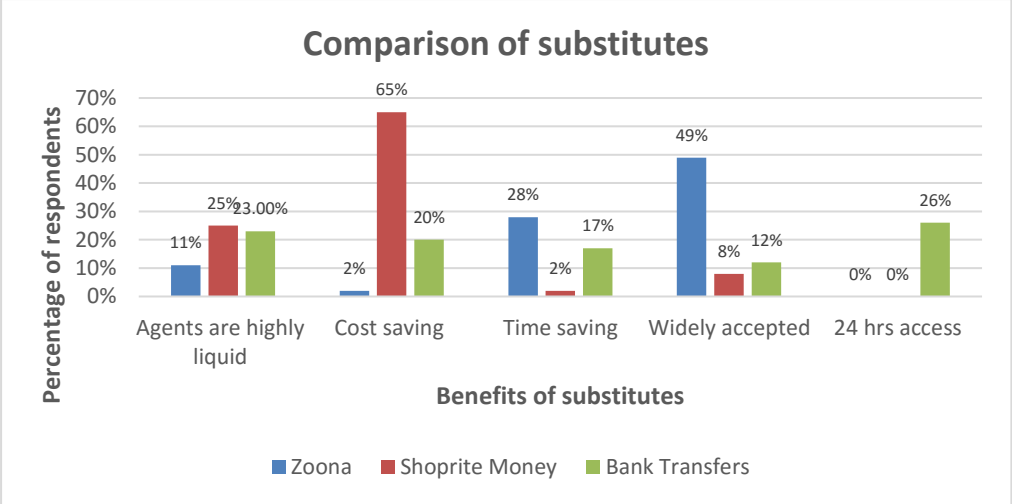

Figure 6: Comparison of substitutes

Desk research, brochures obtained from MNOs and observations of the price lists posted on the wall of the Agents shops revealed there were different tariffs for sending and withdrawing money.

Shoprite money had the cheapest rates as user could send different amounts at a flat charge of K6. See Tables 2 and 3.

Table 2 : Mobile money rates- Money transfer

	AIRTEL	MTN	ZOONA	SHOPRITE
Less than K10	K5	K5	K5	K6
Over K10- K150	K5	K5	K10	K6
Over K150-K300	K10	K10	K20	K6
Over K300- K600	K20	K15	K40-K55	K6
Over K600- K1200	K30	K25	K55-K100	K6
Over K1200	K35	K35	K150-K250	K6
Maximum amount	K3000	K5000	K5000	K5000

Table 3: Mobile money rates: Bill Payments

	AIRTEL	MTN
Less than K10	K1	K1
Over K10- K150	K1	K1

Over K150-K300	K1.5	K1.5
Over K300- K600	K2.5	K2.5
Over K600- K1200	K3.5	K3.5
Over K1200	K3.5	K3.5

From the finding above, it is noted that there are many substitutes for MNO mobile money in Zambia that offer services similar to those offered by MNO mobile money services. The major difference is MNO mobile money can operate without the need for an agent and bank account. Transactions are not limited to terminals or point of service points. Once money is deposited in a mobile money account, transfers, purchases, bill payment and many other transactions can be done by using a mobile phone. The service can be accessed by anyone with a mobile phone number by simply creating a mobile money account. Substitutes like Shoprite money, ZOONA, Swift cash, mobile banking have a common weakness of requiring all transactions to be over the counter. Money must be given at the counter of the agent who will make the required transaction on behalf of the customer. Transactions are mostly limited to money deposits, transfers and withdraws.

However, most of the substitutes have significant advantages which give them strength to compete favorably. Shoprite Money for example was regarded the cheapest of all money transfer solutions irrespective of the phone network or banking status of the recipients. Shoprite money has an all-round figure of about K7 for any amount up to K5000. Secondly the Shoprite money transfer service is considered to be highly liquid. For this reason, it becomes a popular choice when money is being transferred to a recipient without a mobile money account or where the liquidity of a MNO agent point is doubted. However, it is common that one Shoprite store services an entire town which make the process of sending and receiving money through the service tedious and time consuming.

49% of the respondent stated that ZOONA had the widest coverage. Even though ZOONA seems to have the highest tariffs, it has the advantage of wide coverage including in rural

areas. ZOONA formerly called MT was established to aid rural farmers with the payment of for their produce. ZOONA later extended its service to include Peer to peer transactions. ZOONA agents are found where people reside hence are preferred in times when time and convenience is the main factor of consideration. ZOONA is not mobile network specific and can be used by anyone without much documentation.

Banks are usually the most liquid of all the services that offer e-money services. However, they have most services only available to their customers. Bank transfers are convenient as they eliminate the need for agents that is there is no need to withdraw money from the main bank account to deposit to a mobile money account in order to make a transfer. The e-wallet services have helped to eliminate the challenge of failure to service non-customers as non-bank customers can enjoy banking service in banks like Barclays and FNB.

Airtel money and MTN money have the advantage of having the widest coverage in terms of recipients and eligible users and being relatively cheap and easy to use. However, the most common challenge with the two services are agent liquidity and the services not being widely accepted. As a result, use is usually limited to money transfers and airtime top-ups.

Interviews with respondents reviewed that user switch between different mobile money services and substitutes depending on their current needs and the service that best satisfy that need. If a mobile money services only satisfy just some needs, usage will also be limited to just those needs even though adoption is high.

Information obtained from Safaricon website on Mpesa reviewed that Mpesa has partnered with banks to allow for ATM withdraws which has enabled Mpesa users to have 24 hours access to accounts and helped improve liquidity. Other facilities that Mpesa

offers include bank transfers to mpesa accounts, Credit facilities, international money transfers through partnership with money transfers businesses like Western Union, payment for bus tickets, saving accounts and many other facilities.

4.3.3 Agency network

According to Helix (2016) report on Agent Network Accelerator Survey on Zambia, Zoona currently holds the largest share of market presence (33%), followed by MTN (2 7%) and Airtel (27%). Zoona 36% in Lusaka, Airtel 29% and MTN 25% in Lusaka, Rural MTN 29%, Zoona 27 and Airtel 26%.

Data from the IMF's 2016 Financial Access Survey shows that Zambia has a lower overall density of financial access points (per 10,000 adults) than that of South Africa, Botswana, Kenya, and Zimbabwe. Mobile Money Agents per 100,000 adults in Uganda was found at 540, Tanzania at 924 while Zambia had 219 (IMF FAS, 2015).

Mpesa in Kenya, a MNO-led mobile money system achieved competitive advantage by carefully managing it agency network. Mpesas agency network grew in tandem with the user subscriptions. As a result, Mpesa was widely acceptable.

4.4 Mobile money usage patterns

4.4.1 Mobile money transactions

Airtime recharge was the most predominant used for mobile money where about 89% of the respondent stated having had used it. 54% of the respondents have used mobile money for fund transfers and 50% have withdrawn money. Only 26% of the respondents have used mobile money for bill payment. Saving and purchasing were the least used services

where only 16% of the respondents stated using. Figure 7 highlights the transactions performed by the respondents.

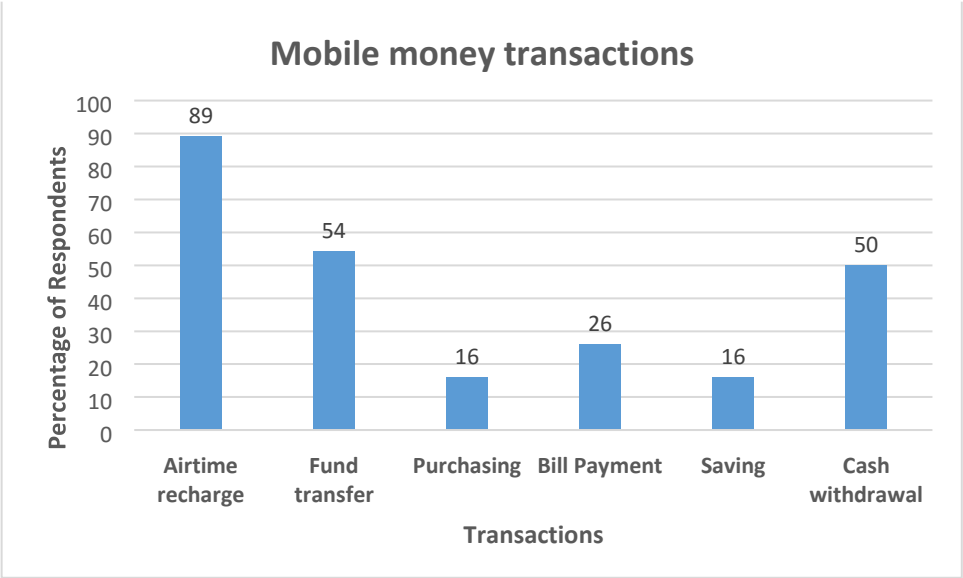

Figure 7: ***Mobile money transactions***

Since purchases make the bulk of day to day transactions mobile money has not replaced cash or other forms of payment as a mode of payment.

The results are similar to those of the GSMA (2015) where Airtime top-ups represented the largest share of total mobile money transaction volumes and were the most frequently transacted product (GSMA, 2015).

However, airtime recharges exemplify the least value to the mobile money system. MTN for example charges between K1- K3.5 transaction fee for payment of bills using Mobile money, charges between K2.5-K30 for withdraws and K5-K35 for transfers to non-users. Airtime top up are however free and do not attract a charge using Mobile money.

A research by Pénicaud (2014) also identified airtime top-ups as the most common transaction, but P2P transfers represent most of the value transacted. For mobile money to be of value there is need to increase on the transactions that add the most value.

There is little awareness of other features offered by Airtel Money and MTN money. 73.6% of the interview respondents for example where not aware of services like MTN Kongola, international transfer to Congo DRC and Rwanda. They were also few retailers that accepted mobile money. People was also not aware that mobile money can be used as a substitute for cash in many retail businesses.

4.4.2 Money transfers within or outside Lusaka

In order to establish the flow of remittances in mobile money use, respondents were asked to state where they generally transfer money. Over 69.61% of the respondents stated that they generally transferred money outside town while 30.39% generally transferred money within town as shown in Figure 8.

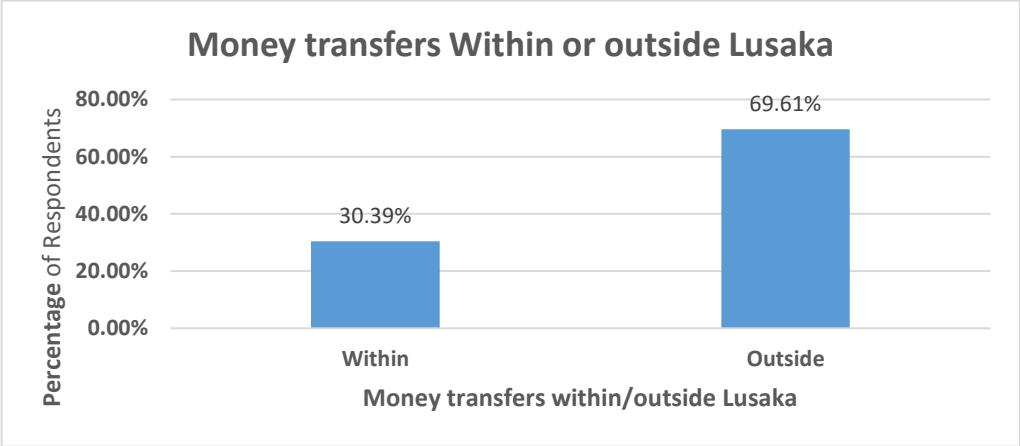

Figure 8: Money transfers within or outside town

Results indicate that most respondents opt for mobile money transfer when the need to send money outside town.

4.4.3 Method of Transfer/Area

Respondents were further asked to state which mobile money service or substitute they use when sending money to different areas in the country. The result may indicate whether customers switch between products or use one product for all their mobile money transfer needs. The results of the survey are illustrated in Figure 9.

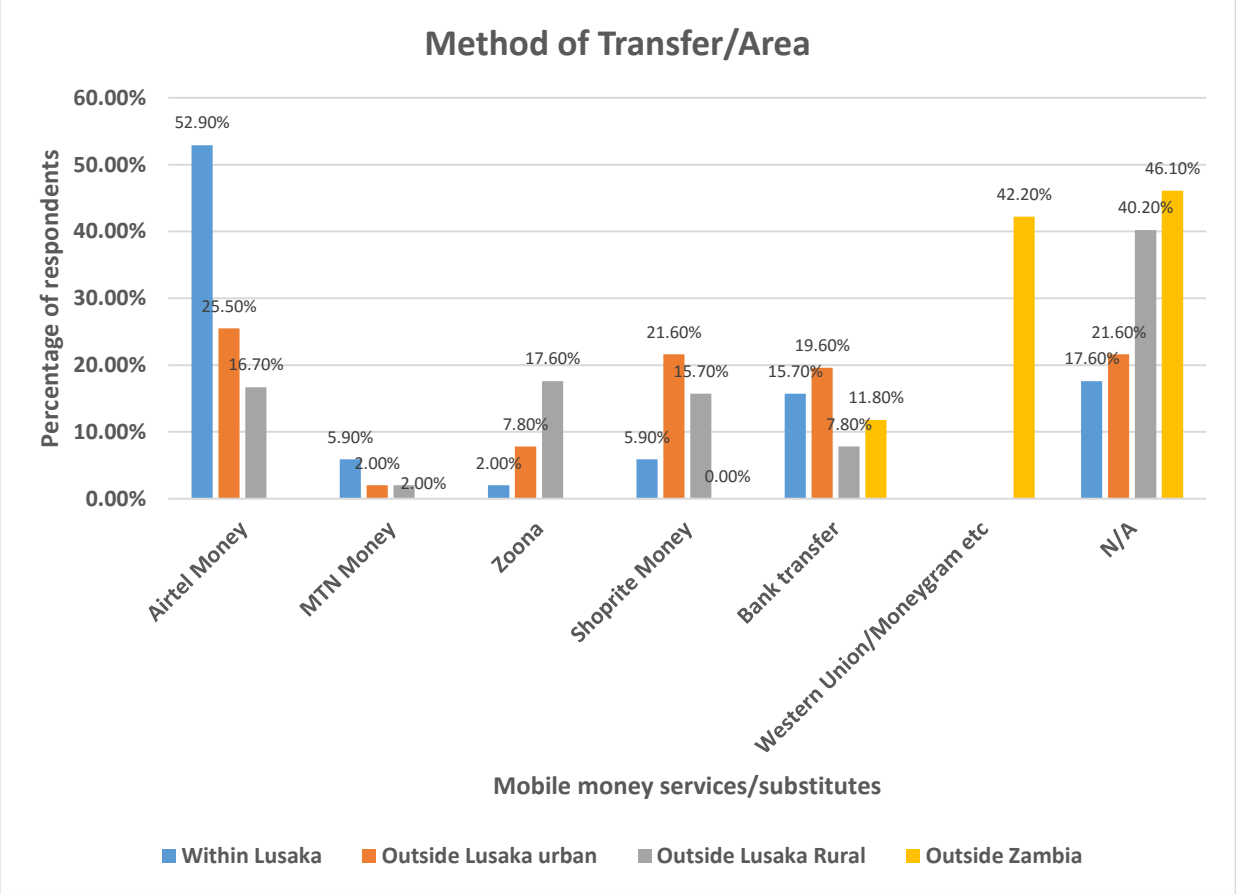

Figure 9: Method of Transfer/Area

Results indicate that 52.9% of the respondents used Airtel Money within Lusaka and only 25.5% and 16.7% used it in Urban areas outside Lusaka and rural areas respectively.

Airtel was first introduced in Lusaka while MTN was launched on the Copperbelt. Airtel is likely to have a strong presence in Lusaka hence it is possible that's the reason Lusaka users prefer using the service. Secondly Airtel has the largest number of mobile money

subscribers in the country accounting for over 79.8%. The research did not however go into details to investigate why Airtel was preferred for most transfers within Lusaka.

ZOONA on the other hand had 2% within Lusaka, 7.8% outside urban areas and 17.8% in rural areas. ZOONA was the most preferred payment option for transfers in rural area. This was probably because ZOONA was first introduced to aid rural farmers with payment hence was more preferred and had a strong presence in the rural areas. ZOONA was as a preferred by 17.6% of the respondent for rural remittances.

Shoprite money increased from 5.9% within Lusaka to 21.6% in outside urban areas.

None of the respondents had used MTN money for international remittances. The most preferred transfer method outside Zambia was Western union or money gram.46% of the respondents however stated that transfers outside Zambia were not applicable to them.

Interviews with respondents reviewed that users switch between different mobile money services and substitutes depending on their current needs and the service that best satisfy that need.

4.4.4 Recipient of money transfers

65% of the respondents stated that they generally send money to family members. 16.7% send their remittances to friends as outlined in Figure 10. The results could indicate the presence of split families which research has shown to be an attribute that has led to regular use of mobile money in Kenya and the Philippines.

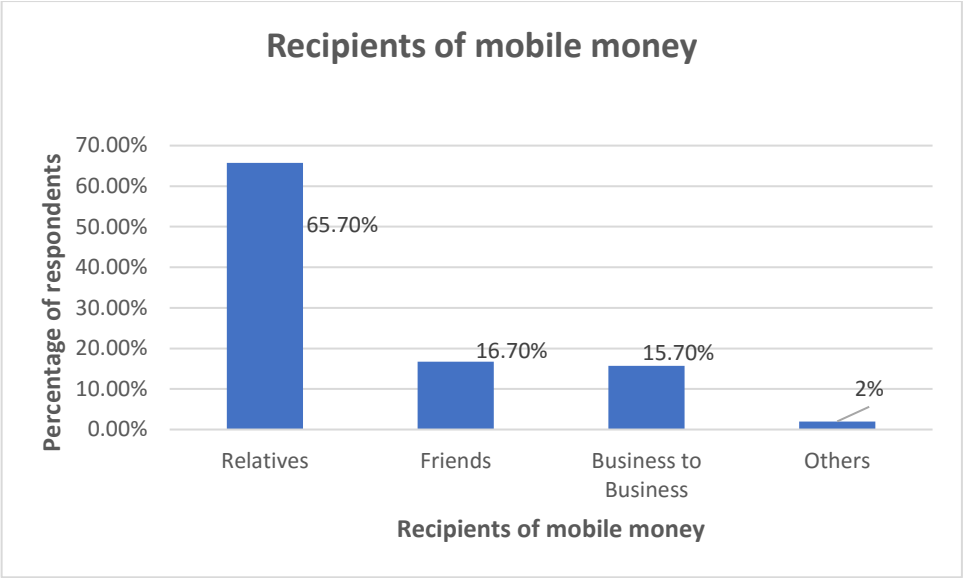

Figure 10: Recipient of money transfers

4.4.5 Frequency of use

In order to establish the frequency of use of MNO mobile money services, respondents where requested to state whether they would categorize their mobile money usage as weekly, monthly and occasionally. 58.8% stated they use mobile money occasionally, 21.6% stated monthly and 19.6% weekly (Figure 11).

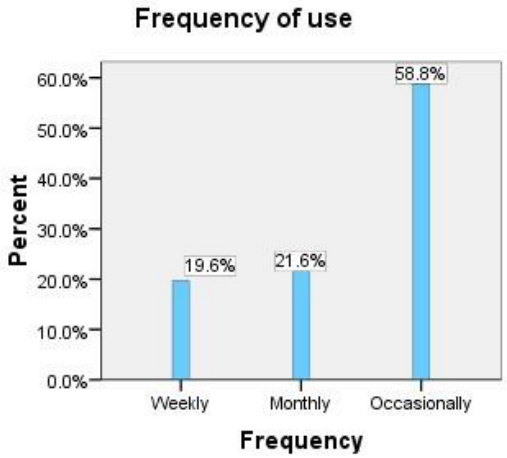

Figure 11: Frequency of use

According to Pénicaud and Katakam (2014), Active customers perform transactions and drive revenues, while inactive customers only incur costs. In order for Mobile Money systems to be valuable to a service provider, its users have to perform transactions otherwise they will be a cost to the MNO. Although the transaction fees that mobile money providers charge are individually quite small, in total, they can represent an important revenue source. Fixed cost used to maintain and setup the mobile money business are fixed whether or not subscribers are using the service. Registration is in most cases free hence each registration incurs a possible cost that can only be retrieved if the recouped mobile account makes transactions.

4.5 Benefits of Mobile Money

4.5.1 Most important benefits of mobile banking

In order to establish why customers are using mobile money, respondents were asked to state what benefit they derived from using mobile money. 55.9% stated that mobile money services helped them save time while 22.5% stated cost saving. 15.7% and 5.9 stated 24 hours access and physical security respectively. Figure 12 shows the most important benefits of mobile money highlighted by the respondents.

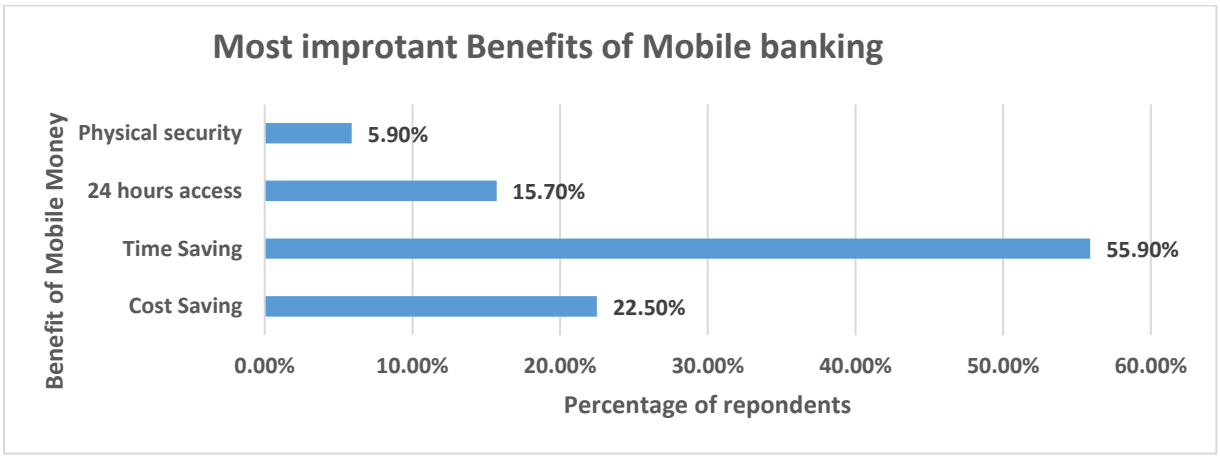

Figure 12: Most important benefits of mobile banking

Analyzing each of the benefits on a scale of 1 to 5, 1 being 'Very low' and 5 being 'Very high', 60% of the respondents regarded mobile money to be average on 24 hours access and only 22% rated it very high. 38% rated mobile money very high on time saving while 31% rated it very high on cost saving. 43% regarded mobile money very high on security (Figure 13).

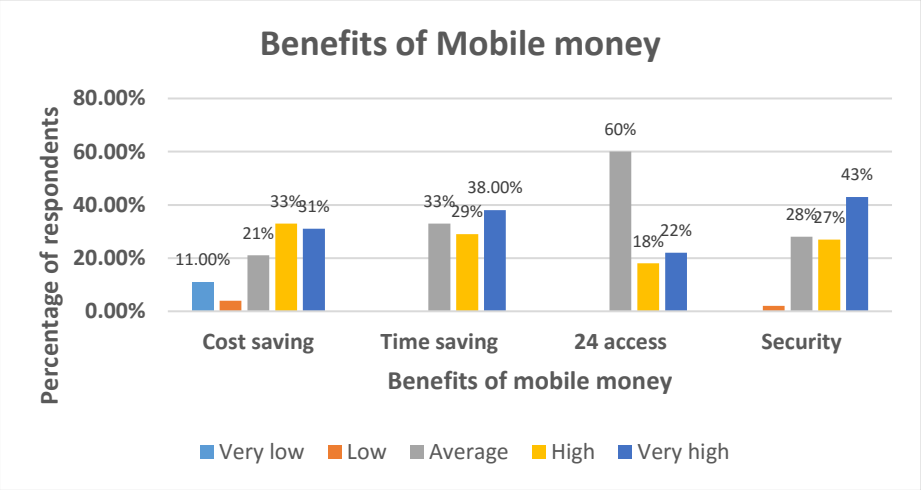

Figure 13: Analysis of benefits of Mobile money

60 % of the respondents stated that MNO MM was average on 24 hours access. This could be because most mobile money agents are closed by 6 Pm and only opened at 8 Am on weekdays. The agents open on Saturday from 8 to 13 PM and are closed on Sundays. Most respondents complained that there were unable to have 24 hours access to their funds and the service especially when they needed to make withdraws and deposits.

Mobile money is also excellent on time saving as long as money has been deposited in the mobile account. Most respondent started that the face delays when they had to withdraw money from other accounts to deposit to mobile money accounts. 86% of the respondents strongly agreed that linking mobile money to their personal bank accounts would improve their mobile banking experience.

4.6 Reasons for Low Usage Among Users/Challenges

In order to understand the challenges faced by user in using mobile money, respondents were asked to state which of the stated challenges was true to them. Further the technical ability of the users were analyzed to examine the type of users that are using mobile money.

26% of the respondent stated that the major reason for their low usage of mobile money was that it is not widely accepted. 23% stated lack of awareness while 9.8% and 7.8% blamed the liquidity of agent and cost respectively. Figure 14 highlights the challenges outlined by the respondents.

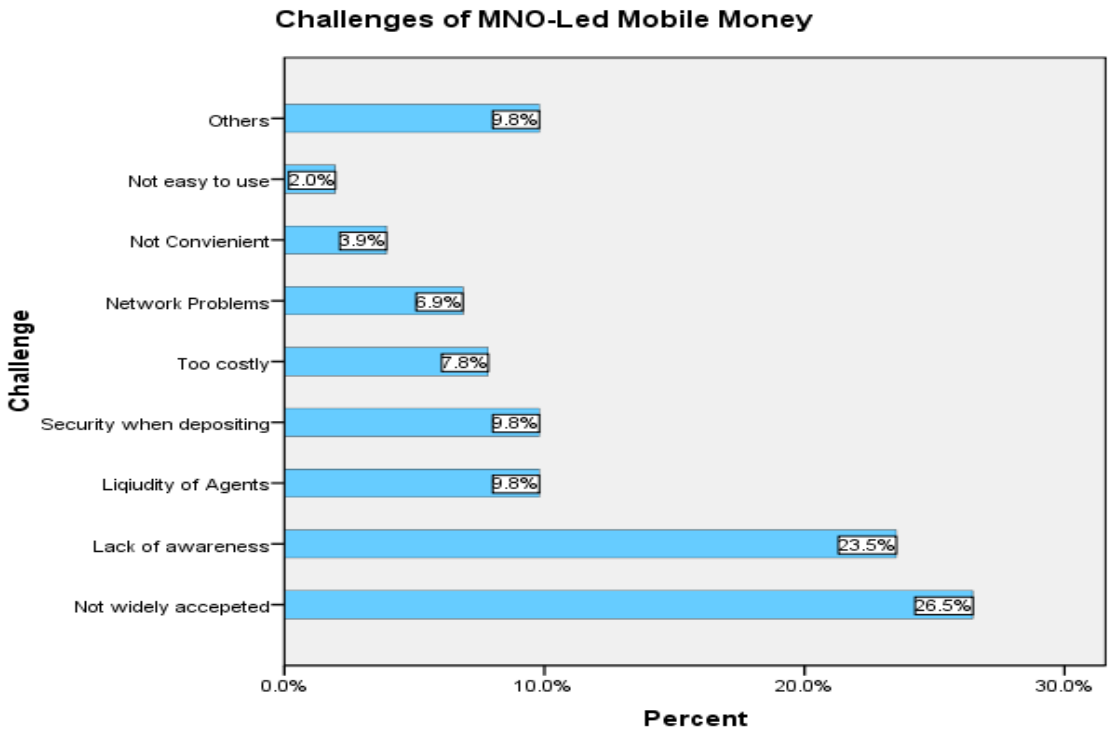

Figure 14: Reason for low usage among users

Analyzing the challenges from the banking status of the respondents, the major challenge faced by the banked respondents is that it is not widely accepted while the major challenge

by the unbanked was the lack of awareness. Figure 15 highlights the challenges according to the banking status of the respondent.

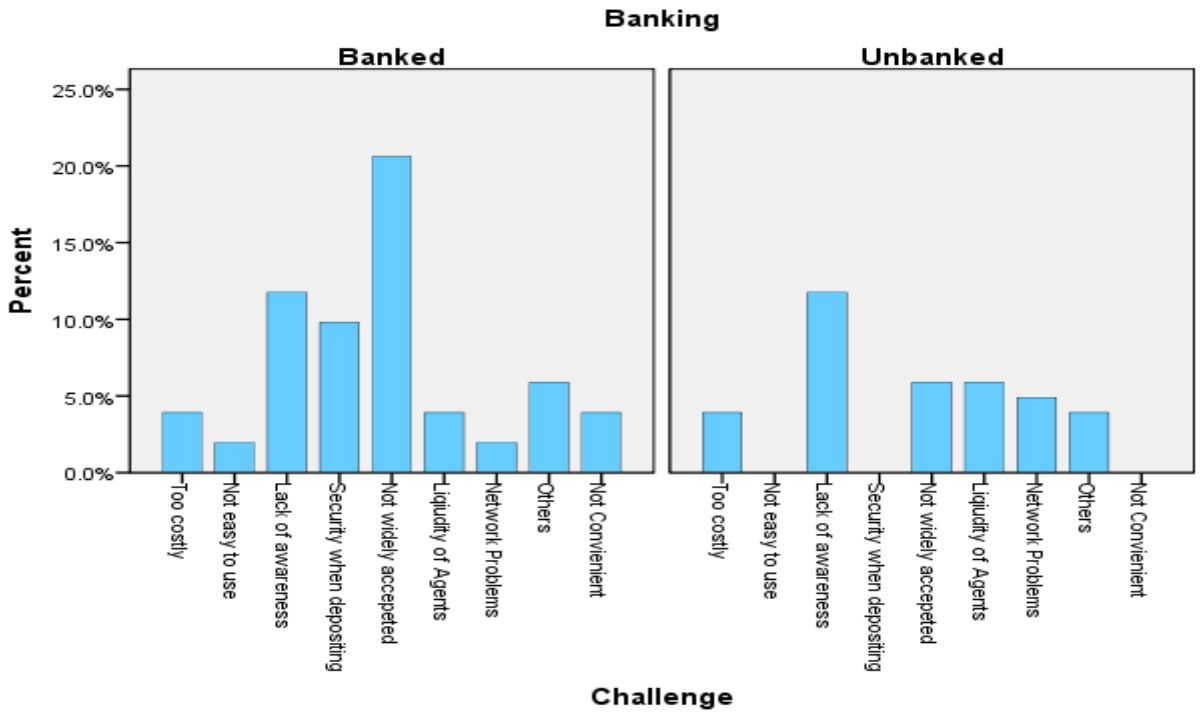

Figure 15: Reason for low usage among users by banking status

MNO Mobile money agents are found in most neighborhoods. Customers can make deposit and withdraws at locations walkable to their homes. Mobile money hence saves most users the time they would have had to deposit money in bank accounts or through other means.

There is little awareness of other features offered by Mobile Money service providers. Most of the respondents for example were not aware of services like MTN Kongola, international transfer to Congo DRC and Rwanda and bank transfers to mobile accounts. Respondents were also not aware that mobile money can be used as a substitute for cash in many retail businesses. Further, respondents interviewed on queues for bill payment believed that bills where cheaper when paid at the provider's outlet than when settled

through a mobile money agent. This was however contrary to the findings from the interview from ZESCO.

Using the observation technique, the researcher approached 10 agents to deposit and withdraw mobile money. 3 mobile money agents stated they could only take a specified amount as they had reached the limit for deposits. 2 stated they couldn't take in any more cash deposits unless someone withdraw an amount. Mobile money agents are given a specific amount of float they should handle at each agent point. There should always at every point be less than the limit. If the limit is exceeded no deposits can be made hence customers are turned away with cash. Agents in less busy areas where always available to take in deposits but always low on cash for withdraws.

Some agents were observed to charge K5 Kwacha for registration for mobile money account which is contrary to the terms and condition provided by MTN mobile money and Airtel money providers. The agents preyed on the ignorance of customers to charge them for services that where in fact free. Upon refusing to pay the K5 registration fee because it was free, the agents were willing to create the account for free. According to the findings of a research by Bill and Melinda Gates foundation in 2016 on Mobile Money in Zimbabwe, most merchants, Small and medium-scale pass on cash-out fees to customers, in addition to the fee for the transfer, reducing the incentive to use mobile money and causing cash to remain the primary medium for day-to-day transactions (Bill and Melinda Gates, 2016).

The researcher however did not experience any challenges using the network to purchase airtime, pay utility bills and pay TV. However mobile money was rarely accepted as a mode of payment for purchases and services. Only one out of 5 shops accepted the use of mobile money for payment even though they required that the researcher goes to the

nearest agent with an employee of the shop and make a withdraw to pay for the service and not make a direct mobile money transfer. Making a withdraw to make a payment will entail that the researcher incurs a cost for the withdraw.

Technical ability of respondents

The technical ability of the respondents was also analyzed in terms of respondents' ability to use an ATM, Mobile phone, ability to transact without help, ability to transact with help and also their ability to understand the mobile money menu. On a scale of 1 to 5, 1 being not at all true and 5 being very true, the ability of respondents was analyzed. 26% of the respondents strongly agreed that the mobile money menu was easy to while 46% selected true. 19% selected sometimes true and sometimes not true. Over 70% of the respondents were able to use the mobile phone very well, while 60% of the respondents stated that they could use an ATM machine very well. 36% of the respondents were able to transact very well without the help of an agent while 27% and 30% selected true and sometimes true and sometimes not true respectively (Figure 16).

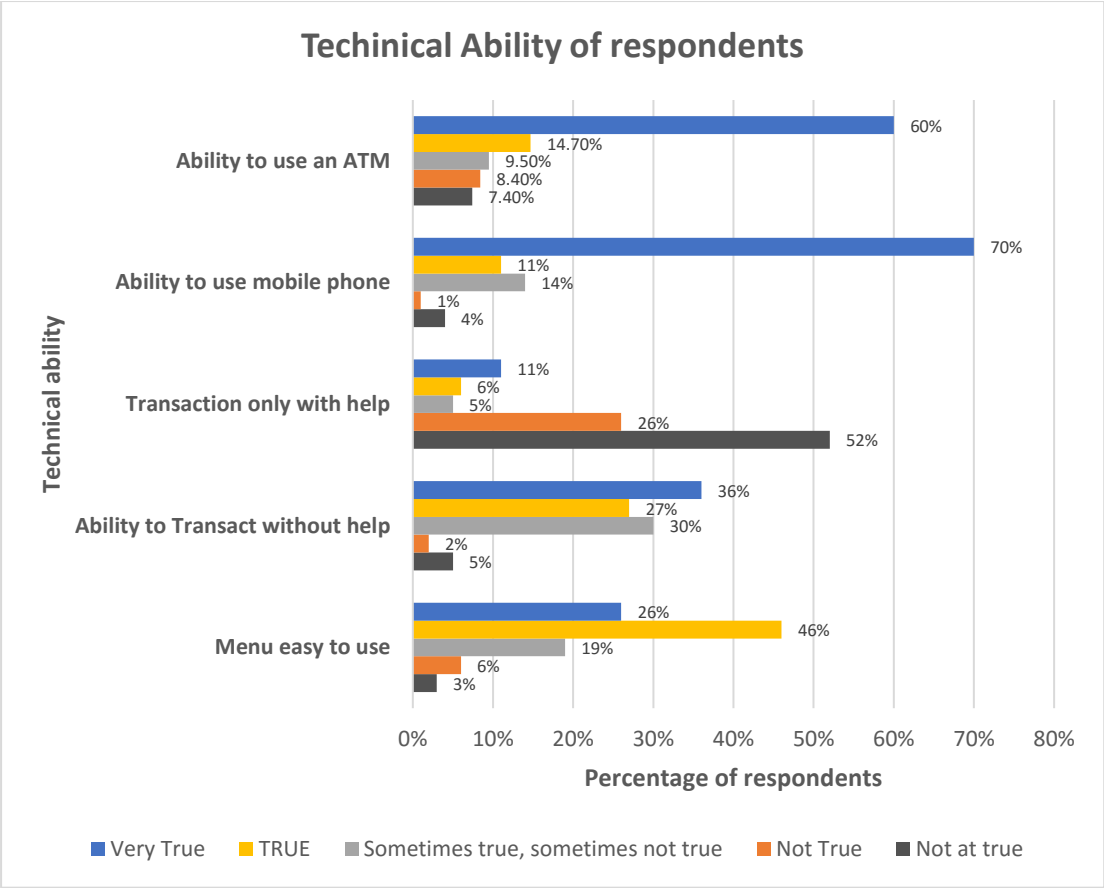

Figure 16: Technical ability of the respondent

Analyzing the technical abilities of most respondents, we notice that over 46% strongly agreed that the mobile money menu was easy to understand. 70% were able to use a mobile phone with absolute ease. 60% could use an ATM with ease. Only 3 percent of the respondent strongly disagreed that the mobile money menu was easy to use. This could indicate that the challenge most users are facing has little to do with the technical abilities.

Analyzing the various challenges faced by most respondents in the use of mobile money we notice that it is not enough for people to just have a phone but there is also need for an agent where people can be able to withdraw and deposit money. Agents also need to be liquid at all times as they can discourage customers. 26.5% stated that they would use mobile money more if there were more agents that accepted mobile money. Further 9.8% of the respondents strongly agreed that the liquidity of agents was one of the major

problems they face using mobile money while 3.9% stated network problems. The poor network signal connecting mobile money agents also made it difficult to access funds. The limited use available for money stored in mobile money accounts was also a source of concern amongst most respondents. The agent network for MNO operator is not well developed that storing money in mobile money account may lock in money when it is needed.

Even though mobile money is meant to help the unbanked population access to banking services, the research reviews that the banked have adopted it more than the unbanked. The unbanked mostly seem to be adopting mobile money when they are receiving money and. 80% of them are occasional users. Most of the unbanked respondents stated that three major challenge to using mobile money service is the lack of awareness.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

This chapter presents the conclusions and recommendations arrived at after discussion of the results of the study.

5.1 Conclusion

The use of the mobile phone for financial transactions has been a growing trend in the world. Not only has Mobile Money services brought advantages of convenient, cost effective and instant payments, it has also accounted for reduced staff and paper-based transactions, a feat which has saved most organizations large sums of money and time.

Mobile Money usage in Zambia has been reported to be low by various researchers. The Times of Zambia Newspaper (times.co.zm, 2015) reported that there were only about 2-5 per cent of registered mobile money active users in Zambia. According to the Zambia National Financial Inclusion Strategy report (2017), only 250,000 (2.2% of the adult population) of the 8.5 million unique mobile subscribers were active monthly mobile money users in 2015. By comparison, 31% of adults in Uganda had used mobile money in the last 90 days, and in Tanzania 53% had an active mobile money account, in 2015.

This study investigated the usage of MNO-Led mobile money services in Zambia. The main objective of the research was to determine the reason for the alleged low usage of mobile money. The research questions aimed to establish the state and types of mobile money services in Zambia, identify mobile money services usage patterns, determine benefits users are deriving from using mobile money, establish the challenges faced by users of mobile money.

The research reviewed that in Zambia mobile money is offered by different business entities including Banks, Mobile Network operators, and other collaborations between financial Institutions and MNOs.

Mobile money in Zambia has been in existence since 2001 when Celpay introduced mobile phone transfer payments. Due to regulation from the Bank of Zambia on the Know your customer requirements, mobile phone transfers where mostly limited to B2B transfers and could not be extended to include P2P transfers. In 2012, the Bank of Zambia signed a memorandum of understanding to allow non-financial Institutions to carry out banking functions with minimal KYC requirements. This was followed by the introduction of MNO-led mobile money business. Airtel Zambia was the first MNO to introduce mobile money through an independent company called Airtel Money. MTN in 2012 also introduced Mobile Money under MTN mobile money.

Zambia has three MNO operators Airtel, Zamtel and MTN. MTN, according to the statistics obtained from ZICTA has the largest market share of mobile phone subscribers at 45.5% followed by Airtel and Zamtel with 39.8% and 14.5% respectively. The mobile penetration rate in Zambia stands at 64.5 percent. MNO led Mobile systems can reach everyone that has a mobile phone hence should be able to reach about 64.5 percent of the population.

At the time of research only two of the MNOs had mobile money services. CellZ introduced mobile money called Zamtel Kwacha in July of the year 2017 which is still in its infancy and could not be included in the research.

Market share for MNOs is evenly distributed with no significantly dominant market leader. This means the Zambian population is split on which network they subscribe to. MTN the largest for example is only able to reach 45.5% of the population and users may

incur extra cost to reach the other 55.5% if they had to use MTN as the provider for the MM service. This can pose a barrier to successful growth of one mobile money service as it is impossible to serve the entire population with one mobile money service. Since interoperation does not exist or if it exists, it invites an extra cost, users switch amongst the services depending on their needs. Users may subscribe to mobile money from all operators to avoid the extra cost that are incurred due to cross network transactions. As a result, no mobile network operator can record maximum use. Kenya's M-pesa on the other hand had over 79% market share hence could achieve maximum scale as it could be used almost across the entire population. This means that even agents will set up cash in / out points for the service that is likely to be used in an area otherwise will incur losses.

Data from the IMF's 2016 Financial Access Survey shows that Zambia has a lower overall density of financial access points (per 10,000 adults) than that of South Africa, Botswana, Kenya, and Zimbabwe. Mobile Money Agents per 10,000 adults in Uganda was found at 540, Tanzania at 924 while Zambia had 219 (IMF FAS, 2015). The number of agents and partners that accept mobile money payment in Zambia is low. The research reviewed that over 90 % of the merchant approached did not accept mobile money.

The research revealed through questionnaire and interactions with respondents that the most prevalent age group of users is the ages between 25-45. This age group according to the CSO is the economically active population. Most users of mobile money are occasional users and do not use the service either daily or weekly. Further, most mobile money transfers are between family members who are outside Lusaka town.

MNOs in Zambia offer several mobile money services such as P2P transfers, Airtime recharges, Bulk disbursement, Credit facilities, ATM cash withdraws and International payments. However, the most commonly used services are fund transfers and airtime

recharges. Mobile money accounts are least used for savings and purchases. Users are not aware of some services or have substitutes that they derive more benefits. Most mobile users were mostly using the service occasionally, using it at least once, more than monthly. The number of merchants that accepts mobile money is limited. Even though users adopt mobile money services, they discover they cannot use it.

The study found that like other countries such as Kenya and Tanzania the banked users were adopting mobile money compared to the unbanked. The research respondents acknowledged the benefit that mobile money brought to their lives. The most important benefit of mobile money being its ability to save time followed by its ability to save cost. Other benefits highlighted included 24 hours access and physical security.

The research reviewed that the major reason why most users where discouraged from using MNO mobile money was because it is not widely accepted. Other challenges faced users include lack of awareness of the service, challenges with the agents and costs.

People are not aware of many services. MNO Mobile money in Zambia has heavily been branded as a money transfer and bill payment service. Even if some retail shops have incorporated mobile money services, most users are not aware of such services.

Zambia has other mobile or substitutes money services apart from the one for MNO such as ZOONA, Shoprite Money, Bank e-money services, Post office transfers, E wallet service etc. The research reviewed that each of these services have a significant advantage which makes them compete favorably with MNO mobile money services.

Most mobile money substitutes have advantages that make them compete favorably with MNO mobile money services such as high liquidity and convenience. Bank e-money service for example eliminate the need for agents and are highly liquid hence they became

the most preferred for most banked users. Further the bank innovation called e-wallet has led to bank e-money services to be extended even to the unbanked user. Substitutes having significant advantages over MNO money services make it easy for most users to switch between products depending on their needs. As a result, no mobile money service can reach scale.

This research concludes that market for mobile money in Zambia is fertile. The low levels of penetration of formal financial services and the high urbanization entails the possibility of fertile ground for MNO led mobile money system. The research found mobile money adoption in Zambia is high and that mobile money usage in Zambia is low because of limited usability and acceptability of the service and poorly developed agent network.

5.2 Recommendations

From the findings and conclusions of this research, it is highlighted that there is no one MNO-led mobile money service that can serve the entire population. This causes users to switch to other products that are cheaper, suitable or available. There is therefore need for interoperation between the various mobile money service companies. Since there is no dominant mobile network operator achieving scale is impossible as customers will switch between products depending on where and to whom they want to transact. If major players can partner and remove inter-operator charges, then mobile money can be widely used and accepted in different parts of the country.

According to this research, the use of mobile money services has also been low in Zambia because of mainly the poorly developed agent network which has made mobile money not widely accepted. There is need therefore for network operators to find a way to increase the number of agents and also be innovative on the uses for mobile money. The agent network needed to have grown at the same pace with the mobile money subscriptions.

Agents will not subscribe to the service if it is not widely used and users will not use the service if it is not widely accepted. Access to mobile money accounts should also not be a challenge. There is need to improve the liquidity and network service of mobile money agents. Liquidity can be improved by collaboration with other more financially stable institutions like banks. Borrowing from M-PESA in Kenya, access to mobile money accounts should be made possible even through ATMs of different banks. This would help improve on 24 hours access and liquidity to mobile accounts unlike the prevalent system were most agents close by 6pM.

Adoption to mobile money services was high because of the various benefits which were attractive to most users but because of the agent network problem and limited usability most users abandoned the services.

This research focused mostly on mobile money experiences of users and reviewed the benefits and challenges users derive from the use of mobile money services. There is need for more research to be done on the challenges faced by the operators of mobile money services in their bid to expand the mobile money business.

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APPENDICES

Appendix 1- Questionnaire

Dear Participant,

I am a second year postgraduate student at the University of Zambia, School of Engineering and am conducting a study to examine the usage of Mobile Network Operator Mobile money services. The result of this study hopefully will be used to improve the usage of Mobile money services in Zambia.

Please find attached to this later the questionnaire relating to the study.

I also wish to state that your participation in this study is Voluntary and your identity will be protected if you wish to include your name on the questionnaire. You are also free to withhold your identity if you wish to do so.

Please feel free to contact me on Cell 0967 777050 for any questions on the study.

Thank you for you participation in the research.

Q1. |Please tell me your present age? **(Single Coding Only)**

Circle Option Code	Age
☐1	16 – 25 years
☐2	25 - 45 years
☐3	45 – 60 years
☐4	61 plus years

Q2. Do you operate a bank account? **(Single Coding)**

1. ☐Yes
2. ☐No

Q3. Who provides your mobile banking service? Which is your preferred mobile money provider**(Multiple Coding possible)**

1. ☐MTN
2. ☐AIRTEL
3. ☐Both MTN and AIRTEL

Q4 What type of Mobile Money transaction do you currently make? **(Multiple Coding possible)**

1. Airtime recharge
2. Fund transfer
3. Bill payment
4. International Remittance
5. Savings
6. Cash withdrawal
7. Purchasing
8. Pension fund management
9. Commodity dealing

Q5. How often do you make _____ (mention the option marked in Q7a) transaction? (Single Coding for every Option in Q7a)

1. Daily
2. Weekly
3. Monthly
4. Occasionally (less than once a month)
5. Never used it

Q6. To whom do you generally (Mostly) send money?

1. Relatives
2. Friends
3. Business to business
4. Others(specify)

Q7a? What are the main challenge do you experience in using mobile money.

1. Too costly
2. Not easy to use
3. Lack awareness
4. Security when depositing large amounts
5. Not widely accepted
6. Agent rarely have enough money
7. Network problems(Fail to complete transactions)
8. Others(Please specify)

Q8 Do you generally (mostly) send or receive money using mobile money?

1. ☐Send
2. ☐Receive
3. ☐Send and receive

Q9 Do you generally send money within Lusaka or outside Lusaka

1. Within Lusaka
2. Outside Lusaka

Q10 What is your most important benefit of mobile money(single encoding)

1. Cost saving (Lower rates, transaction fees)
2. Time saving (no need to go to bank or ATM)
3. 24 h Access (can

Q11 Which is you most transaction preferred method for the following areas.

Within Lusaka	Outside Lusaka Urban	Outside Lusaka Rural	Outside Zambia
1. Airtel Money	1. Airtel Money	1. Airtel Money	1. Airtel Money
2. MTN Money	2. MTN Money	2. MTN Money	2. MTN Money

make transaction any time) 4. Physical security (no need to go out with cash) 5. Others (please specify		3. ZOONA	3. ZOONA	3. ZOONA	3. ZOONA
		4. Shoprite money	4. Shoprite money	4. Shoprite money	4. Shoprite money
		5. Western Union/	5. Western Union/	5. Western Union/	5. Western Union/
		6. Bank tranfer	6. Bank tranfer	6. Bank tranfer	6. Bank tranfer
		6. N/A	7. N/A	8. NA	9. N/A
		Others Specifify		10.	11.

Q12. On a scale of 1 to 5, 1 being the lowest and 5 being the highest, how would you rate the following benefits of Mobile money? Compare with other services and rate how mobile money fares. **(Single Coding for each option)**

		Rating Scale				
		Very Low	Low	Average	High	Very high
1	Cost saving (Lower rates, transaction fees)	☐1	☐2	☐3	☐4	☐5
2	Time saving (no need to go to bank or ATM)	☐1	☐2	☐3	☐4	☐5
3	24 h Access (can make transaction any time)	☐1	☐2	☐3	☐4	☐5
4	Physical security (no need to go out with cash)	☐1	☐2	☐3	☐4	☐5
5	Others (please specify	Click here to enter text.				

Q13. Please rate how important the following reasons are for you to consider using Mobile Money. What makes you want to consider mobile money **(Single Coding for each option)**:

		Very Important	Important	Not Very Important	Not Important	Not Important At All
1	Lower transaction costs	☐1	☐2	☐3	☐4	☐5
2	Security from fraud	☐1	☐2	☐3	☐4	☐5
3	Physical security	☐1	☐2	☐3	☐4	☐5
4	Safe transaction with feedback on transfer (e.g. sms)	☐1	☐2	☐3	☐4	☐5
5	Wide acceptance of mobile money	☐1	☐2	☐3	☐4	☐5
6	More locations I can cash-out my money	☐1	☐2	☐3	☐4	☐5
	Mobile money account being linked to my savings account	☐1	☐2	☐3	☐4	☐5
	Liquidity of mobile money agent point	☐1	☐2	☐3	☐4	☐5
7	Other (specify)	Click here to enter text.				

Q15. On a scale of 1 to 5, 1 being Not at all True and 5 being Very True, How would you rate the following statements about your mobile money menu on your phone? **(Single Coding for each option)**

		Rating Scale

		Not at All True	Not True	Sometimes True, sometimes not true	True	Very True
1	My mobile banking menu is very easy to navigate	☐1	☐2	☐3	☐4	☐5
2	I can make transactions without any help from an agent	☐1	☐2	☐3	☐4	☐5
3	I only make transactions at mobile money agent point	☐1	☐2	☐3	☐4	☐5
	I can easy use my mobile phone	☐1	☐2	☐3	☐4	☐5
	I can easy operate ATM machine	☐1	☐2	☐3	☐4	☐5

ZOONA	**SHOPRITE MONEY**	**BANK TRANSFERS**
1. Agents are highly liquid	1. Agents are highly liquid	1. Agents are highly liquid
2. Cost saving	2. Cost saving	2. Cost saving
3. Time saving	3. Time saving	3. Time saving
4. widely accepted	4. widely accepted	4. widely accepted
5. 24 hrs access	5. 24 hrs access	5. 24 hrs access

Appendix 2: Airtel Money Tarrifs

Deposit (K)	**Charge (K)**
Between 1 & 5,000	FREE
Withdrawal (K)	**Charge (K)**
Between 1 & 150	2.5
Between 151 & 300	5
Between 301 & 600	10
Between 601 & 1,200	20
Between 1,201 & 5,000	30
Airtel Money to Airtel Money Transfer	**Charge (K)**
less than 20	0.25
Between 21 & 50	0.50
Between 51 & 1,000	1
Between 1,001 & 2,000	2
Between 2,001 & 5,000	3
Airtel Money to Bank Transfer	**Charge (K)**
Between 10 & 5,000	6 (inclusive of bank charges)
Bank to Airtel money transfer	**Charge (K))**
Between 10 & 5,000	Depends on the individual bank charges
Restrictions	**(K)**
Max transfer amount (per transaction)	5,000
Max transfer amount (per day)	5,000
Max transactions per day	50
Other Airtel Money Transactions	**Charges (K)**
Call Customer Care	Free
Bill Payments	Free
Monthly Fee	Free
Registration Fee	Free
Top up	Free
Balance Enquiry	Free
Change password and Reports	Free
Payments - Select Merchants	1
Changing Airtel Money Nickname	5
Airtel Money reversals	10

Appendix 3: MTN Mobile Money Tarrifs

Money Transfers

Transaction	*Minimum*	*Maximum*	*Customer Fee*
Deposit Cash	K5	K5 000	0
Send money to registeredd MTN Mobile Money user	K5	K150	K0.25
	K150.01	K300	K0.50
	K300.01	K600	K0.80
	K600.01	K1 200	K1
	K1 200.01	K3 000	K2
Send money to non MTN Mobile Money user	K5	K150	K5
	K150.01	K300	K10
	K300.01	K600	K15
	K600.01	K1 200	K25
	K1 200.01	K3 000	K35
Withdraw cash by registered MTN Mobile Money user	K5	K150	K2.50
	K150.01	K300	K5
	K300.01	K600	K10
	K600.01	K1 200	K20
	K1 200.01	K3 000	K30
Withdraw cash by non MTN Mobile Money user	K5	K3 000	0
Buy airtime (for yourself or others)	K.001	K3 000	0

Bill Payment

Transaction Range	Fee
K.001-150	K1
K151-300	K1.5
K301-600	K2.5
K601-3001	K3.5

Administrative Transactions

Transaction	*Fee*
Change PIN	Free
Top Up	Free
Monthly Fee	None
Minimum Balance Requirement	None
Maximum Account Balance	K5 000
Maximum Amount per Transaction	K3 000
Maximum Transaction per Day	K5 000

Appendix 4: Zoona Tariffs