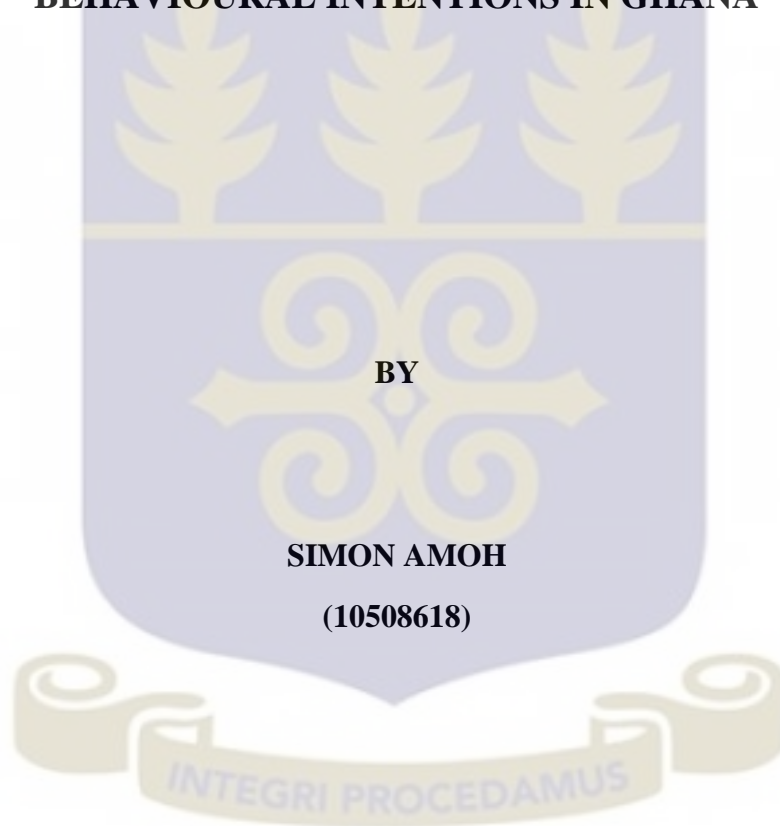


UNIVERSITY OF GHANA

**MOBILE MONEY SERVICES ADOPTION AND CUSTOMER
BEHAVIOURAL INTENTIONS IN GHANA**



**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN
PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF
MPHIL MARKETING DEGREE.**

JUNE, 2016.

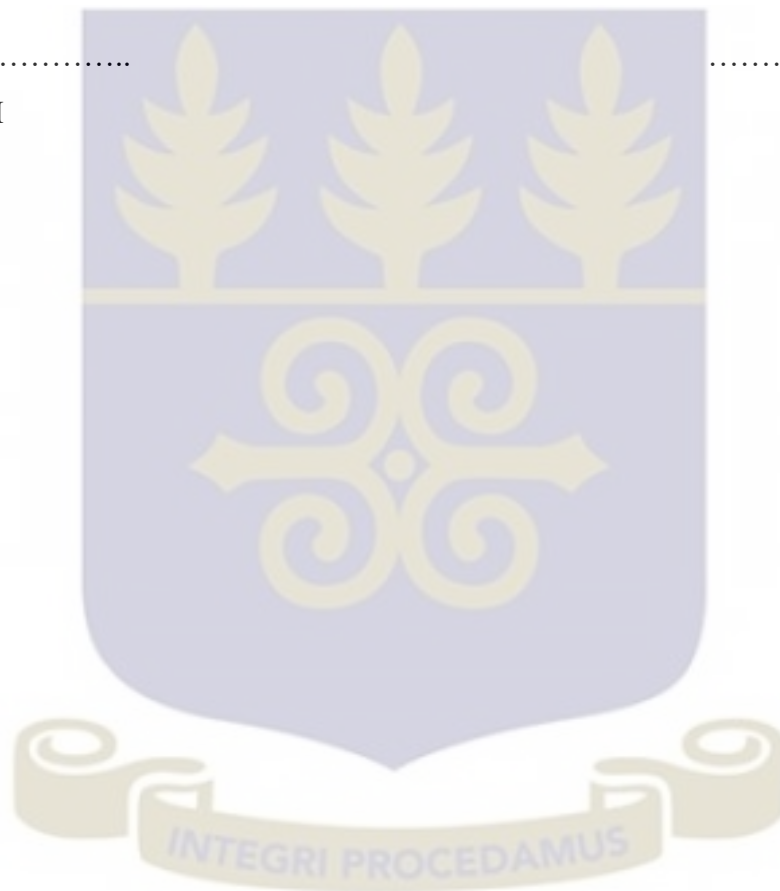
DECLARATION

I do thereby declare that work is the result of my own research and has not been presented by anyone for academic award in this or any other university. All references used in the work have been fully acknowledged.

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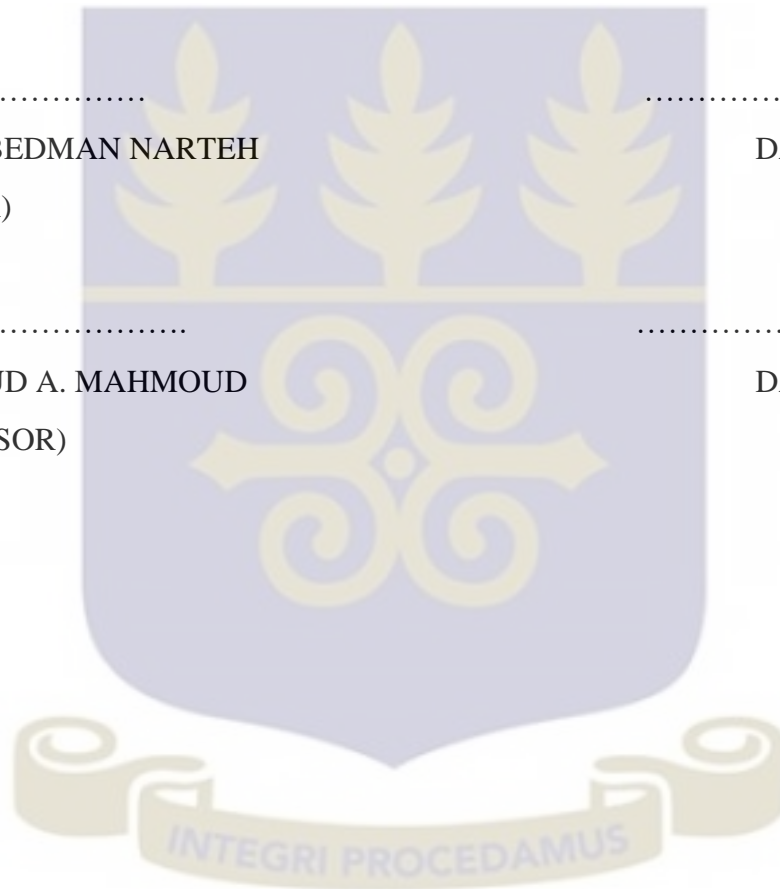
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DATE



DEDICATION

I dedicate this work first to the Living God, for His guidance and protection which has brought me this far in life.

I also dedicate this thesis to my late parents Susana Abena Attu and John Kwame Amoh for their gift of education to me.



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No one ever writes a thesis of this nature without the support, sacrifices and help of others.

Many people urged me on in diverse ways during my work on this thesis.

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I wish to thank management and staff of MTN Ghana who facilitated the data collection exercise in their various branches.

God Bless us all.

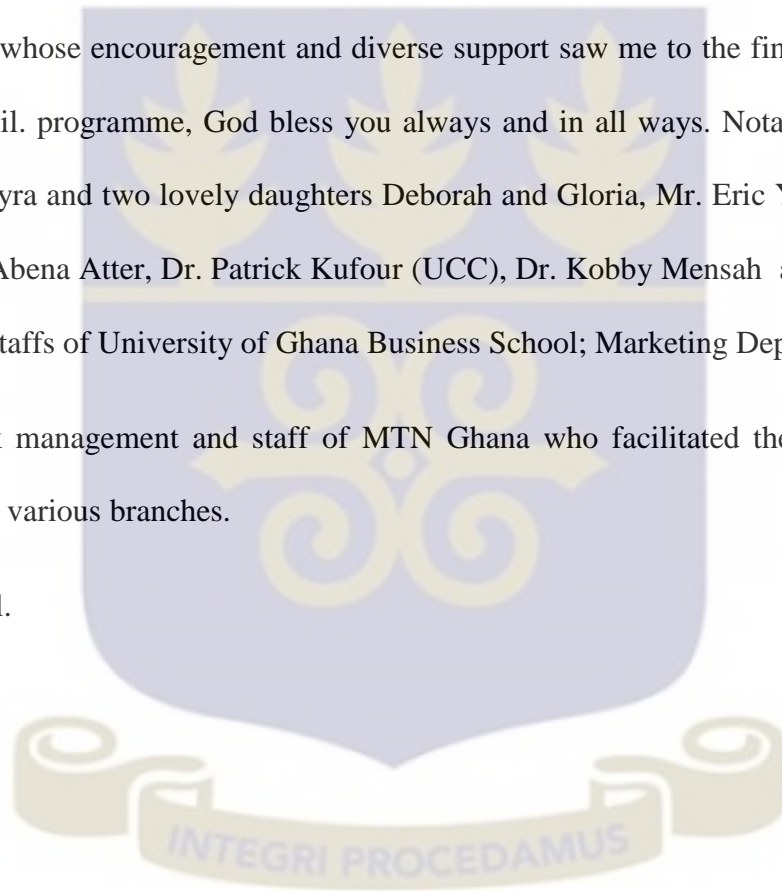


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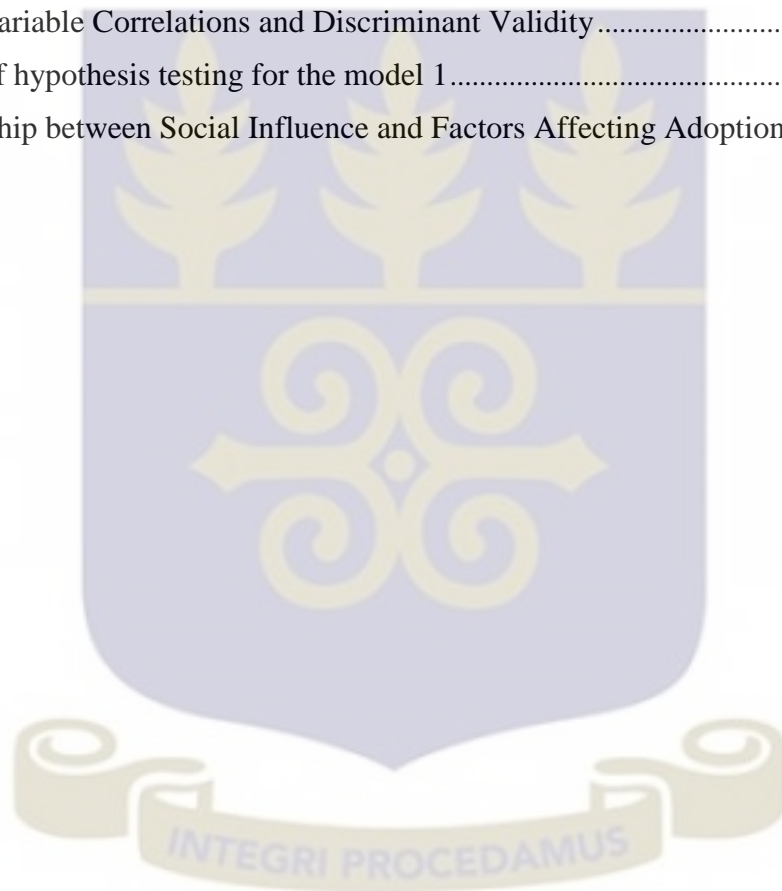
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ABSTRACT

The proliferation of mobile phones in Ghana has given room for the telecommunication networks to innovate new products and services to provide value for their customers in the Ghanaian market. Mobile money is one of such innovations by the telecom industry in Ghana. Although mobile phone adoption and usage has been increasing in Ghana, the same cannot be said about mobile money adoption and usage intentions among customers. Coupled with the low rate of adoption of mobile money, much studies has not be done on it, although a lot of studies has been done on other IT and IS innovations. The study was quantitative and used a cross-sectional survey to sampled 300 (representing 97% response rate) respondents using structured questionnaires that were adapted from other researchers in the area of adoption and behavioural intentions. The data was analysed using structural equation modeling (i.e. the partial least square method). The results of the study revealed that users of mobile money still use the services for traditional purpose of buying, sending and receiving money. The study revealed that factors that significantly lead to the adoption of mobile money services were perceived cost of use, perceived ease of use, perceived trust, perceived usefulness and social influence. Social influence though was one of the adoption, it insignificantly did not moderate the relationship between adoption factors of perceived risks, relative advantage and perceived trust. Theoretically, the study fills the gap that studies on mobile money services are few. This study therefore provide implication for marketing management in the telecommunication industry on the creating of much awareness on the services mobile money can perform.

Key words: Perceived cost of use, perceived usefulness, social influence, perceived trust, perceived usefulness, mobile money services.

CHAPTER ONE

INTRODUCTION

1.0 Background of the Study

Mobile phone through any personal or professional activity has proven to be a vital tool in any society as it has a very high level of acceptance by consumers (Masamila, Mtenzi, Said, & Tinabo, 2010). Over the past decade, mobile phone coverage and adoption in sub-Saharan Africa particularly Ghana has increased substantially. In 1999, less than a percent of the populace had access to mobile phones and this increased to over 55 percent over a decade (GSMA, 2009). Again in Ghana, according to Wireless Intelligence (2012), mobile phone adoption and usage has increased from 150,000 mobile phone subscribers in 2000 to approximately 11 million subscribers in 2009. The proliferation of mobile phones across the globe and in Ghana has resulted in fierce competition between the telecommunication networks as they keep developing new products and services to capture and dominate the market.

One of such new service is the mobile money, which, according to Aker and Mbiti (2010) is a product that allows clients to use text messages to store value in an account accessible by the handset, convert cash in and out of the stored value account, and transfer value between users. Another definition from International Financial Corporation (2011), posits that mobile money is a term used to describe tools that perform banking and financial transaction services using mobile phones or devices. Mobile money can serve as a platform for bill payment, person-to-person transfers (P2P), government-to-person (G2P) transfers, payment of services such as public transport, etc. (Gutierrez & Choi, 2014). The question asked here is, are all these services enjoyed by subscribers? This study seeks to examine the behaviour of subscribers towards mobile money service adoption and usage. Subscriber behaviour is the

study of the processes that individuals or groups go through in making purchasing choices in order to satisfy their needs. Usually the buying behaviour takes many forms of consumer's choices that can vary depending on a broad set of factors such as: earnings, demographics, social and cultural factors.

The adoption of any form of innovation by individuals/groups are influenced by conventional factors, such as perceived benefits, readiness, and external pressures, changes in structure, skills and openness to external sources of information (Mehrtens, Cragg, & Mills, 2011; Rogers, 1983; Spanos, Prastacus, & Poulymenakou, 2002).

Studies on the determinants of IT adoption and usage argue that perceived usefulness and perceived ease of use is primary explanations of acceptance behavior (Davies, 1986, 1989). Similarly, Igarria et al. (1994) report perceived usefulness play respective roles in the acceptance of any form of technology. However, consumer resistance to product uptake has been known to occur when adoption and use of the product require significant alterations in the consumers' value systems, as well as their established behavioural patterns, norms, habits and traditions (Kleijnen, Lee, & Wetzebs, 2009). This resistance can lead to negative attitudes towards the product, resulting in its outright rejection (and hence non-adoption), postponement of use, or outright opposition, and thus, a market failure for the product (Bredahl, 2001; Grabner-Kraeuter, 2002; Lennon, Kim, Johnson, & Jasper, 2007).

Aside mobile phones being used for communication, writers like Jenkins (2008), Ehrbeck, Pickens, & Tarazi, (2012) and Bold, Porteous, & Rotman (2012), have asserted that in Sub-Saharan Africa as a whole, one important use of mobile phones for other activities other than communication is for mobile money. Their study did not draw a parallel to mobile technology adoption as well as mobile money adoption in the West African region. Although the adoption of mobile phone is high in West Africa and in Ghana to be precise, mobile

money adoption and usage have been relatively low in Ghana. Official statistics estimate that less than 2 percent of the population has used m-money (Dzokoto & Mensah, 2011).

This research seeks to examine subscriber behaviour towards mobile money services in Sub-Saharan Africa, specifically Ghana.

1.2 Problem Statement

Mobile Payment System (MPS) is an innovative application on the mobile phone platform that allows a person to initiate a transaction and make a payment using a mobile phone. MPS as an emerging payment system allows commercial transactions to be carried out anytime, anywhere and by anyone (Deans, 2005). Today, mobile phones are already being used by many to make payments, send money to family members and store monetary value safely in Ghana. However, while mobile phone penetration was more than 25 million as at December 2012, only 4.1 million actually subscribed to mobile money. Beyond the fact that Mobile Money (MM) uptake and usage remain low, active users remain even lower (Etim, 2014). The introduction of mobile money services in many developing countries, and Ghana in particular, offers a new opportunity for improving households' access to formal financial services.

Yet despite its potential, mobile money adoption and usage has been relatively low in Ghana. Official statistics estimate that less than 2 percent of the population has used m-money (Dzokoto & Mensah 2011, CGAP 2012).

Etim (2014) investigated in their study whether participants perceived mobile phones as easy to use for various tasks including mobile banking and mobile money transfers and whether mobile money services were adopted. The findings were that while basic mobile phones were widely adopted and used mainly for communication with mostly family and friends,

they were rarely used for servicing high order tasks like mobile banking or mobile money transfers. Before then, Kiplang'at and Ocholla (2005) had emphasised the need for further study on the effects of socioeconomic factors for the diffusion of ICT in developing countries.

One of such study was carried out by Osei-Assibey (2014), who studied drivers of behavioural intention of mobile money adoption in Northern Ghana among indigenous money collectors (called susu). The study sought to find out the behavioural intention of indigenous collectors to adopt mobile money. The study found perceived risk, education level, relative advantage, and the age of the collector to be statistically significant in influencing the behavioural intention of MM adoption. Among the indigenous users, the researcher found such concepts as trialability, observability or awareness, compatibility or educational attainment, as well as the influence of the physical presence of the indigenous collector to be statistically significant in influencing one's behavioural intention to accept mobile money.

According to Osei- Assibey (2014), some of the findings are quite striking and may require further empirical research. This research answers Osei-Assibey call by also looking at the future behavioural intentions towards the adoption and usage of mobile money in Ghana by consumers.

1.3 Research Objectives

The General objective of the research was to examine mobile money and consumer behavioural intentions in Ghana and specifically:

- i. To identify mobile money services mostly used by mobile money subscribers.
- ii. To determine the factors that influence the adoption of mobile money service.

- iii. To examine whether individuals with low and high social influence differ in terms of factors affecting mobile money adoption.

1.4 Research Questions

- i. What are the main services mostly used by mobile money subscribers?
- ii. What factors influence the adoption of mobile money service?
- iii. Is there a difference between individuals with low and high influence in terms of factors affecting mobile money adoption?

1.5 Significance of the Study

This study will enable the operators of mobile money to know how subscribers behave towards their various services. The study of mobile money is limited and this study will add to the stock of the existing literature in the area. This research can also serve as a guide to other researchers who will want to research in this area in future.

In addition, the study would help policy makers and practitioners with available information to eliminate the current challenges faced by consumers. Again, the adoption of mobile money services will solve problems such as carrying large sums of money around for making payments.

1.6 Organisation of the Study

This study was divided into six chapters. Chapter one consist of the general introduction to the study, the problem statement, objectives of the study, research questions and significance of the study.

Chapter two consists of the literature review and the conceptual framework. Key terms associated with the research and extant reviews of related research materials were defined. It also dealt with in-depth analysis of thematic areas and a thorough and objective illustration of evident and argumentative review of related research. For the purpose of this work, literature was reviewed in areas on mobile money services provided to consumers and subscriber behaviour towards adoption and usage.

The context of this study was covered under chapter three. The researcher gave a brief history about mobile money in Ghana, dealt with MTN mobile money and the regular of the service which is the National communication Authority.

The methodology as well as sources of data employed was in chapter four. This chapter was made up of the research design, the population for the study, the sample, and the sampling procedure to be adopted, methods of data collection; instruments of data collection and methods used in the data analysis.

Chapter five was devoted to results and discussion of the findings. This chapter embodied the scrutiny of field data in order to provide a vivid outcome of the study. This is where researcher answered the research questions that were posed in chapter one.

Finally, chapter six provides the summary, conclusion and recommendations from the study. Gaps for future studies were outlined in this chapter. It further outlines the theoretical contributions to academic knowledge and managerial implications.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter looked at theoretical framework where the two theories underpinning the study were discussed. These theories were complemented with other constructs like the perceived cost of use, perceived risks to form the factors that influence adoption of the mobile money service. The services of mobile money were examined, the key stakeholders were discussed and the social impact of the mobile service was discussed with much reference to Kenya M-Pesa. The conceptual framework discussed the factors that influence the behavioural intention to adopt mobile money services.

2.1 Theoretical Framework

The theoretical framework highlighted the two theories (thus the Technology Acceptance Model and Diffusion of Innovation Model) that underpinned the research. These theories originally developed to explain customers' acceptance of technology were adopted to explain users' acceptance and adoption of mobile money services. The Technology Acceptance Model (TAM) was first discussed, followed by the Innovation Diffusion Model.

2.2 Technology Acceptance Model

The theoretical foundation for the Technology Acceptance Model (TAM) is based on the Fishbein and Ajzen's Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) and Theory of Planned Behaviour (Ajzen, 1991) which proposes that behaviour is a direct outcome of behavioural intentions. Technology Acceptance Model (TAM) proposed by Davis (1989) was to predict user's acceptance and use of any information technology. The Technology Acceptance Model has been specifically recommended to model the acceptance of Information Technologies and Information Systems (Davis, 1989; Davis et al., 1989;

Muñoz, 2008) due to its sound and influence for the acceptance of behaviour (Lympelopoulous & Chaniotakis, 2005). The theory again has a slight empirical advantage over some theories like Theory of Planned Behaviour (Mathieson, 1991).

Some areas that TAM has been used in the acceptance of Information Technologies and Information Systems include the acceptance of commercial mobile services (Dahlberg et al., 2003; Jiang & Deng, 2011; Wei et al., 2009; Wei, Xinyan, & Yue, 2011), online shopping (Gefen et al., 2003; Tong, 2010) and e-commerce (Pavlou, 2003). According to Davis (1989), a person's behavioural intentions to use a particular technology is based on two beliefs which are the perceived ease of use and perceived usefulness. These two beliefs will be looked at in the next sub-sections to establish how these two influences behavioural intentions of people in using a particular technology (i.e. mobile money services).

- **Perceived Ease of Use (PEOU)**

According to Davis (1989), perceived ease of use (PEOU) refers to the extent in which an individual believes that a system would be easy to use and that the system should not be complex in order to encourage its adoption (Rogers, 1995). This means to use a particular form of technology, little effort should be needed by the user (Liu & Li, 2009). This effort can be physical and mental (Davis, 1993; Taylor & Todd, 1995). In the mobile money services, perceived ease of use include how easy is the registration procedure, ease of use of the payment method, easy access to customer services, minimal steps required to make a payment, availability of mobile money transfer agents and how accessible the service is on mobile phones with the basic features and software. Extensive researches have documented evidence of the significant effect of PEOU on user behavioural intentions (see Adams et al., 1992; Davis, 1989; Guriting & Ndubisi, 2006; Ramayah et al., 2002; Ramayah et al., 2003).

- **Perceived Usefulness**

Alongside PEOU, perceived usefulness is a frequent construct in the adoption and usage of ICT, especially in TAM models (Agarwal & Karahanna, 2000; Davis, 1989; Hernandez & Mazzon, 2006; Nysveen et al., 2005a; Pikkarainen et al., 2004; Taylor & Todd, 1995; Venkatesh & Davis, 2000). Perceived Usefulness (PU) refers to the extent to which a person believes that using a particular system would benefit or boost an individual's job performance (Davis, 1989; Mathwick, Malhotra & Rigdon, 2001).

According to Vijayarathy (2004), perceived usefulness will show that the use of a given technology might be useful for someone to achieve a particular result in the online environment. Furthermore, Lopez-Nicolas, Molina-Castillo and Bouwman (2008) believe that the system should be able to assist the consumer to carry out a job easier, quicker and in better quality. In the context of this study, perceived usefulness in the adoption of mobile money services is defined as how well consumers believe the services can be integrated into their daily activities (Kleijnen et al, 2004) and how it can enhance their transaction (Chen, 2008). Employing mobile money service systems by the consumer will be due to the fact that the system is useful in their financial transactions (Kim, Mirusmonov & Lee, 2010). According to Tobbin and Kuwornu (2011), intention to use mobile money services will increase if the belief in its usefulness also increases.

Literature suggests that PU is positively linked with the adoption of mobile payment (Kim, Mirusmonov & Lee 2010; Padashetty & Krishna, 2013; Zhou, 2011). PU has been seen to positively influence the adoption of mobile payment system across countries like Finland, USA, Japan and Germany (Guhr, Loi, Wiegard & Breitner, 2013). Studies on past literatures have validated PU as an essential factor in the acceptance of technology (Agarwal &

Karahanna, 2000; Hong, Thong, Moon, & Tam, 2006; Kim, Chuan, & Gupta, 2007; Lee, 2009; Sim, Tan, Ooi, & Lee, 2011; Venkatesh & Morris, 2000).

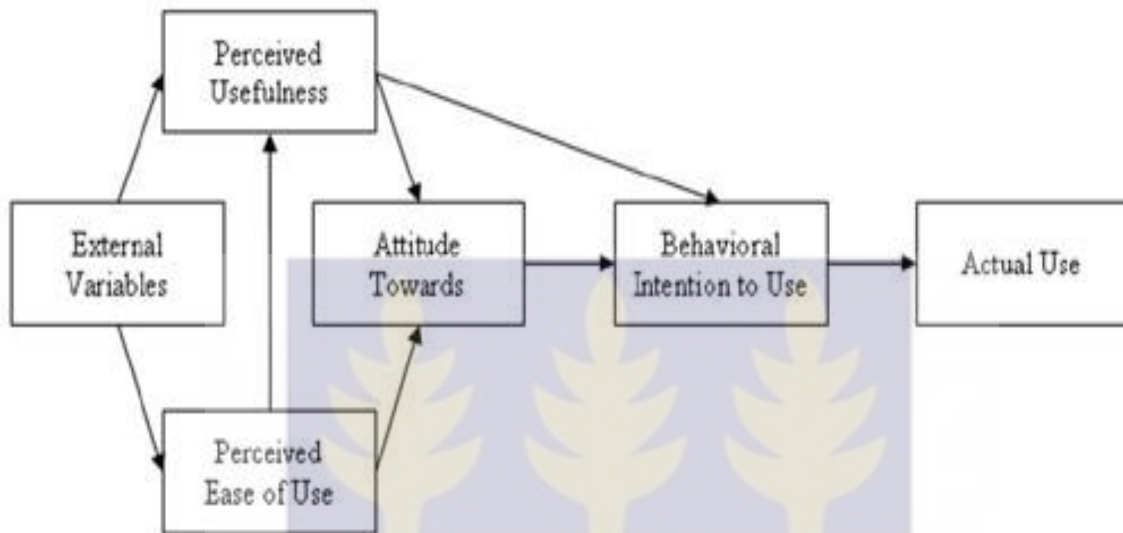


Figure 2.1. Original technology acceptance model (TAM) by (Davis, 1989).

TAM has been widely used to predict the acceptance of a new technology. It postulates that the two variables, perceived usefulness and perceived ease of use, have great relevance to technology acceptance and usage behaviours. Studies on the determinants of IT adoption and usage argue that perceived usefulness and perceived ease of use is the primary explanations of technology acceptance behaviour (Davis, 1986, 1989). That is if the consumer believes that using mobile money services is easy to learn and use (perceived ease of use) and has more advantages (perceived usefulness) than other forms of money transfer, the intention to use mobile money services will increase.

TAM and IDT are similar and complementary among some factors and that each one of them on its own cannot adequately explain acceptance/adoption or rejection of any new technology (Wu & Wang 2005; Lee et al., 2011). TAM was complemented with the Diffusion of

Innovation Model to explain factors that influence the adoption of mobile money services which will be discussed in the next section.

2.3 Diffusion of Innovation Model

Diffusion of Innovation theory was propounded by Rogers (1983) which is a theory of communication and adoption of new ideas and technologies (Rogers, 1995). Diffusion is the process by which an innovation is communicated through certain channels over time and among the members of a social system (Rogers, 1983, Rogers, 2003). In other words, the diffusion of innovation assesses how, why, and at what rate new ideas and technology are communicated and adopted by consumers. Essentially, the diffusion process for all innovations consists of individuals talking to one another about the new idea, thus decreasing the perceived uncertainty of the innovation so to encourage adoption and usage.

Rogers (1995, 2003) identified five intrinsic characteristics/factors that strongly influence whether or not someone will adopt an innovation. These factors are: relative advantage, complexity, compatibility, trial ability and observability. Below are the details of some of these factors that were used in this study:

- **Relative Advantage (RA)**

Relative advantage is defined as the degree to which an innovation is perceived as a better alternative to currently available products or services (Rogers, 1962) and can be related to diverse economic, social, convenience, and satisfaction dimensions. This means that using mobile money services should be better than any traditional mode of payment. Also, the value gained in using mobile money services should outweigh the cost of the service to the consumer (Pihlajamäki, 2004). Studies have consistently found relative advantage to affect positively, users' intention to use an innovation (Ilie et al. 2005; Lee, 2007, Lee et al, 2011;

Premkumar & Ramamurthy, 1995; Shih, 2007; Teo & Tan, 2000). Relative advantage and perceived usefulness have been noted to be the same, however, Liu and Li (2009) posit that relative advantage is very robust predictor of the intention to adopt and use a particular innovation. Lee et al. (2003), affirm that consumers are more prone to adopt a new technology when they perceive that it offers a relative advantage over an existing one.

- **Perceived Complexity (PC)**

Complexity is the degree to which an innovation is perceived as relatively difficult to understand and use (Rogers, 2002). Premkumar and Ramamurthy (1995) found that the greater the complexity the slower the rate of adoption and negative behavioural intention to use as well. This is because consumers may use any innovation they seem to use less of their physical and mental effort in accessing it (thus ease of use). Several empirical studies have found that the more complex the end users perceived a new technology, the lower the users' intention to use the system (Lin, 2006; Lee, 2007, Tobbin, 2011). Antovski et al. (2009, p. 20) posited that when the system is intuitive, flexible, easy to install and has few steps/clicks in using it will contribute to the ease of use.

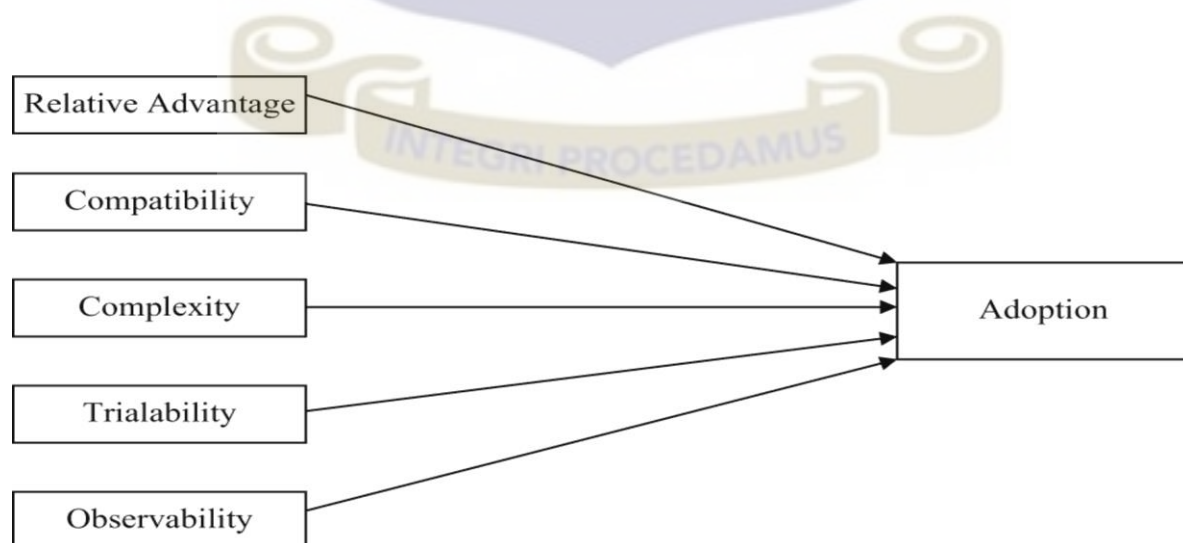


Figure 2.2 Diffusion of Innovation (Rogers, 1995)

With Rogers' (2003) diffusion of innovation theory, very few studies explicitly (and accurately) present the five characteristics as defined by Rogers' (2003) perceived innovation characteristics (relative advantage, compatibility, complexity, trialability and observability). Like the Technology Acceptance Model, other researchers (Meuter et al, 2005; Moore & Benbasat, 1991) have added constructs like image, ease of use, perceived risks which made their model different from that of Rogers.

Both the Innovation Diffusion Theory (IDT) and TAM have been continuously studied and modified, expanded or upgraded with additional constructs (Althunibat, 2012). For example, Barnes and Huff (2003) extended IDT by including perceived trust as new constructs and Tan and Teo (2000) included perceived risk; subjective norm and self-efficacy.

In recent times, a number of studies have tempted to integrate the two studies in explaining adoption since according to such studies TAM and IDT are similar and complementary among some factors which cannot adequately explain acceptance/adoption or rejection of any new technology (Wu & Wang 2005; Lee et al., 2011). This study looked at other constructs like perceived risk, perceived trust and perceived cost of use to complement the two theories used.

Briefly, this study dealt with some of these constructs.

- **Perceived Trust**

Trust reflects a willingness to be in vulnerability based on the positive expectations towards another party's future behaviour (Mayer et al., 1995). Potential adopters of the mobile money need to have a belief that the network is reliable and that they can trust the system at least more than their existing practices of saving and transferring money. Very little trust for mobile money platforms are likely to have behavioural intention on consumers to accept/use

the service. Trust often includes three dimensions: ability, integrity and benevolence (Benamati et al., 2010). Ability means that mobile service providers have enough knowledge and skills to fulfill their tasks. Integrity means that mobile money service providers keep their promises and do not deceive users. Benevolence means that mobile money service providers will concern users' interests, not just their own interests.

Perceived usefulness reflects the utility derived from using the service, initial trust will affect perceived usefulness. Trust provides a guarantee that users will acquire future positive outcomes (Gefen et al., 2003). In other words, trust enables users to believe that mobile money service providers have enough ability and benevolence to provide useful services to them.

- **Perceived Risk**

This is defined as a consumer's belief about the potential uncertain negative outcomes from the use of an innovation (e.g. mobile money transaction) (Gerrard & Cunningham; Osei-Assibey, 2014). Perceived Risks are the beliefs of the uncertainty regarding possible negative consequences (dangers). Consumers' desire to minimize risk overtakes their willingness to maximize utility and thus their subjective risk perception strongly determines their behaviour to adopt any mobile money services (Bauer et al, 2005). Risk is a subjective-determined expectation of loss; the greater the expected probability of loss, the higher the risk perceived (Mitchell, 1999), and thus the lower the motivation to adopt an innovation (Meuter et al., 2005). Purchase through phone, mail-order and internet are perceived as more risky than traditional brick and mortar purchase (Bobbitt & Dabholkar, 2001).

Many marketing practitioners and researchers continue to be interested in perceived risk because it is more powerful in explaining consumer behaviour and has intuitive appeal and broad application (Mitchell, 1999).

- **Perceived Cost of Use**

It is the risk associated with a customer perception of a particular online channel (mobile payment services in our study) costing more money than alternative channels of purchase (Luarn & Lin, 2005). Research has empirically demonstrated that mobile payments adoption is highly encouraged or discouraged by economic factors such as transaction service fees or concerns on basic fees for connecting to mobile payment services (Yang, 2009).

The cost of using the service is the monetary perceived costs and the high perception of fees would decrease perceived value. Extant studies have shown that perceived cost negatively affects perceived value of the mobile internet (Kim et al., 2007b). Varshney (2002) mentioned two costs that come with mobile money services payment. The first cost is for the infrastructure that is managed by the MNO, financial institution, or the merchant and the second cost that is the cost that is borne by the consumers. These costs include set up fees, transactional fees and subscription fees.

Some of the studies conducted in emerging economies like China (Yao & Zhong, 2011), Brazil (Cruz et al., 2010) and Bangkok (Sripalawat et al., 2011) have specifically found perceived cost of use as a barrier to usage intention and perception on usefulness of mobile payments.

- **Social Influence**

Social Influence is defined as the degree to which an individual friends/colleagues, family members and other close relatives perceives the importance to use the new system (Ajzen & Fishbein, 1980; Choi, Choi, Kim & Yu, 2003; Venkatesh, Morris, Davis, & Davis, 2003). Fishbein and Ajzen (1975) posited that social influence is one's perception that those who are important to her or him should or should not perform the behaviour in question. The

unbanked populace may be forced to use mobile money as it can be used to perform those services as saving, transferring and receiving money. Notwithstanding that, families and friends who are using mobile money can influence others to use. As noted by (Tan & Teo, 2000), relevant references such as the adopter's friends, family and colleagues/peers may all influence the adoption decision.

After discussing the two theories and how their factors influence consumers' intention to adopt mobile money services, the next section highlighted what consumers will use the service for after its adoption.

2.4 Mobile Money Services

In this section, the relative importance of the four main service offerings typically offered by mobile money services: sending money, paying bills, receiving bulk payments, and purchasing airtime are considered. These four types of transactions are called functional transactions (Davidson & Penicaud, 2011). According to USAID (2010), the initial purpose for using the mobile money service was to fulfil remittance needs, but other purpose came in the form of using an electronic credit or prepaid airtime for paying for other goods and services. The unbanked populace who are mobile money users now engages in a greater number of financial activities, including sending and receiving remittances, making and receiving payments, and saving money. This has brought in innovative ways to meet the transaction needs of ordinary people (Ndiwalana, Morawczynski & Popou, 2010).

Retail payments. Micro payment through mobile phones has been used to make payment of small-scale online and offline shopping. For online purchasing, customers put their mobile number, ID number on the shopping website and verify their ownership of the mobile phone

through SMS confirmation. For off-line shopping, they use a one-time bar code created through an application to encrypt their mobile phone number information. However, the limit of the service is approximately 270 US\$ and this done to prevent excessive purchases by youth and scams (Gutierrez & Choi, 2014).

Air time purchasing. The most common usage of mobile money is to buy airtime from the mobile network operators. This is where users buy airtime (or credit) either for themselves or others by entering a destination number on the parent network of the mobile money service (Berman, 2011). However, the cost of the service is charge from the person who performed the transaction mobile money balance. Operators have heavily promoted this service because it reduces costs that they incur along the conventional airtime distribution channel. Currently, airtime top-ups represent one of the largest share of total mobile money transaction volumes. It is the most frequently transacted product, with active mobile money users performing 4.5 top-ups on average in December 2014 (GSMA, 2014).

Person-to-Person (P2P) transfers. Another popular use of mobile money is P2P transfers by both registered and non-registered mobile money users. The transaction fees charged depends on the provider of the service and the size of the transfer (Intermedia, 2012). The system works with the provider asking the sender to provide the PIN through a text message. When the sender provides the PIN, the service provider executes the transfer by notifying the receiver of the payment (Gutierrez & Choi, 2014). Domestic P2P transfers remain the largest contributor to the global product mix in terms of total value processed. They are an integral foundational transaction to any mobile money service; active mobile money users conducted an average of 1.6 P2P transfers in December 2014 (GSMA, 2014). P2P allows for domestic remittances where a user can transfer value from a prepaid mobile wallet to another user's

mobile wallet. Similar to other countries, mobile money users in Uganda can transfer money to a un-registered user, or a user of another service (Bank of Uganda, 2011).

Public Transport. Uganda's and Ghana's mobile money services are not yet used for public transport payment. Transportation-related services are MTN Uganda's and Ghana's air ticket payment service which was recently launched in partnership with the Airways operators. Airtel Uganda's has a street parking payment service for its mobile money users (Ndiwalana, Morawczynski & Popov, 2010).

Bill and tax payment. Mobile money services offers customers the opportunity to pay a variety of bills, including school fees, tuition, utility bills, and cable television bills. It is now possible to pay the electricity bill through mobile money in conjunction with real time bank reconciliations (Ndiwalana, Morawczynski & Popov, 2010). The service enables subscribers to avoid disconnections that are caused due to delayed payment reconciliations. Warid telecom in partnership with the Uganda Revenue Agenda (URA) and Orient bank enables taxpayers to pay government fees using mobile money (independent.co.ug/business/business-news). The initial phase will cover express penalties and will cover the rest of payments like passport fees, customs duty, court fees etc.

Taxpayers need to register for the company's Warid Pesa service and use the service for all URA payments. Airtel (previously Zain) in Uganda and currently MTN mobile money in Ghana has a service on their platform that allows parents to pay school fees. According to GSMA (2014), the number of bill payments through mobile money services increased by 7.2 million transactions during the year to December 2014, with active customers making an average of 0.3 bill payments per month from their mobile money account during the month. In Uganda, the use of mobile money services according to Gutierrez and Choi (2014), is for sending and receiving

money. Gutierrez and Choi (2014) did a survey of registered users of the largest mobile money service in Uganda, 61% of its registered users said that m-money “is for sending and receiving money,” 28% said it can be used “in many ways to manage money,” 7% believed that m-money “can be used for storing money” and 4% said “it can be used for payments.

A study in Ghana by Aker and Wilson (2007) found that users were using the service for receiving transfers (80%) or savings (76%), and usage was highest among those who had access to a mobile phone. Currently in Ghana, the MTN Mobile money offers the following services; Deposit withdrawal (through the use of ATMs), Money transfers, Bill payments (Dstv, Gotv, MTN and ECG postpaid, school fees payment) buy and pay insurance, pay airline tickets and bulk payment (www.mtn.com.gh/persoanal/mobile-money/about-mobile-money). During the use of the mobile money service systems, certain players come in to ensure the success of the system, some of these players are discussed below.

2.5 Key players in the mobile money service system

According to Jenkins (2008), and Tobbin (2011), there are a number of key players in the mobile money system (i.e. ecosystem) who share a common fate and these key players include consumers, Mobile Money Operators (MNOs), banks, merchants and regulators. Below is the key players and their roles in the ecosystem.

- **Mobile Network Operators (MNOs)**

The MNO bring the infrastructure, including wireless communication, back-end m-commerce server and application facilities and the mobile device application. They also bring their huge distribution channel for the sale of prepaid cards. These channels are far reaching than branches of other financial institutions (e.g. banks). Their ability of the MNOs in reaching

their customers across all categories gives them the impetus to be players in the system (Jenkins, 2008). The MNOs are responsible for the customers who they provide customer services through their trained agents.

- **Financial Institutions (Banks)**

The financial institutions are responsible for providing the license and the store of the mobile money customer's deposit in a trust account. They do this by bringing in their vast experience and customer trust in dealing with money. In most implementations, the banks act as intermediary between the MNOs and the agents in acquiring the e-value.

The branch offices of the banks serve as aggregation points for the merchants, the distribution channels and their agents. Where merchants are involved, the banks provide a link to the existing merchant account to facilitate the flow of money from the e-float account to its main accounts. The financial institutions are mandated to deal with cross border financial transaction and settlements and provide financial regularly advice to the MNOs (Jenkins, 2008).

- **Merchants and Utilities**

The merchants and the utility providers offer an additional reason to adopt and use the mobile money services. They include retail shops, online shops, casinos, lotteries and general goods and service providers who adopt the platform of the mobile money as a means to receive payments from users (i.e. customers). The customers of the merchants buy the e-value from an agent and use it to pay the merchant by transferring the e-value to the merchant's account. Mobile money, for example, enables customers to pay for the utility bills like DSTV using the e-value on their mobile phone devices. The system there provides some convenient to the user of the utility because this method of payment is fast and provide security to the

merchants and its customers. These conveniences enjoyed by the customer will increase the customer base for the merchants (Jenkins, 2008).

- **Regulators**

The role of the regulator in the ecosystem of the mobile money is for its long term survival. They bring experience and understanding of the various industries involved in the ecosystem. They impose regulations to ensure a balance between innovation, value creation, efficiency, financial inclusion and prudence. MNOs are playing a key role in the delivery of mobile money services globally with 60% of all mobile money services run by MNOs and, in Sub-Saharan Africa, for example, over half of all MNOs have already launched a mobile money service (75 out of 144).

They have the expertise in setting up distribution networks, building broad and trusted brand awareness and mass marketing; they also own the USSD (Unstructured Supplementary Service Data) channel that is typically used to enable access to mobile money services from handsets (GSMA, 2014). Their activities cover all the other members of the ecosystem (Tobbin, 2011). The GSMA has published guidance on developing a regulatory framework for mobile money transfer with a focus on the remittance segment, recognising that mobile operations lack experience in payment regulations. The aim of the report is to explain potential regulatory issues arising from mobile operator payment services (GSMA, 2007).

- **The Customer**

The customer (who is the final recipient of the mobile money service) brings their diverse needs as opportunities to the ecosystem. According to Tobbin (2011), their engagement with the service ensure its success or failure. It is therefore important that customers' needs are

met. The meeting of their needs will lessen the risks that will be perceived by customers.

Below is a table of the different stakeholders' roles and their limitations.

Table 2.1 Key players in the mobile money ecosystem

Players	Roles	Limitation and constraints
Mobile Money Operators	<ol style="list-style-type: none"> 1. Provide infrastructure and communications service 2. Provide agent oversight and quality control 3. Issue e-money 4. Exercise leadership in drawing mobile money ecosystem together 5. Advise other business like banks, utilities on their mobile money strategies. 	<ol style="list-style-type: none"> 1. Regulatory limitations on providing financial services 2. Shareholder pressure for faster and higher returns 3. Strategic focus that may not include mobile money.
Financial Institutions	<ol style="list-style-type: none"> 1. Offer banking services through mobile 2. Hold float or accounts in customers names 3. Handle cross-border transactions, manage foreign exchange risk 4. Ensure compliance with financial sector regulation 	<ol style="list-style-type: none"> 1. Narrow customer base 2. Lack of experience with or interest in low-income customers 3. Stringent regulatory requirement with significant compliance burdens.
Agents	<ol style="list-style-type: none"> 1. Perform cash-in and out functions 2. Handle account opening procedures, including customer due diligence 3. Identify potential new mobile money applications. 	<ol style="list-style-type: none"> 1. Liquidity shortfalls 2. Basic business skill gaps 3. Lack of customer trust 4. Limited liability to partner with large corporations.
Regulators	<ol style="list-style-type: none"> 1. Provide enabling environment for mobile money 2. Protect stability of financial system 3. Demonstrates leadership to encourage and protect behaviour change. 	<ol style="list-style-type: none"> 1. Lack of experience with convergence of financial and telecommunications regulatory schemes 2. Lack of financial and technical capacity.
Consumers	<ol style="list-style-type: none"> 1. Use mobile money to improve their lives. 	<ol style="list-style-type: none"> 1. Lack of awareness 2. Limited financial literacy 3. Cultural and psychological resistance

Source: Jenkins (2008)

2.6 The success story of Mobile Money Services in Kenya and Uganda

Mobile money was initially made popular by Safaricom and Vodafone's M-Pesa in Kenya, which started in 2007. The M-Pesa application is installed on the SIM cards of customers and works on all handset brands. The transfer service was quickly picked up for use as an informal savings account system and electronic payment mechanism for bills, goods and services. With M-Pesa, Kenya is at the forefront of the mobile money revolution: the number of agents across the country increased by 40 percent in 2013 (ACP, 2014) and with more than 80 percent of the populace using the service (IFC, 2011b).

According to the Pew Research Center's (2013) survey report, the number of Kenyans using mobile wallets to make or receive payments is higher and that 50 percent of the Kenyan adult population uses mobile money services. The success of M-Pesa were due to the following:

In the study by Muriuki (2011) and Mbogo (2010), factors that were found to make the use of M-Pesa to be high included low transaction costs as the cost of sending money using the mobile payment services is very low as compared to those of the commercial banks and other money transferring companies (Omwansa, 2009).

The ease of operation of the money transfer process is the availability of support agents. According to O'Sullivan (2011), M-PESA has over 35,000 agents countrywide within easy reach of Kenyans, and about 70 per cent of financial transactions are now handled by MPESA. These agents make it easy to access the service. Furthermore, the speed of transaction is one success factor, where money sent is received by the recipient immediately with an SMS alert making it convenient and trustworthy. Other factors that led to the success were captured under regulatory landscape, socioeconomic conditions, stage of market

development and profile of service providers and role of supporting institutions, channel management, technology and user interface.

Similarly, in Uganda, MTN Uganda recorded a 39.4% increase in mobile money-related revenue in the six-month period to June 2014, resulting in 14.7% contribution to total company revenues. MTN Uganda's mobile money users generated more than 28.5 million transactions per month in the same period (GSMA, 2014). The circumstances that allow for this innovative financial service to be used on a wide scale also thrive in Uganda. Some of the factors that explain the uptake of mobile money are: A combination of a literate and relatively young population; strong demand for sending money to friends and family quickly and securely; a rapidly growing market penetration for mobile phones; an enabling regulatory environment; and a competitive marketplace, where supply is competing to meet demand. All these accounted for the success for the uptake of mobile money services.

Mobile money adoption in Uganda has grown at an astounding rate and continues to follow a steep trend upward. This is due in large part to two factors: first, the rapid expansion in the use of the mobile phone, and following, the rapid expansion in access to mobile money services with the latter very difficult for other money transfer operators. Mobile penetration is currently 44% of the population, and 97% of the population is covered by one or more of the mobile network operator (MNOs) (USAID, 2012). Although, the MNOs need to partner with a bank, mobile money service users do not need an account from the bank to enjoy the service making the adoption of its services very high.

One service that is currently enjoyed by Ugandans is the International Money Transfer. This is where MTN Mobile Money has partnered with Western Union to allow mobile money

subscribers in Uganda to send and receive money to and from countries where Western Union operates. The sender in another country sends the money through a western union agent or visit the website of western union to send the money online. The recipient in Uganda has two options: the first is to withdraw the money from any western union location and the second option is to pull the value of the transfer into his MTN Mobile Money account. Once the value of the transfer has been transferred to the mobile money account, the customer can store the money for future use or withdraw it from any MTN Mobile Money agent (USAID, 2012).

2.7 Social Impact of Mobile Money

Money that is easier to use within the socio-cultural context will result in positive attitudes and faster consumer adoption, whereas those that are not will be slower to be accepted or may be marginalized. Kusimba, Chaggar, Gross and Kunyla (2013) observed that mobile money can be associated with unintended negative social consequences. For instance, they observe that mobile money allows Kenyans to gift money (e.g. at weddings and funerals) without needing to physically be present. While this eliminates travel costs for the sender and therefore makes economic sense, there is a social cost of the individual not being physically involved in the ceremony. The authors also observe that a downside of the convenience of mobile money is an increased request for remittances.

Mobile money impacts on individuals and households in various ways. Donovan (2011), looked at M-pesa in Kenya in an attempt to find out the impact it had on human freedom. The study concluded that a relationship of networks of social interactions, the need and the desire to coordinate financially with friends, relatives and business gave all Kenyans a form of power that acts on both users and non-users of the mobile money service (M-Pesa).

In addition, increased employment opportunities due to the expansion of existing businesses, development of new business startups or through direct employment as M-Pesa agents are another benefit attributed to the mobile money service (Plyer et al., 2010). The increased circulation of money driven by the ease to make a transaction using the service has enabled businesses to grow in order to accommodate the increased local demand for goods and services. In terms of direct employment, Safaricom has employed thirty thousand (30, 000) agents across the country to operate the M-Pesa shops and earn commission on transactions made.

Furthermore, the bargaining power of households has increased due to mobile money services, giving some form of financial autonomy to those with less bargaining power (Donner & Tellez, 2008; Mas & Radeliffe, 2010; Morawezynski, 2009; Plyer et al, 2010). Gross inequalities still exist in Kenya between men and women where through cultural norms, men are made to inherit and control land and other cash crop cultivation. These men play a passive role in the maintenance of the home, leaving women limited income to support their families (Demombynes & Thegaya, 2012; Jack & Suri, 2011a). Through the use of the M-Pesa, these women have been able to receive and manage their funds independently towards the household budget without having to seek permission from their husband (Morawezynski, 2009). This was made possible because the transaction made through M-Pesa is less visible to others as compared to the money delivered through relatives, friends or the post office.

In additions, mobile money significantly impacts on the ability of a household to spread risks as a result of reduced transaction costs compared to households who are not on mobile money and who are likely to suffer a drop in consumption when hit by a negative shock (Jack &

Suri, 2011). According to Mbogo (2010), the informal saving systems in Kenya like the rotating savings and credit association and the accumulating savings and credit account has been linked with M-Pesa to enable users to save money, pay interest on their loans and to access loan services. The mobile money services have also helped the banks in their service provisions whereby the banks have joined the platform, making it possible for users of M-Pesa link their account to their bank accounts.

For the users to adopt the mobile money services, research has shown that certain socioeconomic characteristics of the consumer influence their behavioural intentions to adopt and use new technologies like the mobile money services (e.g. Gatignon & Robertson, 1985; Osei-Assibey, 2014; Ostlund, 1974; Rogers & Shoemaker, 1971; Steenkamp et al., 1999). Below are some of these characteristics and their relationship with technology acceptance.

2.8 Demographics and Mobile Money Services

Empirical research has demonstrated that social-demographic characteristics have significant influence on behaviour and suggests that younger, higher income and better educated consumers tend to accept market innovations more quickly (Gatignon & Robertson, 198; Steenkamp et al., 1999). However, findings regarding the effects of these personal characteristic variables were not being consistent across studies. Three (3) of these demographics were looked at; age, gender and level of education.

- **Age and Mobile Money Service**

Age is one, if not the most important factor that affects consumer behaviour as it has been established to be a vital factor for technological acceptance (Phang et al., 2006). The age of customers/users has an important effect on their behaviour (Arning & Zieffle, 2007; Hubona & Kennik, 1996; Liébana-Cabanillas, Martínez-Fiestas, Rejón-Guardia, & Muñoz-Leiva,

2012; Okazaki & Mendez, 2012). However, the findings of studies with age on the intention to adopt and use technologies have been contradictory. Some studies identified a positive relationship between the age of the consumers and the probability to use the service (Stafford, Turan, & Raisinghani, 2004), while others obtained negative results (Joines, Scherer, & Scheufele, 2003; Zeffane & Cheek's 1993) or simply no relationship (Dabholkar, Bobbit, & Lee, 2003).

- **Gender and Mobile Money Service**

Many studies have shown the gender-associated differences about the acceptance of new technology (Hasan, 2010; Toray, Salminen & Mursu, 2013; Wynn, 2009). Many findings from the research suggest that early adopters are young males (e.g. Fogelgren-Pedersen, 2005; Hsu et al., 2007; Kim et al., 2007; Jiang, 2008; Kim et al., 2008; Koivumaki et al., 2008; Verkasalo, 2008b; Qi et al., 2009). However, there are also quite a number of studies indicating that women are at least as likely as men to be among the early adopters (Cheong and Park, 2005; Hong and Tam, 2006; Lee et al., 2007; Hong et al., 2008; Oh et al., 2008; Kuo et al., 2009; Kuo and Yen, 2009; Shin et al., 2009). Elder et al. (1987) found that females are more likely to experience technostress (physical and emotional burnout caused by inability to adapt to new technology) as compared to males. Some studies have found that females reported greater anxiety in using innovation than males (Igbaria & Chakrabarti, 1990) while others found no gender differences (Howard & Smith, 1986; Parasuraman & Igbaria, 1990).

- **Education and Mobile Money Service**

There is a limited amount of research that examines the relationship between educational level and usage intentions. In most cases, the educational level is not among the main

constructs and is usually measured as part of demographic characteristics or as a control variable (e.g. Igarria et al., 1995). Furthermore, researchers commonly relate educational level to usage indirectly via computer anxiety. Taken together, these results imply that higher educational level is likely to have a positive relationship with usage. Furthermore, higher educational level may result in greater knowledge about computers, thereby facilitating their usage. This notion is supported by Brancheau and Wetherbe (1990) who found that early adopters of spreadsheet software are likely to be more highly educated than late adopters.

2.9 Consumer behaviour Intentions

Consumer Behaviour according to Kotler and Keller (2009), is the study of how individuals, groups and organisations select, buy, use and dispose of goods, services, ideas or experiences to satisfy their needs and wants. It also the decisions made by an individual, groups or organisations to spend their available resources (time, money, effort) on consumption-related items (Schiffman & Kanuk, 2007). Belch and Belch (1998) also define consumer behaviour as the process and activities people engage in when searching for, selecting, purchasing, using, evaluating and disposing of products and services so as to satisfy their needs and desires.

However, before a consumer makes the decision to spend his/her available resources on consumption related items, there will be an intention. Behavioural intention is defined as a motivating factor of a person's effort dedicated towards various behaviours (Fishbein & Ajzen, 1975; Ajzen, 1991). It also refers to the strength of a person's conscious plan to perform the target behaviour (Mykytyn, Mykytyn & Harrison, 2005) and reuse the consumption related item in the future (Lin & Lu, 2000; Joynathsing, 2000).

Behavioural intentions have been found to predict actual behaviour (Al-Maghrabi & Dennis, 2011; Engel et al., 1986; Howard & Sheth, 1969; Nicosia, 1966; Ravichandran et al., 2010; Venkatesh et al., 2012; Yiu et al., 2007). Ajzen (2006) theorize that individual's behaviour is directed by three thoughts: first, behavioural beliefs, which are beliefs about the outcomes of the behaviour and its evaluations; second, normative beliefs, which are beliefs about others normative expectations and inspiration to obey these expectations; third, control beliefs, which are beliefs about the presence factors that might make easy or obstruct performance of the behaviour. So, attitude toward the behaviour lead to the creation of a behavioural intention. This means that the likeness a consumer attached to a decision leads to intention to perform that behaviour.

The behaviour Intention in this study was defined as the degree of conscious effort that a consumer will exert in order to use a mobile money service (either to transfer or receive money, pay bills or buy airtime etc.). However, the intention of the consumer which can result in actual behaviour has been considered an instance of risk taking and risk reducing behaviour (Bauer, 1960). Ram (1987), argues that resistance to change is a consumer response which is normal, understandable and even expected to coexist with adoption behaviour (mostly in situations in which a change is imposed on the consumer).

Ram and Sheth (1989) conclude that many products simultaneously record a high level of innovation and rate of failure. People resist the use of a new product by creating barriers to adoption it. According to Ram and Sheth (1989), there are three functional barriers (usage barrier, value barrier and risk barrier). Usage barrier is related to a person's perception about everything that is in conflict with their work, habits and routines. According to this perspective, this barrier is the most common cause of resistance to innovation. For example,

if using mobile money may change his/her daily habit and routine, there is the likelihood of not adopting the technology.

The value barrier is another functional barrier, being defined as the consumer perceptions of a product's practical benefits, which may be economic or simply pleasurable, taking into account the comparative cost between similar or substitute products. For example, if buying airtime at any vendor is cost effective than buying from mobile money, the adoption of the service will be difficult for the consumer, especially, when the main aim of adoption and use is to buy airtime. The risk barrier is related to the uncertainty surrounding the secure use of the innovation.

Tobbin and Kuwornu (2011) did a study on the adoption of mobile money transfer in Ghana and the study looked at those factors that predict behavioural intentions and those that acts as barriers. The study found that perceived ease of use is the most significant construct on perceived usefulness and affects behavioural intentions both directly and indirectly through perceived usefulness. The study of Tobbin and Kuwornu (2011) was consistent with a study by (Gu et al., 2009).

Also, the trialability construct showed a significant effect on behavioural intentions. Perceived risk and perceived trust affects behavioural intention in mobile money transfer services, thus has a significant effect on consumers' behavioural intentions. In that, higher perceived risk in mobile money transfer service will lead to a lower rate of intention to use. Furthermore, perceived risk was believed to be a predictor and barrier to mobile money transfer services and is expected to negatively influence consumer's behavioural intention.

2.10 Conceptual Framework

Having reviewed the literature, this section provides the conceptual framework underpinning the study. The framework is presented in figure 2.3 and the framework assumed that seven (7) adoption factors will lead to customer behavioural intentions to use mobile money services. This relationship is moderated by social influence and is controlled by age, gender and the level of education to find out the robustness of this baseline model. The model is presented in the next section and will discuss the elements of this framework and how they relate to each other.

- **Perceived Ease of Use**

PEOU is considered to be one of the qualities of greatest impact on the acceptance of a new technology (Chaeh et al., 2011; Carter & Belanger, 2004; Hernandez & Mazzon, 2006; Moore & Benbasat, 1991; Nysveen et al., 2005b; Sim et al., 2011; Venkatesh & Davis, 2000; Wan et al., 2005). It is assumed that a higher adoption by consumers is likely if the devices are perceived to be easy to use (Moore & Benhasat, 1991; Rogers, 2003). In the mobile service context, determinants of perceived ease of use include meaningful icons, user-friendly touch screens, documentation and user training support (Laukkanen et al., 2007), accessibility, knowledge of the service and awareness creation (Gu et al., 2009; schierz, 2012).

It is important that the mobile money should not be complex to use both by the young and the aged, the literate and the illiterate and across all genders to influence its adoption. As it has been confirmed in the literature that perceived ease of use determines consumer behavioural intentions (Carlsson et al. 2005; Venkatesh & Davis, 2000). The ease of use of the mobile money system means that the system can work on any mobile phone, a user can just walk to a

vendor to load money on his/her wallet, and the system is user-friendly that following some basic instructions, a user can pay or receive through the system. With these easiness, the study hypothesized that:

H₁ Perceived Ease of Use of the mobile money system will influence customer behavioural intentions.

- **Perceived Usefulness**

Lopez-Nicolas, Molina-Castillo, and Bouwman (2008) believed that the system should be able to assist the consumer to carry out a job easier, quicker and in better quality. Employing the services of mobile money systems by the consumer will be due to the fact that the system is useful in their financial transactions (Kim, Mirusmonov & Lee, 2010). Since majority of the Ghanaian population is unbanked, the idea that the mobile money service systems will aid them in their financial transaction will influence their adoption. For example, one use of the mobile money service is for saving which is frequent among the unbanked. This has made it possible for users to save their remittances from family and friends for a latter use. According to Luarn and Lin (2005), the ultimate reason people exploit the use of mobile money services is that they find them useful. Currently, other services have been introduced into the system which include paying of utility bills and other fees which is likely to increase the benefit of the service to customers. It can be hypothesized that:

H₂: Perceived Usefulness of the mobile money services will influence customer behavioural intentions.

- **Relative Advantage**

The degree to which an innovation is perceived as a better alternative to other products and services is termed relative advantage (Puschel et al., 2010). According to Pihlajamäki (2004),

relative advantage can also be looked at from the value and the cost of the service to the user. This means that using mobile money services should be better than any traditional mode of payment and that the value gained in using mobile money services should outweigh the cost of the service to the consumer.

Studies have consistently found relative advantage to affect positively, users' intention to use systems across different participants (Ilie et al. 2005; Lee, 2007, Lee et al, 2011; Shih, 2007). With the traditional mode of money transfer where bus drivers were used to send money, to family and friends coupled with disappointment, lateness, theft and vehicle breakdowns. The use of other modern forms of money transfer is very expensive and inaccessible. When an individual sees mobile money services, overcoming some of these challenges as having a relative advantage over other forms of money transfer can influence their adoption.

To Lee et al. (2003), users' are more prone to adopt a new technology (mobile money services) when they perceive that the system offers them a relative advantage over an existing one such as bank or other money transfer services.

H₃: Relative Advantage of the mobile money services will influence customer behavioural intentions to adopt.

- **Perceived Trust**

The use of the mobile money service system should be able to overcome users' distrust (Siau et al., 2003). This means the user should be provided with some assurance that the system will be provided with minimum possible hindrance from hackers and fraudsters using the mobile money services.

Potential adopters of the mobile money need to have a belief that the network is reliable and that they can trust the system at least more than their existing practices of saving and transferring money. Very little trust for mobile money platforms are likely to have behavioural intention on consumers to accept/use the services.

Previous studies have found perceived trust as a significant determinant influencing user's behaviour intentions to use any technology (Jarvenpaa et al., 2000; Meyer et al., 2005; Mallat, 2007; Siau & Shen, 2003; Tobbin, 2010, Zhou, 2011). The idea that the mobile money system is run on an SMS alert where users are notified of any transaction they perform through the SMS alert, the use of Pincodes and the idea that one does not lose the money when you lose your mobile device is likely to influence users' intention to adopt the services.

H4: *Perceived Trust of the mobile money services will influence customer behavioural intentions to adopt.*

- **Perceived Complexity**

Complexity is the end-users' perceived level of difficulty in understanding innovations and their ease of use. Empirical studies have found that the more complex the end users perceived a new technology, the lower the users' intention to use the system (Lin, 2006; Lee, 2007; Tobbin 2011). This is because consumers may use any innovation that they seem to use less of their physical and mental effort in accessing it (thus ease of use).

Antovski et al. (2009, p. 20) posited that when the system is 'intuitive, flexible, easy to install and has few steps/clicks will contribute to the ease of use' as a result of it not being complex. The notion that users' can easily transfer money to friends by following simple steps on their

mobile devices reduces the complexity of the system. Also, where user can easily withdraw money from an agent by the user by providing his/her four digit pin codes and confirming to the withdrawal makes the mobile money system less complex.

H₅: Perceived complexity will influence customer behavioural intentions to adopt mobile money services.

- **Perceived Risks**

Perceived Risks are the beliefs of the uncertainty regarding possible negative consequences (dangers) in using a product or service. Every consumer will want to take minimal risk with the choice of a service. The perception of the possible risk exposure of a user is when their private information is known to others (Cox & Rich, 1964; Featherman & Pavlou, 2003; Nyshadham, 2000). There is the likelihood that these mobile service operators might share a user profile by intentionally collecting, disclosing, transmitting, or selling personal data without a consumer's knowledge or permission or hackers intercepting such information.

When consumers perceive any possible losses that could be created due to the uncertainties of using mobile money services, their perception of risk will increase. The losses may include any unfavourable consequences to consumers, such as financial loss, the violation of privacy, dissatisfaction with performance, psychological anxiety or discomfort, time waiting, long queue etc.

H₆: Perceived risks will influence customer behavioural intentions to adopt mobile money services.

- **Perceived cost of use**

Research has empirically demonstrated that mobile payments adoption is highly encouraged or discouraged by economic factors such as transaction service fees or concerns on basic fees for connecting to mobile payment services (Yang, 2009). Perceived cost of use is one of the key factors that may influence an individual whether or not to adopt and use mobile money services.

According to Luarn and Lin (2004), Dass and Pal (2011), and Tobbin (2012), individuals are likely to adopt mobile money services if they perceived that the cost is acceptable compared to other existing alternatives of the service. If an individual perceives the cost of mobile phone to be high, high price of SIM cards, registration fees and other transaction cost to be higher, they intention to adopt will be affected.

Sending remittances through money transfer companies (MTC), such as Western Union, MoneyGram, Money Express, is widely considered expensive. Globally, sending remittance costs an average of 8.36 percent of the amount sent. According to the World Bank (2011), Africa in particular is one of the most expensive remittance markets in the world. The average fee to send remittances to Africa is 12 percent of the amount sent or remitted and the average fee for intra-Africa remittances is 25 percent. However, mobile money services allow people, especially the unbanked to transfer different small amounts of money both within and from outside the country at lower costs compared to bank transfers and other money transfer centres.

To add to the above on the perceived cost of use, Tobbin (2012), posited that the rate of acceptance and adoption of mobile money service among the unbanked population is the cost of making transactions associated with the service.

H7: Perceived cost of use will influence customer behavioural intentions to adopt mobile money services.

- **Moderating role of social influence**

According to Aker and Wilson (2013), deciding to use mobile money services often depends by the usage by the members of one's social network (which is particularly an issue for mobile money transfers). The next section handled how social influence can play a role on the seven factors and the behavioural intention of the individual to adopt mobile money services. Social Influence is defined as the degree to which an individual friends/colleagues, family members and other close relatives perceives the importance to use the new system (Ajen & Fishbein, 1980; Choi, Choi, Kim & Yu, 2003; Venkatesh, Morris, Davis, & Davis, 2003).

The unbanked populace may be forced to use mobile money as it can be used to perform those services as saving, transferring and receiving money. Notwithstanding that, families and friends who are using mobile money can influence others to use. As noted by (Tan & Teo, 2000), relevant references such as the adopter's friends, family and colleagues/peers may all influence the adoption decision. The reason being that a user may be reluctant to participate in a certain behaviour at first but when taking into considerations the importance of what the referents (i.e. friends/peers, family etc.) think, a user may agree to the behaviour (Venkatesh & Morris, 2000). Also, how the providers are able to create awareness about the

services and how the agents handles the users (in terms of customer service) can determine whether a person will adopt to the mobile money services or not.

H₈: Social influence moderates the effect of mobile money adoption factors on behavioural intention; the positive effect strengthens as social influence levels increase.

- **Control variable; the impact of demographics**

The literature has shown that certain demographic characteristics (e.g. age, education level and gender) can affect behavioural intention (Venkatesh et al., 2003; Maduku, 2013) of individuals on whether or not to adopt mobile money services.

Age is one, if not the most important factor that affects consumer behaviour as it has been established to be a vital factor for technological acceptance (Phang et al., 2006). The age of customers/users has an important effect on their behaviour (Arning & Ziefle, 2007; Hubona & Kennik, 1996; Liébana-Cabanillas, Martínez-Fiestas, Rejón-Guardia, & Muñoz-Leiva, 2012; Okazaki & Mendez, 2012). Concerning age, research has shown that older consumers have problems when adopting new technology (Harrison & Rainer, 1992), as they belong to the late majority or laggards in terms of adoption rates of new technology-based services (Gilly & Zeithaml, 1985; Oumlil & Williams, 2000).

In most cases, educational level has been noted as a control variable in data analysis (e.g. Igbaria et al., 1995). The level of education of individuals can determine their behavioural intention to adopt mobile money services. Higher educational level is likely to have a positive relationship with usage. The reason is that higher education level may result in greater knowledge about mobile phones (thus reduce their complexity perception) facilitating their usage of mobile money services. According to Wood and Li (2005), willingness of males to

adopt a newly introduced technology is by far more than that of their female counterparts (Wood & Li, 2005). However, women are influenced by the use of new technologies when their friends, family and other peers uses it (Wood & Li, 2005). The above demographics will be controlled on the behavioural intention of user in adopting mobile money services.

The Conceptual Framework

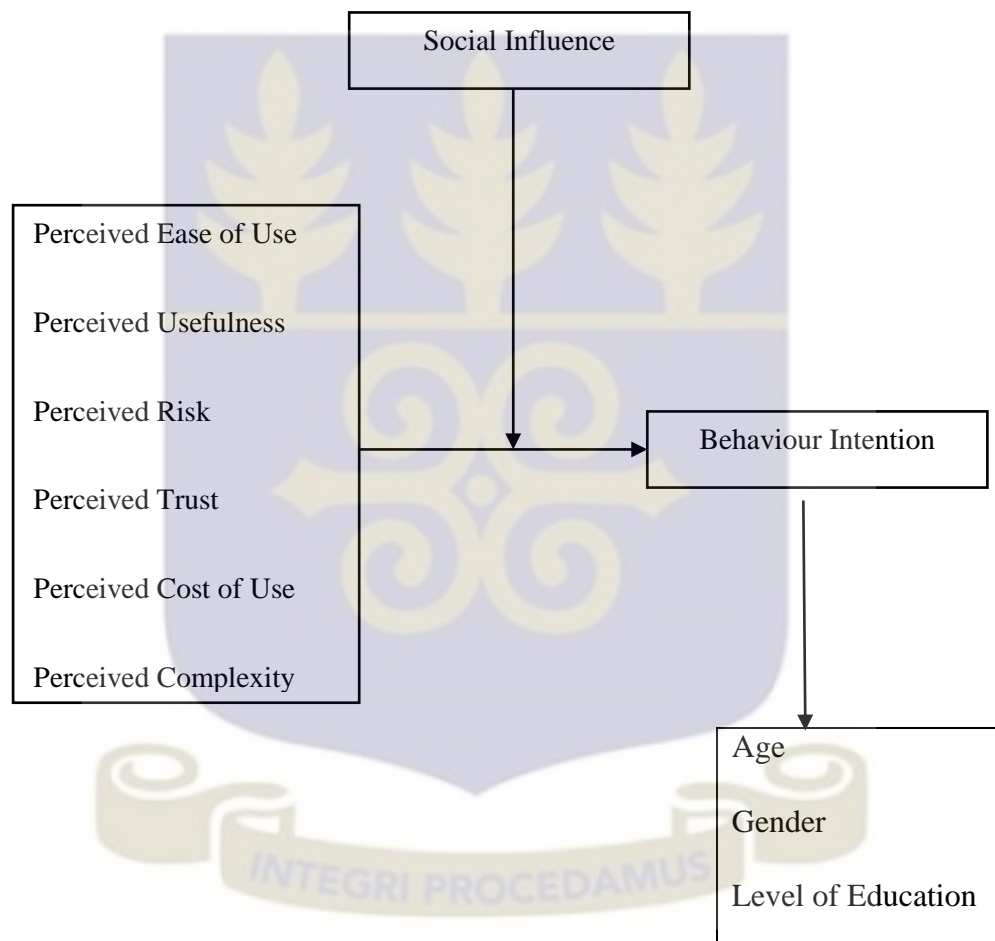


Fig 2.3 Researcher's conceptual Framework

CHAPTER THREE

CONTEXT OF THE STUDY

3.0 Introduction

This chapter describes the setting within which the research was carried out. It begins with an overview of the regulator, the National Communication Authority (NCA), the mobile telecommunication industries in Ghana, the history of mobile money in Ghana, profile of MTN Ghana and the role of mobile money services.

3.1 National communication Authority (NCA)

The National Communication Authority (NCA) which is the regulator in the telecommunication industry came into being through the NCA Act (Act 524) in 1996. The NCA was established to regulate communications by wire, cable, radio, television, satellite and similar means of technology for the orderly development and operation of efficient communications services in Ghana.

Ghana's telephony industry was monopolized by Ghana Post, Telephone and Telegraph (PTT) (Frempong & Henten, 2004). It was a government owned enterprise until 1994. The PTT was transformed by an Act of Parliament to Ghana Post and Telecommunication (GP&T) services, and in 1995 it was separated into two companies: Ghana Post and Ghana Telecom (GT). Ghana Telecom was privatized and a second network operator Western Telesystems (Westel) Ltd was licensed. A license was also issued to Capital Telecom Ltd, a private indigenous telecommunication company, to provide rural telephony to some villages and towns in the southern parts of Ghana. Between 1994 and 2000, as a result of the deregulation of the sector in 1994 under the Accelerated Development Programme (ADP)

1994-2000 (Addy-Nayo, 2001), Ghana moved from a government controlled PTT to a privatized telecom era in which service providers were permitted to provide private internet and mobile telecom network.

On July 3, 2008, the Ghanaian government announced the sale of Ghana Telecom and its mobile telephony wing, Onetouch to Vodafone. Zain Ghana now Airtel and Globacom Ghana have added to the number of cellular network operators in Ghana to increase the number to six by 2010. The penetration rate of mobile phone users in the country has given rise to innovative services offered through the mobile phone and mobile money is not exceptional.

The NCA which is the regulator of these industries, is obligated to protect the consumer by ensuring good customer service and network and is responsible for regulating tariffs of services provided by the dominant or monopoly operator (NCA, 2010). As the regulator, the NCA has the mandate to move the industry forward through policy, promoting broader opening of the telecommunications market segments to private, competitive market forces. It has to ensure that none of the players enjoy an undue competitive advantage, but encourages an open market and fair competition (NCA, 2010).

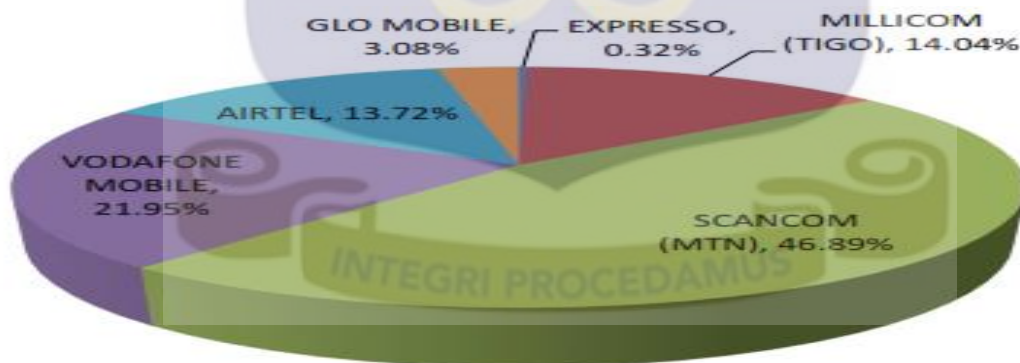
3.2 Mobile Telecommunication Industries in Ghana.

In sub-Saharan Africa, Ghana was among the first countries to deregulate as well as liberalize its communication industry (Osiakwan, 2003). The regulator, the National Communication Authority (NCA), licensed Milicom Ghana which is now Tigo and Spacefon which now MTN to increase telecommunication services to the people of Ghana. This led to the adoption of mobile phones because it became a necessity (Frempong & Henten, 2004). These telecommunication firms used competitive pricing and integrated marketing communication strategies to increase the adoption of mobile phones in Ghana. Later, other players joined the

industry and they were Airtel, Expresso and Glo who also provided similar voice and data services.

As at March 2015, cellular/mobile voice subscribers stood at 31,154,420 with MTN leading with a subscriber base of 13,939,936 representing 46%, followed by Vodafone 7,159,566 representing 23% and Tigo with 4,315,719 constituting 14%. Airtel, Glo and Expresso recorded 12%, 5% and a percent market share respectively. At the end of February 2016, the total number of voice subscribers stood at 35,802,135. MTN has the largest voice subscribers of 16,787,446 representing 46.89% market share, Vodafone with subscribers of 7,859,486 constituting 21.95% of the market share and Airtel with voice subscribers of 4,910,607 with a market share of 13.72% and Tigo with 4,315,719 with a market share of 14.04%. Glo voice subscribers stood at 1,103,301 with a market share of 3.08% and Expresso stood at 121,113 voice subscribers with 0.32% market share.

Figure 3.1 Mobile voice market share for February, 2016.



Source: NCA, 2016

3.3 History of Mobile Money in Ghana

According to the World Bank (2011) about 70% of the adult population in Ghana do not have an account at a formal financial institution. About one-third of the poor and the unbanked

world's population rely mostly on physical cash when transferring money. In Ghana also, people relied on relatives and bus conductors in sending money to friends and families. Thus, the movement of money is limited by how fast cash can be physically transferred by foot or by bus (Batista & Vicente, 2013).

The poor in emerging markets like Ghana, especially those in the rural areas remain unserved by formal financial institutions due to their low balances and transaction sizes which does yield little revenue for banks (Mas, 2010). Moreover, because the rural poor are in low density and remote areas, the banks do not see these places attractive enough to provide financial services to them. This is because the financial services have found it impractical to profitably serve the poor in the developing countries (Kendall, 2011). Nonetheless, the rapid increase of cellular networks in Ghana has laid down the groundwork for a potential shift in financial services to the poor. As the number of mobile phone subscribers' increase in Ghana, so does the market for mobile money services.

Mobile money services are operated by four (MTN, Airtel, Vodafone, Tigo) out of the six of the telecom operators in the country. Mobile money is a relatively new phenomenon in Ghana. It was first introduced by then Zain now Airtel when it launched ZAP in February 2009 and later followed by the giant telecom company, MTN in the same year (Bruce, 2015). Though started by the then Zain, MTN gained prominence with the mobile money service with the highest penetration rate and subscribers.

As of 2012, the transaction value of Mobile money was GH¢171million. Mobile money started off in Ghana tottering on the brink of little hope it will gain popularity among the public. While the promoters, mainly the mobile telecom operators, touted its potential,

especially drawing on Kenya's huge success story with the service, critics maintained that the geo-economic and demographic differences between the two countries were poles apart for Kenya's success to be replicated in Ghana. Currently, there are now 21,721,814 number of wallet holders with GH¢11.6 billion value of transactions carried out - the landscape has changed and the perceived bleak future of mobile money has given way to a bright and prospective story of hope, unspeakable success and more room for improvement (Bruce, 2015).

There is no doubt the future is bright for mobile money stakeholders. For instance, according to The Boston Consulting Group's (BCG) estimates, there will be some 400 million unique mobile-phone subscribers in 2019 and almost 150 million traditionally banked sub-Saharan Africans. That will leave some 250 million people aged 15 or older who have an income of \$500 or more and a mobile phone but not a traditional bank account. This gives a sense of the potential market for mobile financial services. Mobile money currently represents an opportunity to connect billions of people to the formal and informal economy, the banked and the unbanked in the world.

3.4 Profile of MTN Ghana

Launched in 1994, the MTN Group is a leading emerging market operator, connecting subscribers in 22 countries in Africa, Asia and the Middle East. The MTN Group is listed on the JSE Securities Exchange in South Africa under the share code: "MTN." As of 30 June 2013, MTN recorded 201.5 million subscribers across its operations in Afghanistan, Benin, Botswana, Cameroon, Cote d'Ivoire, Cyprus, Ghana, Guinea Bissau, Guinea Republic, Iran, Liberia, Nigeria, Republic of Congo (Congo Brazzaville), Rwanda, South Africa, Sudan, South Sudan, Swaziland, Syria, Uganda, Yemen and Zambia. MTN, the leading provider of

telecommunications services in Africa and the Middle East, entered the Ghanaian market following the acquisition of Investcom in 2006. MTN's overriding mission is to be a vehicle for Ghana's economic growth and development, helping to promote Ghana's strong development potential from the provision of world-class telecommunications products and services, through to innovative and sustainable corporate social investment initiatives.

MTN is the market leader in the increasingly competitive mobile telecommunications industry in Ghana with over 12 million subscribers and offering its valued subscribers a range of exciting products and services under Postpaid and Prepaid subscriptions. MTN's network coverage is extensive. It covers all 10 regional capitals, major cities and many rural and remote areas. The company continues to invest heavily in infrastructure to expand its coverage and capacity across the country. MTN's business across its 22 footprints is governed by five values - Leadership, Innovation, Relationships, Integrity and a Can-Do spirit. These values have contributed to MTN's evolution as the leading player in emerging markets of Africa and the Middle East, with a total global subscriber base of over 200 million, serving a population under license of over 500 million people.

MTN delivers uniquely designed communication solutions and is focused on providing excellent telecommunications services across the African continent under the philosophy of improving access to economic empowerment. The company understands that the best way to gain a competitive edge in a local market is to offer different products and services customized to suit lifestyles and expectations. A vital service of MTN's operations is MTN Business, which provides data solutions and appropriate IT infrastructure to small, medium and large-scale businesses with the purpose for them to deliver up-to-speed efficiency in their operations (mtn.com.gh).

3.5 MTN Mobile Money

MTN Mobile Money is a fast, simple, convenient, secure and affordable way of transferring money, making payments and doing other transactions using a mobile phone. The service is offered by MTN in partnership with 10 banks. Subscribers can use MTN Mobile Money to send and receive money, top-up MTN airtime, pay bills (DStv, ECG Postpaid, MTN Postpaid, School fees, etc.), buy & pay for insurance, pay employee salaries, pay for airline tickets and other goods and services. No need to travel far or wait impatiently to receive or send money. This service operates through authorised Merchants who will facilitate the service on behalf of the partner banks. Currently, more than 2 million Ghanaians are registered as active users.

MTN expects this number to grow as a result of the resources they have committed to educating subscribers about switching from the traditional mode of cash payments to electronic payments (mtn.com.gh). As the number of mobile phone subscribers in Ghana increases, so does the market for mobile money services. The majority of Ghanaians lack any formal bank account (Ahiabenu, 2010). An estimated 80 percent of Ghanaians are “unbanked” – meaning they conduct their transactions outside the banking sector with no access to financial services. Products like “mobile money,” that enable safe and secure money transfers without the use of a bank account, could have a major impact on this unserved segment of the population. Mobile money gives anyone with a mobile phone the ability to transfer money, make cash payments and conduct other financial transactions over the phone.

3.6 The Role of Mobile Money in Ghana

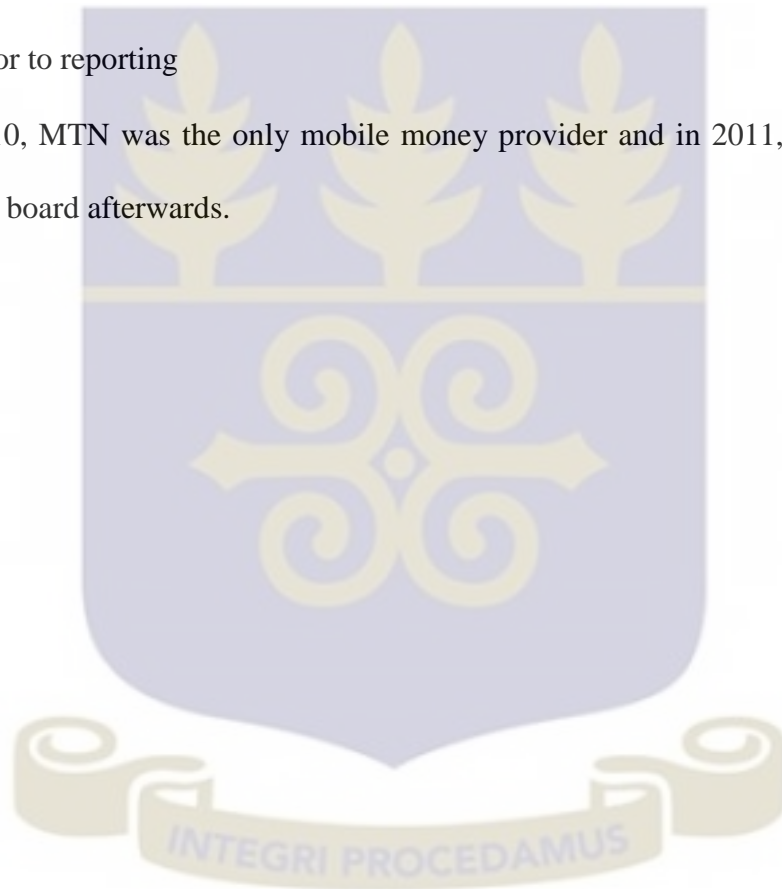
According to Ahiabenu (2010), the introduction of mobile money service is taking place in isolation but in parallel with the advent and expansion of other financial electronic payments services. One of these is E-Zwich, an electronic platform that enables the loading and spending of electronic cash and also allows the settlement of inter-bank claims in addition to online transactions. Others are being made available over the Internet and through SMS-text messages. Sakyi (2014) adds that, the explosive growth in the use of mobile phones in Africa has brought with it a lot of business opportunities, not least the phenomenon of mobile money transfers whereby users of mobile phones can use their cell phones or handsets to transact a lot of business such as paying for utilities through direct debit or DDAC, checking their bank balances online, instructing their banks to deal in monetary and capital assets, transferring money to relatives and creditors, among others. He contends that people no longer have to get stuck in traffic jams or queues in alleys, highways, and offices in Accra to go and pay their water, electricity, school and other bills and fees as they can transact such businesses from the comfort of their homes or offices. With more than 15,000,000 mobile phone subscribers in Ghana, the potential market for these new services is significant. Mobile money presents certain advantages for Ghanaians without access to banks. It reduces the transaction costs of financial services for the poor, especially those in rural areas where financial services seldom exist. Mobile money saves the cost of travel and time spent visiting the nearest town to access financial services. As noted in AudienceScapes research, mobile money provides people with a way to transfer money safely and keep (or even increase) their savings (Ahiabenu, 2010).

Mobile money has the potential to create jobs directly through hiring in the mobile phone companies, partner banks and the more than 53,200 merchants involved in Ghana's mobile money system. Key partners in the provision of mobile money services include commercial

banks, mobile phone operator's shops, distributor shops and accredited agents. Jobs may be created indirectly as mobile money contributes to growth in Ghana's business and trade. If deployed successfully, mobile money could help individuals harness funds outside the banking system and channel them into the formal financial sector, thus making it easier to gather funds for investments.

Note:

- *Active customer refers to the number of customers who transacted at least once in 90 days prior to reporting
- * In 2010, MTN was the only mobile money provider and in 2011, Tigo and Airtel came on board afterwards.



3.7 Mobile Money Transfer in Ghana**Table 3.1 Bank of Ghana Mobile Money statistic 2015**

INDICATOR	END 2010	END 2011	END 2012	END 2013	END 2014
Total number					
of mobile					
phone subscribers	10,474,295	16,707,459	18,620,563	19,978,190	21,409,520
Registered mobile					
Money customers					
(cumulative)	1,838,000*	3,183,970	2,960,982	3,303,837	5,424,650
Active mobile					
Money customers*	26,000	93,491	345,446	963,495	2,369,997
Total volume of					
Mobile money					
transactions					
(Annual)	1,040,000*	9,471,729	14,585,398	36,796,146	106,431,007
Total value of					
Mobile money					
transaction GHC					
(annual)	26,820,000*	116,528,656	413,158,798	2,351,000,000	11,592,000,000

Source: www.bog.gov

CHAPTER FOUR

METHODOLOGY

4.0 Introduction

This chapter addressed the methodology which included the processes and techniques used in carrying out the study in order to answer the research questions that were outlined in chapter one of the study. The researcher approached this by looking at the various paradigms, research approach and design strategies, the sampling technique and sample size, the instruments used and method that was used to analyse the data.

4.1 Research Paradigms.

Saunders *et al.*, (2007) referred to research philosophy as the —assumptions and beliefs that govern the way the researcher view the world. It can also be seen as the general framework within which a researcher may work (Sobh & Perry, 2005). It is very essential for a researcher to justify the use of a particular paradigm and not to see one paradigm being superior to the other (Saunders *et al.*, 2007). Bryman and Bell (2007), posit that a research paradigm is exceptional at doing different things subject to the research questions proposed by the researcher. Generally, there are three types of research paradigms or philosophies- interpretivism, realism and positivism.

4.1.1 Interpretivist Paradigm

Interpretive paradigm is built on the view that the world is subjective and is seen differently by persons (Guba & Lincoln, 1994). Collis and Hussey (2009) argued out that the theory underpinning this philosophy is that, the researcher and the researched have some mode of interaction between them. In that, the researcher and the researched is very difficult to be

differentiated. The goal of the interpretivist philosopher, according to Craton (2001) is to understand the meaning of a phenomena rather than to generalize or predict outcome.

Qualitative methods mostly satisfy the use of the interpretive approach (Glesne & Peshkin, 1992; McQueen, 2002; Nind & Todd, 2011; Silverman, 2000; Thomas, 2003; Willis, 2007).

Qualitative methods according to Thomas (2003) are usually supported by interpretivists, because the interpretive paradigm “portrays a world in which reality is individually and socially constructed, complex, and ever changing...” (p.6).

The paradigm was not used for the study because the researcher’s focus is not to understand the meaning of a phenomena, but rather to generalize the finding from the study by collecting and analysing data from the field.

4.1.2 Realism Paradigm

Realism is defined by Saunders *et al* (2007), as the epistemological position, in which objects exist independently of our knowledge and existence. The realism paradigm paves a way for chance to understand the beliefs and thoughts of individuals to be assessed from a wider perspective. Real subjects to the realists, exist on its own, based on the consciousness of the human mind and combining the positivist and the interpretivism paradigms can be used to gain better understanding of the subject.

Qualitative approaches in the form of case studies and interviews are largely used (Sobh & Perry, 2005). However, this philosophy is time consuming, much more expensive and the researcher needs to know multiple methods and approaches and how to mix the methods appropriately. In spite of the above limitations, the mixed methods can answer a broader

range of research questions due to the use of more than a research method. It also overcome the weakness of both the interpretivists and the positivists (Johnson & Onwuegbuzie, 2004). The researcher did not use the realist paradigm because in the methodological purists, a researcher needs to resort to one particular philosophy and also there is a problem of how to analyse quantitative data and how to interpret conflicting results that might arise in the qualitative and the quantitative data.

4.1.3 Positivist Paradigm

With the positivist paradigm, the focus is greatly on theories to be able to predict a social phenomenon (Collis & Hussey, 2009). The epistemological position of these philosophers was described by Saunders *et al* (2007), as working with observable social reality. The researcher can be separated from the researched. Quantitative methods such as survey research and experimental approaches are their methodological underpinnings (Jupp, 2006). This paradigm was used because it mostly used in business school research (Orlikowski & Baroundi, 1991). The research aims of the study is to explain the relationship that exists among the variables and the use of the positivist paradigm sits well. The use of the positivist paradigm will also enable the researcher to assess how social influence will moderate factors of adoption and behavioural intentions of subscribers. The positivist paradigm was therefore used for this study.

4.2 Research Approach

An approach to research is taken in order to make suitable decisions and reduce uncertainties. According to Saunders *et al* (2007), all research approaches are better in various ways in doing different things and as such researchers should not assume a particular research

approach is superior to the other. Characteristically, research approaches can be divided into three types of methodologies; quantitative, qualitative and mixed methods (Neuman, 2007; Amaratunga *et al.*, 2002; Cooper and Schindler, 2006).

4.2.1 Qualitative Approach

A qualitative research approach which is based on the interpretivist paradigm believe qualitative research is used to understand underlying reason, opinions and motivations. Maanan (1983) defined qualitative research as an approach that seeks to describe, decode and translate phenomena in terms of meaning rather than frequency. Qualitative research uses a small sample size where respondents are selected to fulfil a given quota (Wyne, 2011). The researcher did not use this approach because the aim of the study was not to gain in-depth view of a smaller respondent on the adoption and behavioural intentions of mobile money services in Ghana.

4.2.2 Quantitative

Quantitative researchers follow the positivist paradigm. It involves the collection of factual data that is measured and quantified (Amstrong, 2009). Amaratunga *et al.*, (2002) defined quantitative research as a type of research where theories are not only justified by the extent to which they can be verified but also by an application of facts acquired. Others (see Denzin, Norman and Lincoln 2003; Leedy & Ormrod 2005) saw quantitative research as an approach to research inquiry that involves statistical analysis and focuses on measuring, confirming or validating relationships between variables to develop generalizations that contribute to the theory.

4.2.3 Mixed methods

According to Creswell (2009), the mixed method involves collecting and analysing qualitative and quantitative data in a single study. Aina (2002), argue that using the mixed methods overcome the weakness found in the qualitative and the quantitative methods. For example, Creswell and Plano-Clarke (2007) indicated that qualitative and quantitative approaches are used to reinforce each other so the use of the overall strength of a study is greater when the mixed method approach is used. Although, according to Johnson and Onwuegbuzie (2004), the mixed methods can add insights and understanding that might be missed when using either qualitative or quantitative methods, the mixed methods can also be used to reinforce generalizations of results but this method is more expensive and time consuming.

However, the focus of this study was to quantitatively establish the association between various constructs (adoption and behavioural intentions of mobile money services). The study used the quantitative method or approach because this method enabled the researcher to use a questionnaire to collect data from a larger number of participants for analysis. Also choy (2014), posit that quantitative studies and be carried out quickly as responses can be analysed within a short period as compared to the qualitative and the mixed methods. This approach was gain used by the researcher in order to establish, confirm or validate relationships and also to develop generalizations that will contribute to theory.

4.3 Research Design

Research design is defined as the procedure(s) for collecting, analysing, interpreting and reporting data in research study (Creswell & Plano Clark, 2007). It can also be considered as the overall blueprint underpinning the research (Ghauri & Gronhaug, 2005; Malhotra, 2006).

Survey research has been described by Saunders et al., (2007), as a type of research that is associated with the deductive approach and entails a structured gathering of data from a large population economically. According to Fraenkel and Wallen (2006), the key purpose of a survey is to describe the self-reported characteristics of a population and it often uses structured questionnaires and interviews. The survey relates to the deductive approach and is the frequently used method in research (Seyed, 2008). It entails gathering a large quantity of data which includes questionnaires, semi-structured interviews and structured observation in an appropriate and efficient manner (Thornhill *et al.*, 2003). Surveys can be used to collect both primary and secondary data from a sample of the population.

The survey method suits well with this study due to the cross-sectional nature of data collection. The study, therefore, used the cross-sectional survey. This method utilizes different groups of people of who differ in the variable of interest, but share other characteristics such as socioeconomic status, educational background and ethnicity (Cherry, 2015). Also, according to Robson, (2002) survey strategy usually suits cross-sectional studies. The cross-sectional survey again allows the researcher to look at different things at once (age, income, gender) and is often appropriate when assessing the prevalence of something in a given population at a particular point in time.

4.4 Target Population

Babbie (2008), defined a study population as the aggregation of elements from which the sample is actually taken. Kumekpor (2002) posit that the population is the total number of units of the phenomena to be investigated that exist in the area of investigation. The target population defines those units for which the findings of the survey are meant to generalize (Lavrakas, 2008). The study was conducted based on the way MTN Ghana has structured its

Strategic Business Unit (SBUs). These units are Kumasi, Accra, Cape Coast, Takoradi, Sunyani, Tamale, Wa, Koforidua, Ho and Bolgatanga. The study examines the adoption and behavioural intentions of users of mobile money services in Ghana. The target population was therefore all users of mobile money services in these strategic business units which also captures the ten regions of Ghana. This will enable the researcher to have a fair presentation of respondents so to generalize findings of the study.

Also, researchers who have done studies in the mobile money service captured a particular part of the region for the study. For example, except Aker and Wilson who did their research in Northern Ghana, other researchers (see Osei-Assibey, 2014, Dzokoto & Mensah, 2011, Tobbin & Kuwornu, 2011), this study saw it prudent to also conduct this study using the ten regions in Ghana.

4.5 Sampling Technique

Bryman and Bell (2007) saw sampling method in two forms; probability and non-probability sampling methods. The probability sampling units are selected by chance and it includes the cluster sampling, random sampling, and systematic sampling. However, the non-probability sampling procedure is dependent on the individual judgement of the researcher and it includes purposive sampling, convenience sampling and quota sampling (Saunders *et al.*, 2009; Collis & Hussey, 2009). This study adopted the probability and the non-probability sampling technique specifically purposive sampling and simple random. Probability samples according to Henry (1990), can determine possible bias and likely error and non-probability sampling can be used to achieve particular objectives of the research at hand.

A purposive sampling method was used to capture the various study areas and the simple random sampling was used to sample the subscribers. The purposive sampling method was used to sample the regional business units because majority of users of mobile money services is seen carrying out their daily activities (i.e. mobile money services) in these units. The simple random method was used to give equal chance to the users of the service. This was done by randomly selecting users, who were physically present at each of the business/service centre until specified member or units were selected. The selected users were not given a chance to be selected again.

4.6 Sample size

Shajahan (2006) defined sample as a subset of the population of study and a sample according to Vernoy and Kyle (2002) is a relatively small representative group selected from a population. In order to conduct a reliable factor analysis the sample size needs to be big (Costello & Osborne, 2005; Field, 2009; Tabachnik & Fidell, 2001). This is because the sample size is critical in Structural Equation Modelling (SEM).

Although there is little consensus on the recommended sample size for SEM (Sivo et al, 2006), according to Hair, Black, Babin, Anderson and Tatham (2006), the minimum sample size of Structural Equation Modelling (SEM) analysis is 100-150 respondents. However, Garver and Mentzer (1999) and Hoelter (1983) proposed a critical sample size of two hundred (200) respondents.

The researcher decided to sample three hundred and fifty (350) respondents in order to get a fair representation of the respondents and also provide sufficient statistical power for data analysis.

In all three hundred (300) subscribers were sampled representing 86% of the sample size showing a good data for analysis (Malhotra & Birks, 2007).

4.7 Sources of Data

Primary and secondary data are the two main data sources. Primary data are the name given to a data that are used for a specific purpose for which they were gathered (Francis, 2008). According to Yin (2003), primary data are collected with a given purpose in mind. Primary sources of data were used for field data collection and this constituted data gathered by the researcher in order to address the research problem. Although the primary data source can be in the form of interview, observation, however, this study used well-structured questionnaires. This type of primary data was used so that the researcher can quantify users' adoption and behavioural intentions in using mobile money services in Ghana.

Unlike the primary data source, secondary data on the other hand, refers to data collected for purposes other than the problem at hand (Malhotra, 2006). It again include data that has already been gathered and assembled for other purposes than the current research problem (Yin, 2003; Hair *et al.*, 2006; Saunders *et al.*, 2009). Secondary data sources include customer complaint file, employee appraisal results, annual reports, annual abstract of statistics, monthly digest of statistics, economic trends, national budgets or accounts, social trends, books and journals. Numerous advantages are associated with the use of secondary data sources. For instance, it can be collected at a lower cost and the time frame within which data is collected can be very fast relative to primary data sources.

In spite of the above strengths of secondary data sources, however, the researcher preferred to use primary data sources as the main source of data because this source would ensure that the

study did not use a data that has questionable quality (Babbie, 2008). For example, the use of a secondary source like financial statements is mostly manipulated by companies to suit their needs. Such data source (i.e. secondary data source) could be outdated and also might poorly meet the researchers' current needs (Cooper & Schindler, 2006) and since it is usually collected for a different purpose, its content might correlate poorly with the researchers' current objectives (Yin 1994; Hair *et al.*, 2006).

4.8 Data Collection Method

4.8.1 Instrumentation

Questionnaires were the main source of primary data. Kumar (1999) also defined questionnaire as, a list of questions with which a respondent is expected to read, give an interpretation of what is expected and then select the opinion that best suits the question. The structured questionnaires were adapted as the wording of the questions were modified to reduce ambiguity. The questions were adapted from previous studies to ensure the validity and reliability of the items. This was also to validated items were utilized in order to ensure high quality of this empirical research. The standardized questionnaire allows easy comparison of different answers from respondents in the analysis of data for the study (Saunders *et al.*, 2007; Neuman, 2007; Patton, 2002).

The questionnaire is also an effective tool when the researcher would want to gather opinions, attitudes, measure cause and effect relationship (Malholtra, 2007; Ghauri & Gronhaug, 2005). Questionnaires are easy to administer, have undoubted reliability due to its limited stated alternatives (Malhotra, 2007).

Although, there were several means (personal interviews, telephone interviews, observation and the self-administered questionnaire) through which the researcher can obtain information

from the respondents, the research used the self-administered method. A questionnaire was given to the target sample to read and tick the option that best explains the answer.

According to Fraenkel and Wallen (2006), in designing questionnaires, its structure can be based on scales, multi-choice and on dichotomous. Scales refer to a special type of measurement in which numbers are assigned to positions and the assignments indicating varying degrees of the property under consideration (Fraenkel & Wallen, 2006). The use of scales is employed in this study Guy *et al.*, (1987) indicated that there are a lot of scales in social research, but most frequently used are the rating scales (placing a person or object being rated in one of an ordered set of categories) and the questionnaire-based scales (The use of multiple statements that are tallied so as to create a single composite score). The items that were used to represent a construct is discussed below.

4.8.2 Instrumentation Design

A Likert scale which ranged from 1=strongly disagree to 5= strongly agree was used. The questions were adapted from researcher who either used the questions in a mobile payment or mobile banking environment.

Perceived Usefulness (PU) and Perceived Ease of Use were adapted from Davis (1989), Davis et al. (1989), Moore and Benbasat (1991) and Thompson et al. (1991). Social Influence (SI) was adapted from Ajzen (1991) and Thompson et al. (1991). Future Behavioural Intention (BI) was adapted from Davis (1989) and Davis et al. (1989).

Relative Advantage (RA) and Perceived Complexity (PC) were measured by items adapted from Moore and Benbasat (1991) study. Perceived Risk (PR) was adapted from Ndubisi and

Sinti (2006) and Laukkanen and Cruz (2009), Perceived Cost of Use (PCOU) was measured by adapting the instrument from Luan and Lin (2005) and Perceived Trust was adapted from Pavlov (2002) and Munoz-Leiva (2008).

In all, thirty (30) items were used to measure nine (9) constructs. Three (3) items each were used to measure Perceived Cost Of Use (PEOU), Perceived Usefulness (PU), Social Influence (SI), Behavioural Intention (BI), Perceived Risks (PR), Perceived Complexity (PC) and four (4) items each were used to measure Relatively Advantage (RA), Perceived Trust (PT) and Perceived Cost Of Use (PCOU).

The Instrument was in three (3) sections. The first (section A) part measured the demographic characteristics of the respondents, the second (section B) and the third (section C) measured both factors of adoption and the behavioural intentions of mobile money service subscribers.

4.9 Data Collection Procedure

An introductory letter was taken from the Department of Marketing and Entrepreneurship. The various regional business units were contacted. The questionnaire was left with the respondents. The researcher left the presence for the respondents to fill the questionnaire so that the researcher's presence does not influence the responses of the respondents. Due to the simple and clear wording of the questions, the respondents were able to fill the questionnaires with ease.

The collection of the data lasted for three weeks and in all three hundred (300) questionnaires were retrieved out of the three hundred and fifty (350) questionnaires sent out which represented a 86% response rate.

4.10 Data Analysis

Data analysis has to do with gathering, summing and collecting the collected data from the field with the results reflecting important aspects to the topic under study (Saunders et al., 2008). The data collected from this study were analysed with the help of SPSS version 20 and SmartPLS 3.2.4. Data was coded and screened for outliers or any other variation in the data set. Descriptive analysis was used for demographic variables and hypotheses were tested using Structural Equation Modelling (SEM).

In order to determine whether social influence moderates the effect of mobile money adoption factors on behaviour intention, social influence was grouped into low social influence and high social influence using cluster analysis. After, an independent t-test was used to assess if there is any significant statistically difference on the positive effect strengthens of behaviour intention between low influence social and high social influence based on the mobile money adoption factors.

- **Validity Analysis**

The validity of a scale is essential for its confidence. According to Babbie (2008), validity describes a measure that accurately reflects the concepts it is intended to measure. Validation were performed through face, content and constructs validations.

- **Face Validity**

Pre or pilot test was used to assess face validity. This was done at the University of Ghana Business School, where thirty (30) students were sampled. The aim of the test was to identify items that were ambiguous for modification hence, unclear statements were correctly worded.

- **Content Validity**

Babbie (2008), saw content validity as a degree to which a measure covers the range of meaning included in the concepts. It was done through expert opinions. My supervisor, teaching assistances and colleague in the Marketing and department used their expert opinions to examine the understandability and suitability of the questions.

- **Construct Validity**

The structured questionnaire constructs validity was determined by conducting a Confirmatory Factor Analysis (CFA). The confirmatory factor analysis (CFA) was used to purify the measures, assess the unidimensionality of the scale items, and to assess discriminant validity (scores on the measure do not correlate with variations that should differ, or are expected by theory to not correlate with the construct) among these constructs.

- **Reliability Analysis**

Reliability refers to the extent to which a measuring instrument yields consistent results under similar conditions (Hair *et al*, 2006). Thus a measuring device is said to be reliable if it gives the same or almost exactly the same results on repeated measures of the same object, assuming that the object itself is stable.

Reliability also measures the degree of consistency between multiple measurements of a variable. A commonly used measure of reliability is internal consistency, which applies to the consistency among the variables in a summated scale. The most extensively used measures for the consistency of a scale is the Cronbach's alpha (Hair *et al.*, 2006; Trochim, 2001),

measuring internal consistency as the average of all possible split-half coefficients resulting from different ways of splitting the scale items (Malhotra and Birks 2006).

Table 4.1 depicts the reliability analysis after the pre-test.

Constructs	Cronbach Alpha values
Perceived Cost of Use	0.797
Perceived Usefulness	0.778
Social Influence	0.669
Behavioural Intention	0.810
Perceived Risks	0.637
Perceived Complexity	0.779
Relatively Advantage	0.803
Perceived Trust	0.739
Perceived Cost of Use	0.611

Source: Field Data, 2016

The value of the Cronbach's alpha ranges 0 to 1. The more the alpha value approaches 1 the more reliable it becomes. A value above 0.60 is generally accepted as satisfactory internal consistency, 0.70 is adequate and 0.80 represent a good scale (Hair et al., 2006). From table 3.1, alpha values ranged from 0.611 to 0.810, these values were greater than 0.60; hence constructs were deemed reliable (Nunnally & Bernstein, 1994).

4.11 Ethical Consideration

A content letter was taken from the Department of Marketing and Entrepreneurship of the University of Ghana Business School (UGBS). Respondents were not coerced to fill the questionnaire and there was no form of material gifts that influence their responses. To ensure anonymity, respondents were not asked of any sensitive questions like their names and personal addresses. To ensure confidentiality, a covered and empty box was left at the reception of the various offices where respondents dropped their filled questionnaire.

CHAPTER FIVE

DATA ANALYSIS AND PRESENTATION OF FINDINGS

5.0 Introduction

This chapter presents the empirical aspect of the study, which involves the analysis of the data gathered and the interpretation of data gathered based on the literature reviewed. This section is broadly divided into three sections-descriptive analysis, inferential analysis and the discussions of the findings based on literature. The descriptive analysis illustrates the background details of the respondents. Descriptive analysis was used to compute the mean and standard deviation of the latent constructs. The final section concentrates on the discussion of the results based on the literature reviewed for the study.

5.1 Demographic Characteristics of Respondents

Several demographic variables were collected in this study comprising, gender, age, level of education, years of using mobile money service, types of services mostly used and these results have been summarized in Table 5.1. From the table, out of the 300 respondents included in this study 59% were male while 41% were female. Also, the results showed that 27.7% of the respondents were below age 24, with 32% between the ages 25-31. Respondent between the ages of 32-38 were made up of 18.7% with 39-45 years constituting 13%. Finally 46-52 years were 5% of the respondent and above 53 years making 3.3%. This implies that majority of them were in the economically active population.

Further, table 5.1 shows that 3.7% of the respondents were single Junior High School graduates while 19.3% were Senior High School or Vocational/Technical graduates. Major (56.7) of the respondent were territory students and 19% of them being Post-Graduate students. With regards to the number of years respondent had used mobile money services,

5.7% had used the service under 1 year whilst 22.3 had used the service between 1 and 2 years. Also, 28.7% had used the service between 2 and 3 years and 43.3% had used the service above 5 years. This indicates that most of the respondents have been active users of mobile services for while now.



Table 5.1: Demographics of Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	177	59
	Female	123	41
Age	Less than 24	83	27.7
	25-31	96	32
	32-38	56	18.7
	39-45	39	13
	46-52	15	5
	53 and above	10	3.3
	Level of education	Junior High	11
Senior high/Vocational/Technical level		58	19.3
Tertiary		170	56.7
Post graduate		57	19
Others		3	1
How long using mobile money services	Less than a year	17	5.7
	1-2 years	67	22.3
	3-4 years	86	28.7
	Above 5 years	130	43.3
Buy Airtime	No	71	23.7
	Yes	229	76.3
Pay bills (DSTV, Utility)	No	249	83
	Yes	51	17
Transfer money	No	60	20
	Yes	240	80
Receive Money	No	39	13
	Yes	261	87
Savings	No	204	68
	Yes	96	32

Source: *Field Survey (2016)*

In terms of type of services mostly patronized, it was observed that 76.3% have been buying Airtime while 23.7% have not used mobile money service for airtime purchase. Only 17% had used mobile money services for bill payment and 80% of the respondents have been

using money transfer services on mobile money. Finally, whilst 87% have been receiving money through mobile money, only 32% actually use mobile money for savings purposes.

5.2 Data Analysis and Results

The analysis of data were done using descriptive analysis and partial least squares structural equation modelling approaches available in SPSS 20.0 and SmartPLS 3.2.4 (Ringle, Wende, and Becker, 2016)) respectively. Partial Least Squares Structural Equation Modelling (PLS-SEM) was employed to evaluate the adequacy of measurement model of the principal constructs and the predictive relevance of the conceptual model, and thereby test the hypothesized relationships (see Figure 1). PLS-SEM was suitable as the main objective of the study was concerned with maximizing the prediction of respective constructs to predict the contribution of various antecedents on intention to use mobile money services.

Additionally, PLS-SEM was selected because of its distribution-free assumption, which was appropriate for the purpose of this study. The PLS algorithm permits each indicator to vary with how much it contributes to the composite score of the latent variable, instead of assuming equal weight for all indicators of a scale (Chin et al., 2003). For sample size considerations in PLS-SEM, according to Hair, Ringle and Sarstedt (2011, p.144), as a common rule of thumb for appropriate sample size for testing PLS-SEM models is the rule of ten, which suggests ten times the largest number of structural paths directed at a particular latent construct in the structural model. In this study, the highest number of structural paths (seven independent variables) directed a latent construct (intentions to use mobile money services) at a time was seven. Therefore seven multiplied by ten gives 70 cases; thus, our sample 300 respondents could be described as satisfactory.

Though PLS-SEM estimates both the measurement model and the structural model concurrently, the assessment of the estimated full model should followed Hair et al.'s (2011,

p.144) two-step approach; the examination of the measurement (outer) model before the estimation of the structural (inner) model. While the measurement model allows us to examine whether the constructs are measured with satisfactory accuracy, the structural model helps us to assess the explanatory power of the model (see Cool, Dierickx, & Jemison, 1989). The former is, however, a prerequisite for the latter as it only makes sense to evaluate the structural model when the measurement model shows evidence of reliability and validity (Henseler et al., 2009). The SmartPLS 3.2.4 software was set to 500 bootstrap samples for the estimation of significance of the t-values (Chin, 2010). Moderation and a multi-group analysis (MGA) was performed using Henseler's non-parametric PLS-SEM-MGA approach, which is available in SmartPLS 3.2.4.

5.3 Assessment of the Measurement Model

All the constructs in the study are reflective and not formative, hence in order to validate the model fitness there is the need to examine the composite reliabilities (CR), average variances extracted (AVE), item loadings' size and significance, and discriminant validity (see Liang, Saraf, Hu, & Xue, 2007). Cronbach's alpha and the Composite Reliability test revealed that all constructs showed a value above the threshold (0.7 for both Cronbach's alpha and CR, adopted by Bagozzi and Yi, 1988) (see Table 5.2).

Table 5.2: Constructs Reliability and AVE

	Cronbach's Alpha	Composite Reliability	AVE
BI	0.826	0.896	0.741
PC	0.734	0.809	0.590
PCU	0.772	0.868	0.687
PEOU	0.848	0.908	0.767
PR	0.906	0.941	0.841
PT	0.809	0.886	0.722
PU	0.845	0.906	0.763
RA	0.828	0.896	0.743
SI	0.812	0.889	0.727

Source: *Field Survey (2016)*

5.4 Convergent Validity

Convergent validity according to scholars describe how indicators together explain a construct and shows the extent to which each measure correlates with other measures of the same latent construct (Hair *et al.*, 2010). To test for convergent validity, composite reliability factor loading, and AVE (Average Variance Extracted) were examined. It is acceptable if an individual item factor loading is greater than 0.7, composite reliability exceeds 0.7, and AVE exceeds 0.5 (Gefen *et al.*, 2000) (see Table 5.3). All loadings for the reflective constructs exceeded 0.7 and were shown to be significant at Bootstrap t-statistics ($\alpha = 0.01$), while satisfying CR and AVE criteria.

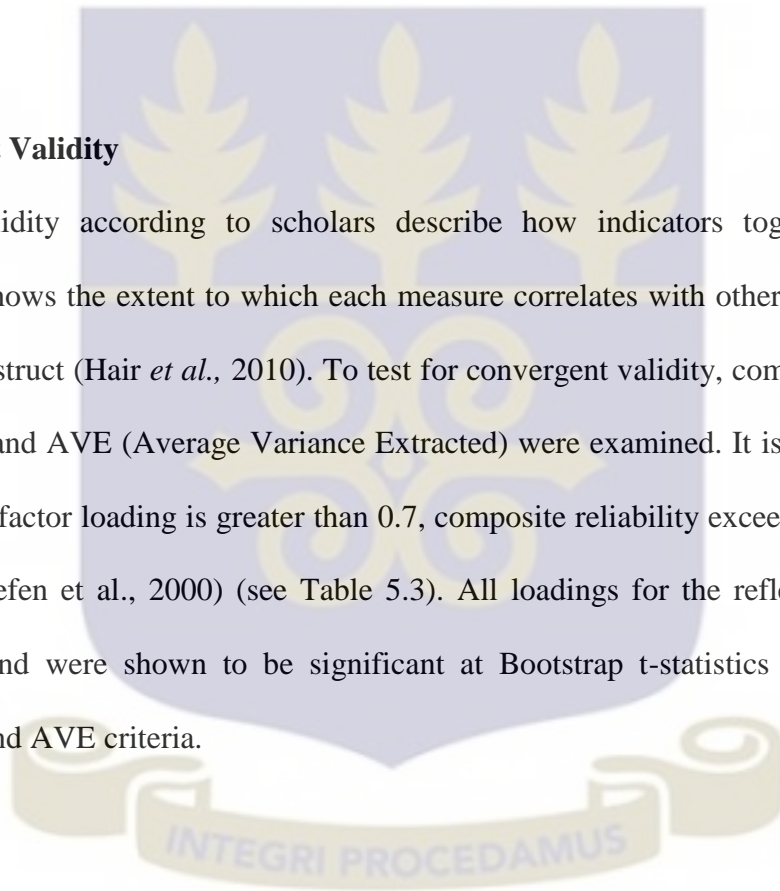


Table 5.3: Cross Loadings for Item and Convergent Reliability

	BI	PC	PCU	PEOU	PR	PT	PU	RA	SI
BI1	0.859	-0.118	0.593	0.538	0.525	0.600	0.614	-0.102	0.616
BI2	0.874	-0.050	0.568	0.505	0.544	0.614	0.624	-0.083	0.596
BI3	0.850	-0.090	0.578	0.512	0.537	0.600	0.572	-0.119	0.605
PC1	-0.030	0.657	0.029	0.024	0.030	0.011	-0.043	0.022	-0.032
PC2	-0.046	0.716	0.032	0.032	0.018	-0.047	-0.049	-0.032	-0.025
PC3	-0.111	0.908	-0.024	-0.049	0.103	-0.072	-0.045	-0.038	-0.069
PCU1	0.588	-0.028	0.833	0.421	0.494	0.644	0.543	-0.167	0.537
PCU2	0.581	0.065	0.864	0.454	0.744	0.626	0.580	-0.197	0.566
PCU3	0.499	-0.048	0.787	0.407	0.548	0.605	0.596	-0.051	0.523
PEOU1	0.541	-0.001	0.462	0.889	0.473	0.536	0.506	-0.116	0.562
PEOU2	0.543	-0.010	0.449	0.903	0.491	0.518	0.529	-0.146	0.578
PEOU3	0.497	-0.047	0.447	0.835	0.452	0.450	0.502	-0.136	0.474
PR1	0.525	0.076	0.632	0.445	0.897	0.538	0.754	-0.127	0.489
PR2	0.620	0.073	0.679	0.538	0.936	0.619	0.777	-0.198	0.654
PR3	0.559	0.087	0.667	0.494	0.918	0.609	0.748	-0.174	0.580
PT1	0.656	-0.074	0.643	0.505	0.592	0.841	0.654	-0.219	0.627
PT2	0.529	-0.040	0.618	0.416	0.509	0.859	0.576	-0.145	0.481
PT3	0.591	-0.046	0.658	0.530	0.528	0.850	0.583	-0.161	0.573
PU1	0.555	-0.031	0.574	0.448	0.695	0.556	0.846	-0.068	0.484
PU2	0.640	-0.048	0.627	0.553	0.764	0.649	0.898	-0.170	0.644
PU3	0.636	-0.066	0.601	0.525	0.711	0.661	0.876	-0.130	0.634
RA2	-0.087	-0.026	-0.126	-0.106	-0.119	-0.172	-0.086	0.864	-0.119
RA3	-0.121	-0.030	-0.140	-0.138	-0.159	-0.184	-0.139	0.913	-0.162
RA4	-0.090	-0.029	-0.184	-0.146	-0.198	-0.187	-0.141	0.806	-0.115
SI1	0.535	-0.064	0.551	0.535	0.510	0.551	0.578	-0.116	0.814
SI2	0.655	-0.086	0.578	0.581	0.601	0.600	0.614	-0.152	0.894
SI3	0.601	-0.012	0.545	0.459	0.499	0.553	0.541	-0.129	0.848

Notes: item loadings are in bold

Source: *Field Survey (2016)*

5.5 Discriminant Validity

Discriminant validity refers to the extent to which the measure of a construct does not correlate with measures of other constructs, and thus measures the extent to which constructs are distinct. Discriminant validity was considered adequate since the square root of the AVEs (in the diagonal) are greater than their respective inter-construct correlations as is in Tables 5.3 and 5.4 (Fornell & Larcker, 1981). Additional support for discriminant validity comes through inspection of the cross-loadings (Table 5.3), which indicate that the measurement items for each construct load higher on their respective constructs than they load on other constructs (Chin, 2010; Hair et al., 2011). Since the square root of the AVE's (in the diagonal) are greater than their respective inter-construct correlations as depicted in Table 5.3 and Table 5.4, conditions for discriminant validity was fulfilled (Fornell & Larcker, 1981).

Furthermore, the inspection of the cross-loadings in Table 5.3 support discriminant validity, as it shows that the measurement items for each constructs load higher on their respective constructs than they load on other constructs (Hair et al., 2011). These confirm that the measurement items explains adequately their respective constructs more than they do explain other constructs in the structural model. Because the conditions for construct reliability and validity of the outer model are satisfactory, we can conveniently move on to examine the psychometric properties of the structural models.

Table 5.4: Latent Variable Correlations and Discriminant Validity

	BI	PC	PCU	PEOU	PR	PT	PU	RA	SI
BI	0.861								
PC	-0.100	0.768							
PCU	0.673	-0.002	0.829						
PEOU	0.602	-0.021	0.516	0.876					
PR	0.622	0.086	0.720	0.539	0.917				
PT	0.702	-0.064	0.754	0.574	0.643	0.850			
PU	0.701	-0.056	0.688	0.585	0.829	0.715	0.873		
RA	-0.117	-0.033	-0.172	-0.151	-0.184	-0.209	-0.143	0.862	
SI	0.703	-0.064	0.654	0.616	0.631	0.666	0.677	-0.156	0.853

Notes: AVEs are in the diagonal; correlations are below the diagonal

Source: *Field Survey (2016)*

5.6 Assessment of the Structural Model

Having examined the measurement (inner) model to be suitable (i.e., reliable and valid) the next stage is to assess the structural model. To do this, it's important to first examine the multiple squared correlation coefficients (R^2) for each dependent (endogenous) variable in the structural part (Chin, 1998), showing the amount of variance in the dependent variable explained by its corresponding model. In PLS-SEM, the interpretation of the R^2 is not different from the traditional MLR (Chin, 1998), and obviously, there are no definite guidelines for the evaluation of a model as “good or bad” only based upon the magnitude of R^2 as this will be dependent on several factors.

This is the more reason why scholars are urged to give significant considerations to the nature of the dependent variable, the number and relevance of the independent variables and assumptions etc. (Keith, 2006). In effect, a model that is able to explain 25 percent of the variance in a dependent variable can be considered reasonable or having a large effect seen in relation to ANOVA (Keith, 2006). In other words, the variance explained for each dependent variable should, as a rule of thumb, be greater than 10 percent (Duarte & Raposo, 2010).

To further help evaluate the quality of the structural model, Tenenhaus et al., 2004 proposed an additional global criterion of GoF with the intent to account for the performance of the model at both the measurement and the structural parts (all of the R^2 values are taken into consideration) with a focus on overall prediction performance of the model (Chin, 2010). Accordingly, GoF can be used as an index for validating the model globally (Tenenhaus, Esposito Vinzi, Chatelin, & Lauro, 2005). The GoF index is bounded between 0 and 1; models displaying relative GoF values equal to or higher than 0.90 can be considered good (Esposito Vinzi et al., 2010).

5.7 Results of Structural Model

In PLS-SEM, structural models' validity are assessed through the strength of regression weights, t-values, *p*-values for significance of t-statistics, as well as effect sizes of independent variables on the dependent variables (Chin, 2010; Hair et al., 2011). The results of hypothesis testing are presented in Tables 5.5 and 5.6 (Base and moderated model respectively) and the results of the PLS-Multi group analysis (MGA) for the control variables are presented in Tables 5.7, 5.8 and 5.9.

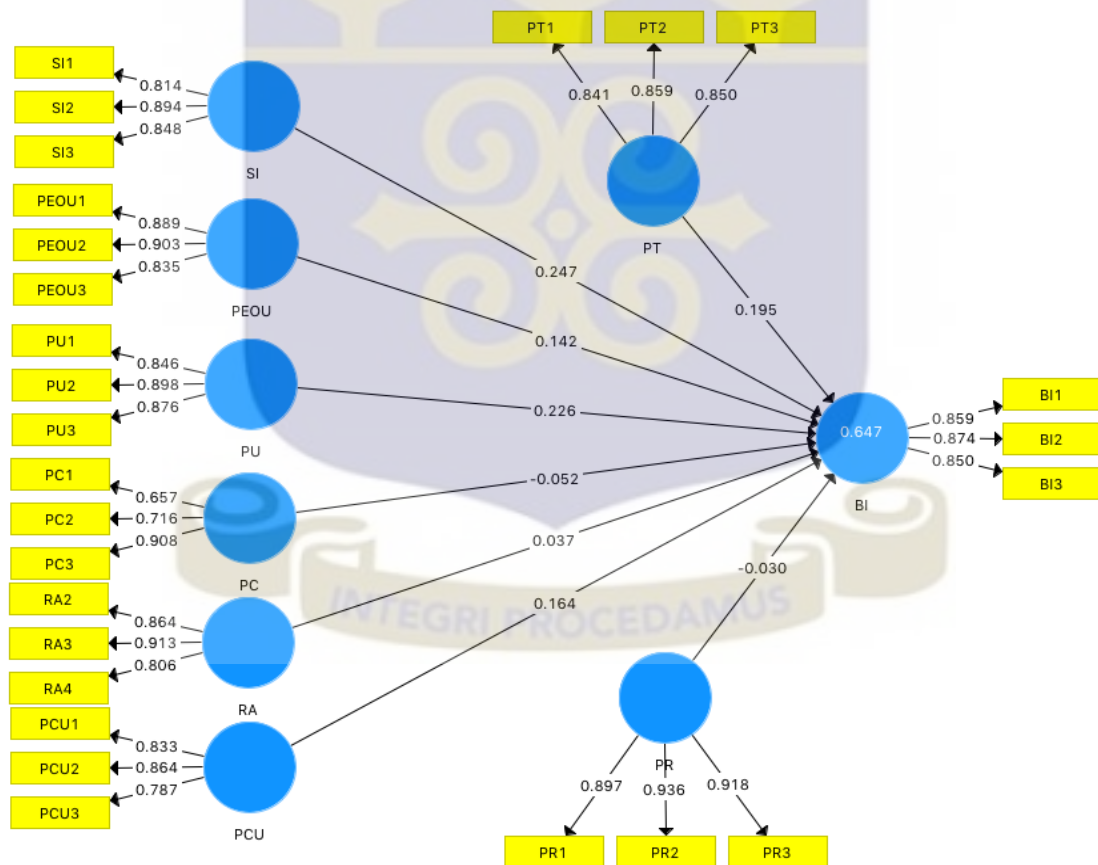
Table 5:5 Results of hypothesis testing for the model 1

Hypothesis	Hypothesized Relationship	Regression Weight	Std. Error	T-value	P-value	R ²	Result
H1	PC -> BI	-0.052	0.047	1.116	0.265		Not Support
H2	PCU -> BI	0.164	0.075	2.191	0.002		Supported**
H3	PEOU -> BI	0.142	0.052	2.740	0.005		Supported**
H4	PR -> BI	-0.030	0.050	0.603	0.547		Not Support
H5	PT -> BI	0.195	0.065	3.009	0.003	0.647	Supported**
H6	PU -> BI	0.226	0.083	2.718	0.005		Supported**
H7	RA -> BI	0.037	0.034	1.092	0.275		Not Support
H8	SI -> BI	0.247	0.070	3.511	0.000		Supported*

Notes: * significant at 0.01, ** significant at 0.05.

Source: *Field Survey (2016)*

Figure 5.1: The Structural Equation Model



Source: *Field Survey (2016)*

The first hypothesis was tested to assess the relationship between perceived complexity (PC) and behavioural intention. The observed regression weights, t-value and p-value indicated the relationship is not significant. This could suggest that, the respondent being literate and techno savvy does not see mobile money services to be complicated and difficult to navigate around. Hypothesis 1 was not support in the study as indicated in table 5.5.

From table 5.5 PCOU had a significant positive relationship with behavioural intention (BI), which support hypothesis 2. Strong positive effects of PCOU on BI were manifest when observing the regression coefficient. (**t-value=2.339, p < .0003**). The findings suggest the extent to which an individual believes that using a particular technology will cost money will determine whether they will choose to adopt and use the service or not. The value of money that has to be used up to enjoy mobile money service is very important to customers.

Further, hypothesis three was tested. The relationship between PEOU and Behavioral Intentions (BI) was significant (**t-value=2.493, p < .0004**). The results indicate that PEOU positively predicts customers' behavioural intentions in the mobile money context hence hypothesis three was supported.

The relationship between PR and behavioural intentions (BI) was found not to be significant given the results of t-value and p-values. Unlike the case of susu collectors in the Osei-Assibey (2014) where PR was significant factor in the adoption of mobile money, the characteristics of the respondent (educated/literate) who are more abreast with current technology means that, they have no level of uncertainty regarding the adoption and usage of mobile money. Hypothesis 4 was not supported.

Hypothesis 5 was to examine the effect of PT and Behavioral intentions in the adoption and usage of mobile money services. The regression path between Perceived Trust (PT) and BI was significant (**t-value=3.117, p < .0002**). The whole financial system is based on one pillar

called trust. The confidence a user has in a mobile device to perform expected activity without taking advantage of. The result is indication that, trust is a very significant ingredient to customer's intent to act favourable towards mobile money. Hypothesis 5 was therefore supported.

The sixth hypothesis was tested to investigate the effect of perceived usefulness (PU) on behavioural intentions (BI). The regression coefficient and t-value from perceived usefulness and behavioural intentions was significant (**t-value=2.718, p < .0005**). The result is consistent with Tobbin and Kowornu (2011) findings that the degree to which a person believes that using a particular system would enhance his or her job performance or life will affect their intention to utilize it. Hypothesis 6 was supported.

Hypothesis 7 was to analysis the relationship between RA and BI. The regression coefficient and the corresponding t and p values were not significant, hence hypothesis 7 was not supported. The result could mean that, in terms of mobile money superiority and attractiveness over similar existing products, customers don't perceive any significant difference. In other words, a customer's intention to adopt and use mobile money service is influence by factors other than just its benefits relative to another existing products

Hypothesis 8 was tested. The relationship between social influence (SI) and behavioural intention (BI) was found to be significant (**t-value=3.470, p < .0001**). Based on this result, social influence positively influenced behavioural intention, thus hypothesis 8 was supported.

In all, PEOU, PU, PT, PCoU and SI predict BI by 64.7% (R^2 of **0.647**), in the research context.

5.8 Difference between High and Low Social influence groups

In order to determine whether there is a significant statistical difference between individuals with low and high social influences, in terms of factors affecting mobile money adoption, the independent sample t-test was used. The responses to the variables used to measure social influence were divided into low and high using a cluster analysis known as K-means.

Table 5.6 Relationship between Social Influence and Factors Affecting Adoption

		Group Statistics			
QCL_1		N	Mean	F	Sig.
PEOU	High Social Influence	204	4.250	13.385	0.000
	Low Social Influence	96	3.6076		
PCU	High Social Influence	204	3.5049	1.409	0.236
	Low Social Influence	96	3.4167		
PT	High Social Influence	204	4.1740	1.026	0.312
	Low Social Influence	96	3.6927		
PU	High Social Influence	204	4.2990	10.417	0.001
	Low Social Influence	96	3.5903		

Source: *Field Survey (2016)*

Table 5.6 indicates that there is a significant difference between low ($M = 3.6076$) and high ($M = 4.250$) social influence and their perceived ease of use of mobile money service ($F = 13.385$, $p < 0.05$). There was also a significant difference between low ($M = 3.5903$) and high ($M = 4.2990$) social influence and their perceived usefulness of mobile money service ($F = 10.417$, $p < 0.05$). Social influence was not found to be significant with perceived risk, perceived trust, and relative advantage towards the intention to use mobile service.

5.9 Discussion of Findings

Based on the research objectives and questions of the study indicated in chapter one, this section discusses the findings of the study. The study was undertaken to assess the influence

of eight exogenous variables on behavioural intentions from users of mobile money services. Specifically, the study sought to identify the key drivers of mobile money adoption and usage as well as the extent of influence these drivers have on customer subjective probability to engage in mobile money. The final object of the study was to identify and understand the key services mostly patronized by mobile money users. The results show that there is a positive relationship between five of the hypothesized relationship the study constructs while three independent variables were not significant. Details are explained below.

5.9.1 Main services mostly used by mobile money subscribers

The result shows that mobile money services are used mostly for buying airtime, receiving and transferring money. Other uses like paying bills and for savings were relatively used by fewer respondents. It can be implied that, users of the service do not trust or perceived some risks with the use of mobile money service for paying bills or for savings. Using mobile money for saving is popular among the unbanked. The use of mobile money services according to Gutierrez and Choi (2014), is for sending and receiving money. Looking at the respondents' age and level of education, their access to the banking system is high. Therefore, may not see the need to use mobile money for savings.

The findings suggest that even though mobile money services are designed to provide greater convenience to the everyday life of users, usage has been limited to few service types. Users are not tapping into the full opportunities mobile money services offers such of convenient of paying for goods and services, payment of utility bills and broader financial inclusion to the unbanked through savings on the mobile money wallet.

5.9.2 Drivers to adopt and use mobile money services by customers

The study revealed that factors that significantly lead to the adoption of mobile money services were perceived use, perceived ease of use, perceived trust, perceived cost of use and social influence. The result is consistent with existing literature (Osei-Assibey, 2014, Tobbin and Kowornu, 2011). By implication, among other things respondents are more likely to adopt and use mobile money platform when it is seen to be user friendly, when they see the service to be useful, reliable and relatively cheaper and can be counted on to deliver as expected. The overall model is able to strongly predict customers' behavioural intention towards mobile money adoption and usage. The five drivers of PEOU, PU, PT, PCoU and SI predict BI by 64.7% (R^2 of **0.647**), in the research context. This means that, about 65% of factors that will influence customers to engage in mobile money services are explained by the exogenous variables tested in the study.

5.9.3 Whether individuals with low and high social influence differ in terms of factors affecting mobile money adoption.

The study revealed that, there was significant differences between low and high social influence on perceived ease of use and perceived usefulness of mobile money services. Nonetheless, social influence was not found to be significant with perceived risks, perceived trust and relative advantage towards the intention to use mobile money. The demographic characteristics of respondents from the field indicated that majority of the respondents were educated and they were in their youthful ages which makes them technology savvy. Although, personal characteristic (demographic) variables were not being consistent across studies, extant literature has demonstrated that, social-demographic characteristics have significant influence on behaviour and suggests that younger, higher income and better

educated consumers tend to accept market innovations more quickly (Gatignon & Robertson, 198; Steenkamp et al., 1999).



CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

This chapter discusses the summary, concludes the study and gives recommendations. This chapter also highlights limitation for the study and gave directions for future studies direction. Also, the study contribution to literature was discussed in this chapter.

6.1 Summary

The study adopted a quantitative approach specifically, the cross-sectional method to sample three hundred respondents from the business units of MTN Ghana. The respondents were sampled through the use of a simple random sampling method. Questionnaire was the main research instruments which acted as the main source of primary data. Demographic variables were descriptively analysed and hypotheses from the study were tested using the Structural Equation modelling and the independent sample t-test.

The findings from the study revealed that subscribers used the mobile money services mostly for buying airtime, receiving and transferring money. Other uses like paying bills and for savings were relatively used by fewer respondents. The study also revealed that factors that significantly lead to the adoption of mobile money services were perceived use, perceived ease of use, perceived trust, perceived cost of use and social influence. Again, the study revealed that, there was significant differences between low and high social influence on perceived ease of use and perceived usefulness of mobile money services. Nonetheless, social influence was not found to be significant with perceived risks, perceived trust and relative advantage towards the intention to use mobile money.

6.2 Conclusions

Based on the findings from the study, the study therefore concludes that:

Mobile Money Services are still used for traditional purposes of buying airtime, transferring and receiving money. It seems the traditional use of mobile money services for buying airtime, transferring and receiving money is not only done in Ghana but in other developing economies like Uganda. In Uganda, the use of mobile money services according to Gutierrez and Choi (2014), is for sending and receiving money.

Perceived usefulness, perceived ease of use, perceived trust, perceived cost of use and social influence are the main factors that drives subscribers to the service. This is because when the subscriber believes that, the mobile money system is very easy to use, the cost in using the service is lesser than other means and a guarantee that users will acquire future positive outcomes (trust) in using the service, their level of adoption will increase which also affect their behavioural intention to adopt the service in the future.

Although, social influence was a factor that drives adoption and behavioural intentions of subscribers to use mobile money services, social influence was significant to the perceived usefulness and the perceived ease of the service but was not significant with perceived risks, perceived trust and relative advantage towards the intention to use mobile money. The unbanked populace may be forced to use mobile money as it can be used to perform those services as saving, transferring and receiving money. Notwithstanding that, families and friends who are using mobile money can influence others to use. However, the educational level, the age and the level of education of the sampled respondents for this study made them more technology savvy so their family and friends did not influence their use of the mobile money services in areas of risks, trust and its relative advantage.

6.3 Recommendations

The following recommendations were given:

The need to create more awareness through adverts on the other uses of mobile money services like paying of bills and saving. The adverts will also reduce the level of risks perceived by some subscribers and increase the trust level among them.

Among the factors of adoption, perceived cost of use was seen one of the main factors that influence the adoption of mobile money service. This means the use of the service is cheaper compared to others. The mobile network operator should try and keep the charges to the service low so subscribers especially the unbanked who have been excluded from other financial services can be included. Social influence was one of the factors to the adoption of mobile money service. However, any promotional activities that aims to heightened the interest of family and friends to attract other members of the family unto the service should be very minimal.

6.4 Contribution to literature

Although there are a lot of studies on factors the influence the adoption of technology, that on mobile is less. This study therefore add to the few on mobile money adoption and behavioural intention. This study again add to the few that assessed the role of social influence (family and friends) on the adoption of any kind of technology.

6.5 Limitation to the study and direction for future studies

Limitation of the study are the potential weaknesses or problems that often relate to loss or lack of participants, measurement errors, small sample sizes and other factors typically related to data collection and analysis (Creswell, 2005). The limitation of this study has to so

with only selecting subscribers of mobile money services in only the regional business units/centres. Future study can focus not only on the regional business unit can extends to other merchants outside the regional business unit.

Moderation/Mediation models contain causal path which is affected by the passage of time, using cross-sectional design can produce biased estimates (Aguinis, Edwards & Bradley, 2016). Future studies can overcome this by examining mediation through longitudinal data that will allow for comparing alternatives causal flow.



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Appendix A: Questionnaire

UNIVERSITY OF GHANA BUSINESS SCHOOL, LEGON

QUESTIONNAIRE

Dear Respondent,

I am an Mphil student from the above institution undertaking a research on the topic ‘**Mobile Money Services Adoption and Customer Behavioural Intentions In Ghana**. This information will be used strictly for research purposes and will also be treated with high confidentiality (names are not required). The researcher will be grateful if you contribute to this study by completing the questionnaire as honestly as possible by ticking (√) appropriately.

Thank You.

Section A: Demographic Characteristics of Consumers

Instruction: Please indicate your response by ticking (√) appropriately.

1. Gender of respondents
 1. Male ()
 2. Female ()

2. Age of the respondents
 1. Less than 24 years ()
 2. 25-31 ()
 3. 32-38 ()
 4. 39-45 ()
 5. 46-52 ()
 6. 53 and above years ()

3. Level of Education
 1. Junior High Level ()
 2. Senior High/Vocational/Technical Level ()
 3. Tertiary ()
 4. Post Graduate Level ()
 5. Others (Please specify)

4. How long have you been using mobile services
 1. Less than a year ()
 2. 1-2 years ()
 3. 3-4 years ()
 4. Above 5 years ()

5. Which of the following services do you use mobile money for? (Please tick as many as you can)
 1. Buy Airtime ()
 2. Pay bills (DSTV, Utility) ()
 3. Transfer money ()
 4. Receive money ()
 5. Savings ()
 6. Others (Please specify)

Section B.

Instructions: Please indicate how you agree or disagree with the following statements by ticking (✓) appropriately. Use the scale below:

Strongly Disagree(SD)	Disagree(D)	Neutral (N)	Agree	Strongly Agree (SA)
1	2	3	4	5

NO.	STATEMENTS					
	Perceived Ease of Use (PEOU)	SD	D	N	A	SA
6.	I expect that my interaction with the mobile money services would be clear and understandable.	1	2	3	4	5
7.	I expect the mobile money services would be easy for me to become skillful at the service.	1	2	3	4	5
8.	Learning to operate mobile money services will be easy for me.	1	2	3	4	5
	Perceived Usefulness (PU)	SD	D	N	A	SA
9.	Mobile Money services enables me to receive money easily	1	2	3	4	5
10.	Using mobile money services will enable me to accomplish transactions more quickly.	1	2	3	4	5
11.	Mobile money services allows me to do other transactions such as bill payment/buy airtime	1	2	3	4	5
	Social Influence (SI)	SD	D	N	A	SA
12.	It enables me to send money to my family and friends in Ghana	1	2	3	4	5
13.	My family and friends are all on Mobile Money Services	1	2	3	4	5
14.	People who are important to me think I should use mobile money	1	2	3	4	5
	Behavioural Intentions (B1)					
16.	Given the chance I will use/continue using mobile money services in the future.	1	2	3	4	5
17.	I will recommend mobile money to others.	1	2	3	4	5
18.	I will use other services introduced by Mobile Money Service Providers.	1	2	3	4	5
	Relative Advantage (RA)	SD	D	N	A	SA
19.	Mobile money services are cheaper compared to other money transfers services.	1	2	3	4	5
20.	It is convenient compared to other money transfers services.	1	2	3	4	5
21.	It faster compared to other money transfers services.	1	2	3	4	5
22.	It is safer/reliable compared to other money transfers services.	1	2	3	4	5

Section C:

Instructions: Please indicate how you agree or disagree with the following statements by ticking (✓) appropriately. Use the scale below:

Strongly Disagree(SD)	Disagree(D)	Neutral (N)	Agree	Strongly Agree (SA)
1	2	3	4	5

	Perceived Complexity (PC)	SD	D	N	A	SA
23.	Using mobile money services requires a lot of mental efforts.	1	2	3	4	5
24.	Using mobile money services requires a lot of technical skills.	1	2	3	4	5
25.	Using mobile money services platform can be frustrating	1	2	3	4	5
	Perceived Risks (PR)	SD	D	N	A	SA
26.	If there is a network failure, my transaction will be affected	1	2	3	4	5
27.	It will allow me to be receiving unsolicited consumer promotion information I don't need.	1	2	3	4	5
28.	I can't get my money where mobile money merchant are not available	1	2	3	4	5
	Perceived Trust (PT)	SD	D	N	A	SA
43.	Mobile Money Services are trustworthy.	1	2	3	4	5
44.	I trust that if I lose my mobile phone, I will not lose my money					
45.	I trust mobile money to send money correctly to recipients.	1	2	3	4	5
46.	Mobile money keeps proper records of all transactions with the service provider.	1	2	3	4	5
	Perceived Cost of Use (PCU)	SD	D	N	A	SA
47.	Mobile money services will help me save time and cost.	1	2	3	4	5
48.	There are financial charges that create barriers to the use of mobile money services.	1	2	3	4	5
	Mobile money registration is free of charge	1	2	3	4	5
	Cost of replacement of Mobile Money SIM Card is affordable.	1	2	3	4	5

Thank you once again.