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FACTORS INFLUENCING THE USAGE OF MOBILE MONEY SERVICES IN GHANA

Master´s Thesis
in Information Systems Science

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1 INTRODUCTION

1.1 Research area

The ambiguity and convenience of mobile phones has brought about new values and opportunities that no one foresaw in the delivery of financial services. It has brought about significant changes and sustainable growth as well as economic opportunities for the unbanked population and the emerging countries.

According to Sunil Gupta 2013, mobile technology is said to have a more far-reaching impact on payment and banking industries across the world. It has transformed the financial service delivery particularly the NFC (New field communication) and the use of embedded apps on mobile phones.

Jenkins 2008 also states that the mobile channel offers banks the opportunity to reach new clients as well as provide better service to existing clients; for customers, it has brought about increased convenience, affordability and security of payment.

Venkatesen & Gaurav 2013, Ehrbeck et al 2012, and Bold et al 2012; talk about the positive relationship that exist between mobile money adoption and financial inclusion.

M-Pesa (mobile money in Kenya), the anchor product that developing countries look up to for such a revolution has a cliental base of about 5.29 trillion shillings ($52.6 billion) which constitute about 85% of Kenya's national economic output as at March 2016 (Bella Genga, 2016). In the last few years, Safaricom (the leading communication company in Kenya) has introduced new services including M-Shwari, a virtual bank service which allows its customers to open bank account via mobile phone without ever having to visit a bank. The service further allows its clients to save money, get interest on the savings as well as obtain micro loans (Ochieng 2016, Gupta 2013). Indeed, mobile money offers new channels and new business models for increasing financial inclusion particularly in countries at the base of the pyramid.

According to the 2016 World Bank study, about 2.5 billion adults worldwide do not have access to financial services. This is particular significant in Africa as 30 million of the world's unbanked live in Sub-Saharan Africa (World Bank, 2016). Ghana with a population of 27.41 million has 18.13 million unbanked representing 70% of its population (Ansong, Chowa et al, 2015). The unbanked are mostly deprived of basic financial services (such as savings account, bill payments and insurance product) leaving them vulnerable to unexpected emergencies, lower income returns and as a whole drives the country into poverty due to lack of opportunity.

Since the introduction of mobile money in Ghana, the rate of unbanked population has reduced. Currently more people in Ghana have mobile accounts than bank accounts. The penetration of mobile phones recently passed the 100% mark, as at March 2015 it

stands at 114% of the population (MTN Group, 2015). Small-scale businesses, households, rural dwellers are all migrating to mobile money due to its large accessibility, flexibility and simplicity such as numerous outlet as opposed to banks (marginal ATM deployments and the inability to reach the unbanked), convenience: regardless of the mobile network or presence of mobile wallet or what day of the week it is.

Despite the high patronage, mobile money in Ghana has been remittance/fund transfer focused, limiting the use of it for other financial transactions such as savings and payments of goods and services.

Furthermore, the financial inclusion insights (FII) shows that Ghana is most DFS (digital financial service)-ready country in Africa and yet still mobile money has not reach same penetration as that of their counterpart in Kenya and Tanzania. According to the FII, digital bank account in Ghana is more common than any other FII country in Africa including Kenya and Tanzania. In other words, Ghana is ranked as the most DFS-ready in Africa. (98%) of Ghanaian adults have the necessary ID to open an account whereas in Kenya is 82%. Also (95%) of Ghanaian adults have basic numeracy; in Kenya is 90%. Further (91%) of Ghanaian adults own a mobile phone; in Kenya is 74%. Also (74%) of Ghanaian adults already send and receive text messages; in Kenya is 69%. These figures show that Ghana is the highest in terms of skills and equipment ownership necessary to run and use DFS.

Despite all the ingredients in place, mobile money has not grown as expected. It has not reach the same penetration as that of their counterpart in East Africa, specifically Kenya and Tanzania. (Financial Inclusion Insights, 2015), (CGAP, 2015). There is therefore the need to empirically investigate the factors hindering the full adoption of mobile money platform and its services and the attitude of Ghanaian consumers towards its adoption and use to harness a more targeted and cohesive strategy to solving the problem of limited usage of mobile money services in Ghana. Ghana having a high rate of unbanked population gives hope that mobile money operations will deepen financial inclusions and a catalyst for a cashless Ghanaian society. Mobile money if harnessed properly will contribute to the development of the Ghanaian economy.

1.2 Research gap

Few studies have focused on investigating barrier to adoption of mobile money, particularly in developing countries like Ghana.

Secondly, previous studies of e-banking and mobile money in Ghana have mainly focused on only the challenges to adoptions. More also the limited studies have used descriptive analysis mainly pie chart and simple graphs for their analysis.

Furthermore, there are very few studies that have tested the variables in the technology innovation and adoption theories such as relative advantage, complexity, compatibility, relative cost, trialability among others to ascertain those that are significant in determining mobile money adoption in Ghana. For example Laukkanem and Kiviniemi (2010) found that complexity has a negative influence on the intention to adopt mobile money in Finland. Nevertheless, findings from Lewis, Palmer and Moll (2010) contradict the position. Their findings while studying the case of Germany revealed that complexity does not have any influence on the intention to adopt mobile money.
The foregone discussions may give indications as to how these factors weigh on adoption and diffusion and how they differ depending on the environment, hence a strong interest to investigate the case of Ghana.

1.3 Research question

What are the critical factors hindering the full adoption of mobile money platform and its auxiliary service in the Ghanaian financial market?

1.4 Research scope

The research covers mainly mobile money in Ghana and other developing countries. In the research, mobile money includes mobile banking, mobile payment, and mobile money transfer.

The study is limited to the mobile network operators (MNO) that are engaged in mobile money services and have higher market share precisely MTN, Vodafone and Tigo. The research therefore does not cover all the MNOs in Ghana.

The study will involve users and agents of the selected network operators within Accra and Kumasi metropolitan, the major commercial centres in Ghana.

An *agent* is person or business that is authorized by a mobile network operator to provide mobile money services.

2 LITERATURE REVIEW

The literature review focuses on established e-business models as well as reviews of other researches relevant to the research theme and question.

2.1 Mobile money

The definition of "mobile money" varies. It varies across the communication industry as its scope covers a very broad range with overlapping applications. However there is one condition; the use of mobile phones or mobile devices. (Dermish et al., 2011; GSMA, 2013)

Demombynes and Thegeya (2012) define mobile money as a system of electronic money account that can be accessed by mobile phones.

Hope et al (2012) also defines mobile money as an electronic payment system that enables money transfers to and from an electronic account that can be accessed via an ordinary mobile phone.

Likewise, Ndiwalana, Morawczynski and Popov (2011) refers to mobile money as money stored using the subscriber identity module (SIM) card as an identifier as opposed to an account number in the conventional banking sense.

Tobbin (2011) further defines it as including all the various initiatives covering long-distance remittance, micro-payments, and informal air-time bartering schemes aimed at bringing financial services to the unbanked using mobile technology.

Jenkins (2008) simply defines mobile money as money that can be used and accessed via mobile phone.

In general mobile money is a term used to describe an electronic wallet service that allows users to store, send, and receive money through their mobile phones.

2.2 Types of mobile money services

There are *three* major mobile money services: mobile banking, mobile payments and mobile transfers, see figure 1 below. (Parikh M. et al. 2013; GSMA, 2013; Dermish et al., 2011; Ernest & Young, 2009; Janine Firpo, 2009)

However, the term "mobile money" is often confused with the term "mobile banking" and used interchangeably with the overall category of mobile money in research and literature.

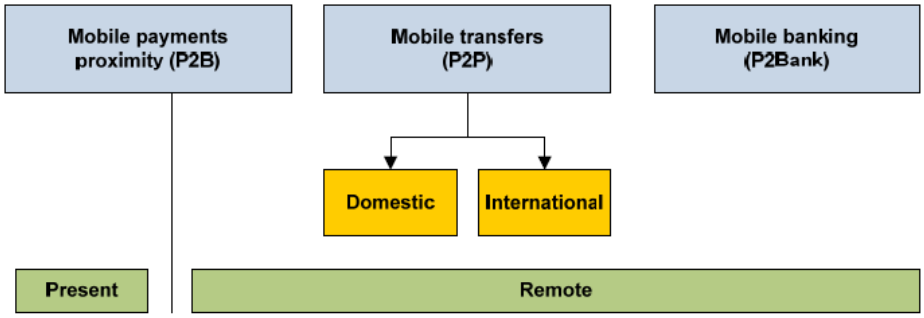

Figure 1 Types of mobile money services (GSMA 2008a)

2.2.1 Mobile money transfer

Mobile money transfer refers to *peer-to-peer* money transfer using a mobile phone. The transfer can either be *domestic* or i*nternational* remittances.

The service requires that one actor in the value chain uses a mobile phone (e.g. mobile to cash or cash to mobile) therefore users are *not required* to own a *formal bank account* in order to move money. This is because both parties (sender and receiver) mobile wallets are connected to their SIM cards and not their personal bank account.

Mobile money transfer is usually used by telecom operators and remittance service providers as well as financial institutions. In developing countries such as Ghana, the primary motive behind this service is to spur economic activities in urban centres (e.g. transfer from urban centres to rural). (ITU 2013, Parikh M. et al. 2013; Diniz, Porto de Albuqueroque & Cenev, 2011; Ernest & Young, 2009; Janine Firpo, 2009; Dolan Jonathan, 2009)

2.2.2 Mobile payment

Mobile payment is a type of transaction in which a mobile phone plays an important role in the realization of payment. It is a replacement of cash to make *person-to-business* payments via mobile phone. It involves a mobile phone being used as a mechanism to pay for *goods* and *services* either remotely or proximately.

The mobile *proximity* payments involve transactions with *physical interactions* between phones and terminals; that is either two phones or a phone and an agent point of sale (POS) terminal. The phones communicate through contactless technologies such as barcode, near field communication (NFC) to carry out payment transactions.

The *remote* mobile payments on the other hand do not involve physical interactions between phones and terminals but rather uses data connectivity. In other words, it is used an alternate payment channel for goods and services sold online.

Both payment types involve some sort of electronic wallet connected to a mobile phone account or a bank account or other electronic wallets. Therefore the service is used by financial institutions as well as telecom operators and other payment services. (ITU 2013, Parikh M. et al. 2013; Diniz, Porto de Albuqueroque & Cenev, 2011; GSMA, 2010; Ernst & Young, 2009; Janine Firpo, 2009; Dolan Jonathan 2009)

2.2.1 Mobile banking

Mobile banking is the connection between mobile phones, personal digital assistants (PDA) or other portable devices and a *regular bank account*. It is used by financial institutions that treat mobile banking as an additional medium to its existing services.

The service offers users the ability to *access informational and financial transactions* (e.g. balance inquiry, bill payments, account transactions, etc.) using a mobile phone. Therefore the service is available to customers that possess a formal bank account. In developing countries such as Ghana, the primary motive behind this service is to provide convenience and access to additional financial service. (ITU 2013, Parikh M. et al. 2013; Diniz, Porto de Albuqueroque & Cenev, 2011; GSMA, 2010; Ernest & Young, 2009; Janine Firpo, 2009; Dolan Jonathan 2009)

2.3 Benefits of mobile money

2.3.1 Socio-economic benefits

Mobile money *increases financial inclusion*. According to the 2016 World Bank study, about 2.5 billion people in the world do have access to financial services. The unbanked population is mostly deprived of basic financial services (such as savings account, bill payments and insurance product) leaving them vulnerable to shocks and lower returns.

Mobile money offers new channels and new business models for increasing financial inclusion particularly in countries at the base of the pyramid. There is increased availability of financial service to all citizens especially the unbanked. The unbanked can now access basic financial service through their mobile phones. There is also improvement in credit management and accessibility to rural areas due to the collaboration between mobile operators and microfinance institutions. More so, m-money improves investment in and allocation of physical investment due to its lower international remittances and domestic money transfers. The increase in activity may lead to growth in GDP.

Likewise, m-money *increase*s *socio-economic development.* It facilitates businesses and families to manage the unexpected, and improve their livelihoods. Families and business are better equipped to withstand the unexpected. According to Suri and Jack (2013) who conducted a study on the MPESA in Kenya concluded that, households with access to mobile money were better able to manage negative shocks (including job loss, death of livestock, or problems with harvests) than those without. The MPESA users were often able to fully absorb the shocks because they received more remittances and lost less to transaction costs whereas households that did not use MPESA saw consumption fall by 6-10% on average. More so, mobile money transfer service enables the under developed to receive money from economically active areas which could balance economic disparities and reduce social tensions. Besides rural dwellers can conduct business activity and build asset through access to capital that is remittances.

Furthermore, m-money *reduces the risk in carrying cash*. In Ghana the main form of informal money transfer is through "bus drivers". People visit the bus station of their town or village and with little incentive plead with the bus driver to deliver their remittances to their families. Others forms include travelling over a long distance or using networks of friends and families. The risks with these methods are theft, accident and robbery. Mobile money reduces the risk of carrying cash as it is electronic, making it accessible when you need it without carrying it around. It is safer way of carrying out money as it uses authentication system which requires a phone number and a secret pin. It is more reliable than traditional informal methods such as cash sent via public transport. Initial studies of M-PESA in low-income areas also revealed that the risk of muggings declined because cash was less evident.

Also, there is a great potential for *job creation* using m-money platform. In Ghana, more than 4,000 merchants are involved in mobile money platform. Jobs may also be created indirectly as m-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.

2.3.1 Financial institutions

Mobile money *promotes operational cost optimization*. It has significantly reduced the cost of delivering financial services. For example the overhead cost in installing and maintaining ATM machines. Customers on the other hand are also able to access financial services at a more affordable rate.

In addition, m-money *delivers cost benefits*. 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. Mobile money is relatively cheaper than other alternatives to cash. This is confirmed by a study conducted by McKay and Pickens (2010). They compared 26 international banks and found that branchless banking (including mobile money) was 19% cheaper on average than alternative services. At low transaction amounts or for informal money transfer options, this difference more than doubled.

Mobile money *increases market penetration*. It bridges the existing huge gap between the unbanked and the financial sector. In developing countries, financial institutions are severely constrained by physical infrastructure which means that a large portion of the population do not have access to formal banking system. Mobile money brings financial service to the unbanked. Mobile money transfer has helped financial corporations to spread into remote areas very quickly without substantial increase in cost. It has increased customer base with minimal cost

Mobile money *helps in retention of valuable customers*. It has helped banks to provide a wide range of fashionable services making its valuable customers less prone to leave. With the ability of customers being able to access both informational and transactional information via mobile phone, banks can propose new service to their customers in a more targeted fashion.

2.3.2 Mobile operators

With m-money there is *increase in revenue*. Mobile money has proven to have a commercial significance for service providers when it reaches scale. The transaction fees charged to send and redraw money represent a very significant revenue source for mobile money providers. For example, Safaricom in Kenya announced that mobile money revenues for the first half of 2011 amounted to KSh 7.9 billion ($90 million). Besides, the establishment of mobile money enables mobile operators to cross sell additional products by introducing other channels.

Mobile money also *decrease airtime distribution cost.* The traditional method of airtime top-ups which include scratch-card needed to be manufactured and distributed to retail outlets and agents. Telecom operators using mobile money services to sell airtime potentially save airtime distribution cost. Mobile operators also save the billing cost associated with postpaid and prepaid customers by not paying high margins to retail distributors of mobile top-op vouchers. Also consumers can quickly buy mobile phone credit without moving.

2.3.3 Merchants

For merchants, m-money has *transformed supply distribution.* Mobile money facilitates trade, making it easier for people to pay and receive payment for goods and services. It offers supply chain participants an additional medium of settling payment associated with dissemination of goods. Distributors can now be paid within minutes instead of waiting several months for reimbursement by the retailer. In addition money can be cash-out in millions of locations.

Moreover, with m-money there is *improvement in transparency*. Mobile money provides a cheaper medium for merchants and businesses to pay their employees. This reduces payroll processing cost.

Furthermore, m-money brings about *increased convenience.* Mobile money is instant; it travels with same speed as SMS. Besides money can be sent to anyone regardless of the mobile network or the presence of a mobile wallet nor what day of the week it is. It is accessible beyond banking hours.

2.4 Models of mobile payment

There exist two main business models of mobile money service in Ghana. They are the *bank-led and* the *telecom-led model.*

The models can be executed using different types of service providers, regulatory agents, and facilitators. However, the way in which a model is implemented is largely dependent on a country regulatory regime, culture and population size. (Boer and de Boer, 2010), (Chemonics International, 2010), (Bank of Ghana, 2008)

2.4.1 Bank-led

In this model, the banks control customer relationships and offer mobile services and distribution channels primarily with the intention of offering an additional medium to the existing service. The telecoms mainly provide telecommunication facilities for domestic and international transfers.

The model offers banks the opportunity to increase its use of service and reach out to the unbanked population. Besides, if a bank chooses to adopt this model, it can utilize these alternative delivery channels to flexibly and inexpensively increase its outreach without having to build new bank branches or hire more employees.

The bank-led business model has several sub-models. These include *one-to-one model, one-to-many model, and many-to-many model*.

The *one-to-one model* is one most commonly used bank-led models employed in the world. In the one-to-one model, a bank is the only institution permitted to offer mobile banking services to the customers of a specific MNO.

The *one-to-many model* is however very similar the one-to-one model, except for the fact that a bank is permitted to provide mobile banking services to multiple MNOs.

The *many-to-many model* explicitly prohibits one-to one and one-to-many models. Exclusive partnerships are not allowed. The many-to-many model is expected to collaborate with one another to take advantage of economies of scale, increasing customer bases, and available network infrastructure.

As at 2011, Ghana was the only country in the world that had adopted this type of bank-led model at the national level. However some industry players believe this policy may not be best because the partnerships seem to lack clarity around roles, responsibilities, and remuneration. Most banks are unwilling to invest substantially in any implementation, perhaps since their direct competitors are also involved and would benefit from their efforts. However in Ghana only the bank- led model is permissible per the 2008 Bank of Ghana Guidelines on Branchless Banking. (ITU 2013), (CGAP, 2011) (Bank of Ghana, 2008)

2.4.1 Telecom-led

In this model the telecom service providers dominate the mobile money transfer service and handle customer relationships. They are also responsible for providing a network of agents for settlement and payment functions. The banks do not actively participate in mobile services. They rather act as a facilitator in the operation of the telecom model that is payment delivery and settlement. In other words they operate as back office component holding the aggregate deposit collected by the MNOs.

The model offers mobile services primarily as an alternative infrastructure for financial services particularly with the intention of providing financial service for the unbanked population thereby creating financial inclusion for the group as well as increase market share and the volume of subscribers. (ITU 2013), (CGAP, 2011) (Bank of Ghana, 2008)

2.5 Mobile money service providers in Ghana

The evolution of telecommunication companies in Ghana began in 1992, with the first being Tigo (previously branded as Buzz and first known as Mobitel), then followed by MTN Ghana Limited in 1995 (previously branded as Spacefon and first known as

Areeba). The rest include Vodafone (previously known as Onetouch), Expresso (previously known as Kasapa), Airtel (previously known as Zain) and Glo. In all six MNOs operate in Ghana; MTN, Vodafone mobile, Airtel, Tigo, Glo mobile, and Expresso. Among these, only four have launched mobile money deployments: MTN, Vodafone mobile, Tigo and Airtel.

However the study focuses on only those with higher market share that is MTN, Vodafone and Tigo, see figure 2 below. Between November 2015 and December 2015, the total number of mobile subscribers has increased from 34,400,153 to 35,008,387. The mobile money operators have partnered with the banks to wallet transfer and help improve the banking services.

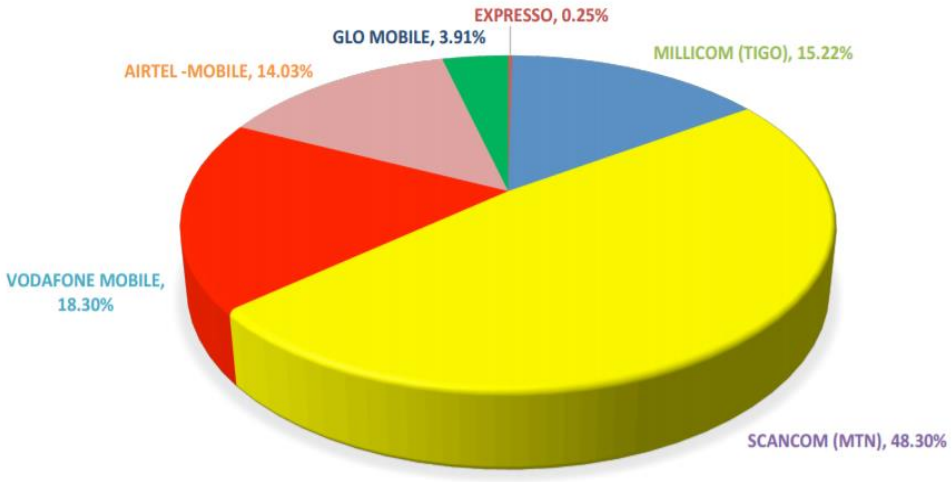

Figure 2 Mobile broadband market share per operator (NCA, 2015)

2.5.1 MTN mobile money

MTN, the market leader and the first-mover advantage launch MTN mobile money in July 2009. As at the end of December 2015, MTN mobile money holds 48.30% market share and 16,254,984 registered customers.

MTN mobile money has 16 partner banks. They include Ecobank, Barclays, HFC bank, Stanbic bank, Unibank, Zenith bank, Agricultural development bank (ADB), Ghana commercial bank (GCB), Guaranty trust bank (GTB), Access bank, Fidelity bank, GN bank, Cal bank, United bank for Africa (UBA), Universal merchant bank (UBM) and Apex ARB bank. The partnership with banks enables subscribers to perform financial services using their mobile phones. All funds are held with the different banks on the back end. MTN has also partnered with micro insurance to offer a life insurance account and with Belgacom International Carrier Services (BICS) for interna-

tional remittances. MTN has trained 4,000 agents in Accra and 2,000 in other parts of the country.

According to the MTN Ghana CEO, Mr Brett Goshen, the service allows subscribers to pay offline as long as they are able to access MTN network. He further added that even those who do not own a mobile phone can transfer and send money using authorized MTN mobile money agent. (NCA, 2015), (CGAP, 2015), (MTN Ghana, 2014), (Lartey O. W., et. al, 2013), (BICS, 2011)

2.5.2 Vodafone cash

Vodafone purchased Ghana Telecom in August 2008, since then the firm has undergone extensive internal restructuring and undertaken investment in upgrading infrastructure. After five years of staying out of mobile money services, Vodafone Ghana has now launched Vodafone cash, a mobile money service. Vodafone cash (M-PESA Ghana) recently entered the Ghana market after a successful pilot period which started August 2015. With 23% market share, Vodafone cash employs 1500 workers and another 300 engaged in contract basis. Despite its recent introduction, it has received tremendous growth in the number of mobile subscribers. As at January 2016, it has 7,612,059 registered customers.

The service offer customers the ability to send, receive, purchase, top-up airtime as well as pay bills using their mobile phones. In addition subscribers can redraw money from ATM machines without an ATM card but rather their mobile phones. However this activity can only be performed at Ecobank ATM machines. Vodafone cash currently has one partner bank which is Ecobank.

Unlike the other mobile money operators which practice over-the-counter (OTC) market meaning users go to agent point of sale and drop money to the agent to transfer on their behalf, Vodafone cash rather insist money to be loaded unto the users wallet but the user send the money herself. It is strictly wallet-based transaction. Vodafone cash empowers customers to master the service and usage. (Vodafone Ghana, 2016) (Ghana Adom news, 2015)

2.5.3 Tigo cash

Millicom Ghana, operators of Tigo network launched Tigo cash in October 2010. By 2012, Tigo cash had over 1 million registered subscribers. Tigo cash as at December 2015 has 4,850,034 registered customers with a market share of 15.22%.

Tigo cash enables its subscribers to send, receive, purchase, top-up airtime as well as pay bills using their mobile phones. Tigo cash has partnered with four banks. They include Agricultural development bank (ADB), Fidelity bank, Ecobank and Universal Bank for Africa (UBA).

According to the Commercial Manager of Tigo, Mr Kwesi Donkor, the introduction of Tigo cash was impelled by the fact that eight out of ten persons in the country did not have bank accounts especially those in the rural areas. Mr Percy Gondi, the Head of Innovation, Tigo further added that the introduction of Tigo cash was a milestone that blended well with technology and banking and also deepens financial access to customers. (NCA, 2015) (CGAP, 2015), (Lartey O. W., et. al, 2013), (GNA, 2010)

2.6 Regulations for Mobile Money Services

In Ghana, telecommunication activities are regulated by the National Communication Authority (NCA). However due to financial service of Telecom operators, mobile money therefore falls within the mandate of Bank of Ghana.

The Bank of Ghana issued Branchless Banking Guidelines in August 2008 as a basis of mobile financial services. Generally, there is no explicit mobile money or electronic money (e-money) regulation yet. The under listed points may however be deemed as the cardinal points contained in the regulations:

- Bank-based. Only the bank-based model is permissible in Ghana. “Activities outlined in these guidelines as branchless banking cannot be offered by any person or institution other than deposit-taking financial institutions (FIs). In each case the customer account relationship must reside with some FI and each transaction must hit the actual customer account.”
- Flexibility on types of agents and transactions they can conduct. The guidelines allow wide scope for who can be an agent, including “Telco’s, fuel distribution companies, merchants, post office, etc.” In addition, agents are allowed to open and maintain branchless banking accounts, do cash-in/out transactions, bill payments, loan disbursements, and repayments and funds transfers.
- Many-to-many model. Ghana is the only country in the world that permits only many-to-many models in terms of the relationship between MNOs and banks (and explicitly prohibits one-to one and one-to-many models). Exclusive partnerships are not allowed. The guidelines say that “this model offers the maximum connectivity and hence maximum outreach and is closer to the desired situation where all FIs and all Telco’s should be able to entertain each other’s customers.”

- Ghana Interbank Payment and Settlement System (GhIPSS). All transactions are to be centrally processed, cleared, and settled through GhIPSS. All new switches, ATMs, POS devices, and card or mobile phone payments products issued or deployed by banks must be eZwich compliant or interfaced with the eZwich platform.

The first two points about the bank-based model and role of agents are explicitly clear and can result in a well-functioning branchless banking environment. However, Ghana may be the only country that prohibits this act of exclusive partnerships and will allow only the many-to-many model. A series of MNO-led implementations with a number of partner banks is still evolving. (Tagoe et al, 2016)

2.6.1 Permissible Activities

Permissible activities in Ghana's mobile banking sector include: opening and maintaining an account;

- Transferring funds between accounts (between electronic/branchless banking and current physical accounts with banks and saving companies);
- Person-to-person money transfers, where customers can transfer funds from their account to a branchless banking account or a physical account with a bank to a customer of the same or participating
- bank(s); Cash in/ Cash out, where customers are able to deposit or withdraw money from the branchless banking or physical bank account from
- bank-branches, ATM machines, and third party agents;
- Bill payments, where branchless banking accounts or linked bank accounts can be used to pay utility bills.
- Merchant payments, where customers can use their branchless banking account to pay for goods and services at retail locations throughout the country (Bank of Ghana, 2008, p. 4).

2.7 Mobile money adoption factors

Several studies have been conducted to investigate the factors that influence the intention to adopt mobile money in many different countries. These studies have employed varied models including theory of reasoned action (TRA) (Ajzen and Fishbein, 1980), theory of planned behaviour (TPB) (Ajzen, 1991), decomposed theory of planned behaviour (DTPB)(Taylor and Todd, 1995), technology acceptance model (TAM) (Davies, 1989), innovations diffusion theory (IDT) (Rogers, 1983), etc. However, the theo-

ry that is frequently used and most suitable in the area of mobile money adoption is IDT by Rogers (1983). The theory reasons that the adoption of innovations depends on a set of factors including relative advantage, compatibility, complexity, trialability and observability.

Relative advantage is defined as the degree to which a person perceives an innovation as offering an advantage over other existing methods of executing the same task. In theory however, it is argued that relative advantage has a positive influence on the behavioural intention. In line with these studies by Laukkanen and Kiviniemi (2010) found that, relative advantage has a significant positive influence on the intention to adopt mobile money in Finland. Similarly, Riquelme and Rios (2010), Lin (2010), Puschel, Mazzon and Hernandez (2010) as well as Cruz, Neto, Gallego and Laukkanen (2010) found similar results in the case of Singapore, Taiwan and Brazil, respectively. Rogers (1983) in his study found that adopters perceived the relative advantage in terms of the economic benefits and the costs resulting from the adoption of an innovation and improvements that are linked to their social status.

Further to this, *compatibility* is defined as the extent to which an innovation is seen as being consistent with the already existing values, past experiences and the needs of potential adopters. It therefore represents a measure of the values and beliefs of the customers; the embody ideas adopted in the past as well as the ability of an innovation to meet their current needs (Rogers, 1983). It is widely perceived that compatibility should therefore have a positive influence on the behavioural intention. In this regards, Laukkanen and Kiviniemi (2010) discovered in their studies that compatibility has a positive influence on the intention to adopt mobile money in Finland. This was supported by the findings of Lin (2010), Lewis, Palmer and Moll (2010), and Puschel, Mazzon and Hernandez (2010) who have found similar results in Taiwan, Germany and Brazil, respectively. However findings from Cruz, Neto, Gallego and Laukkanen (2010) contradict that and rather suggests that compatibility may not have any significant influence on the intention to adopt mobile money in the case of Brazil.

Rogers (1983) defined *complexity* as the extent to which an innovation is regarded as difficult to understand and use. Complexity is therefore measured based on the perception about the purpose of a given innovation, its intended use and the ease or difficulty one has to go through in using it. Hence it is suggested that complexity may have a negative influence on the behavioural intention, in other words, customers will be reluctant to adopt an innovation that is difficult to understand and use. In support of this, Laukkanen and Kiviniemi (2010) found that complexity has a negative influence on the intention to adopt mobile money in Finland. Similar results were found by Riquelme and Rios (2010) and Lin (2010) in the case of Singapore and Taiwan respectively, as well as Gu, Lee and Suh (2009) and Lee, Park, Chung and Blakeny (2011) both in the case of South Korea. Nevertheless, findings from Lewis, Palmer and Moll (2010) contradict

that position. Their findings while studying the case of Germany revealed that complexity does not have any influence on the intention to adopt mobile money.

More to this, *trialability* is the degree to which an innovation can be experimented on a limited basis, before the final use (Rogers, 2003). It is suggested that trialability has a positive influence on the behavioural intention. According to Rogers (2003), an innovation that is trialable can refute uncertainty and misgivings that potential users may have, thus for those who may be jittery about the service, it may give them the necessary confidence to use it. Studies by Puschel, Mazzon and Hernandez (2010) on Brazil found that trialability does not matter when it comes to an intention to adopt mobile-money.

3 Research model and hypothesis

The UTAUT model will be used to investigate the empirical findings since its core determinants (performance expectancy, effort expectancy, social influence, and facilitating conditions) are important for the adoption of technology in Ghana.

3.1 UTAUT

Figure 3 below depicts the research model for the study. The study uses the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh et al (2003). UTAUT was developed through a review of the eight established models that is TAM, IDT, Motivational model (MM), Theory of planned behaviour (TPB), Model of PC utilization (MPCU), Social cognitive theory (SCT) and a model combining TAM and theory of planned behaviour (C-TAM-TPB).

According to UTAUT, four constructs significantly determines user acceptance and usage behaviour of a technology. These constructs include *performance expectancy, effort expectancy, social influence, and facilitating conditions*. The first three constructs are posited to have a direct influence on behavioural intention in using a technology or system while the fourth is theorized to have a direct influence on user behaviour. Alongside comes four key relationship moderators (*age, gender, voluntariness of use,* and *experience*) that impact the four constructs regarding usage intention and behaviour in using technology.

In addition, the model theorizes that attitude toward using technology, self-efficacy, and anxiety are not direct determinants of intention.

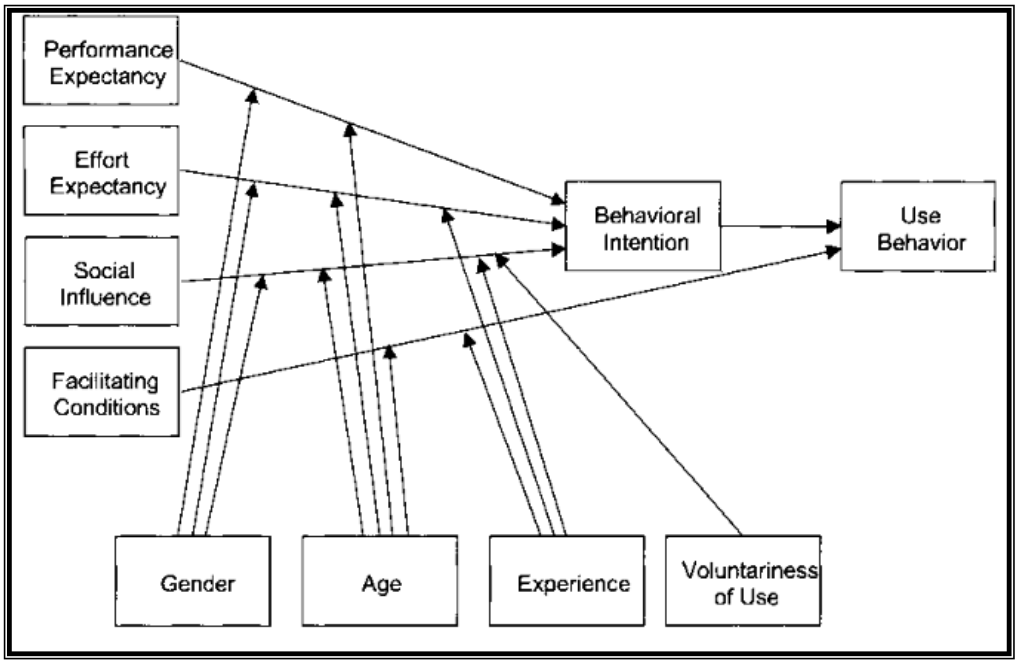

Figure 3 The UTAUT model (Venkatesh et al. 2003)

3.1.1 Determinants of intention to use m-money

Performance expectancy (PE)

Performance expectancy is the degree to which an individual believes that using a particular technology or system will enhance his or her job performance. The other constructs from the different models that pertain to performance expectancy are perceived usefulness (TAM), extrinsic motivation (MM), job-fit (MPCU), relative advantage (IDT), and outcome expectations (SCT).

In mobile money context, PE would mean how well consumers believe that using mobile money services can be integrated into their daily activities (Moore and Benbasat, 1991). When this belief increases, consumer's intention to use mobile money services will also increase.

From a theoretical view however, it is expected that the relationship between performance expectancy and intention will be moderated by gender and age. For instance a research on gender differences by Minton and Schneider (1980) suggests that men tend to be highly task-oriented and therefore, performance expectancies, which focus on task accomplishment, are likely to be especially salient to men. Similarly, age is also theorized to play a moderating role. For instance a research by Hall and Mansfield (1975) and Porter (1963) found that younger workers may place more importance on extrinsic rewards. According to Morris and Venkatesh (2000), gender and age differences have been shown to exist in technology context. The researcher therefore hypothesises:

H1: *Performance expectancy on behavioural intention will have a positive influence on the intention to adopt mobile money in Ghana and that it will be moderated by gender such that the effect will be stronger for men.*

Effort expectancy (EE)

Effort expectancy is the degree of ease associated with the use of a system. The other constructs from the other models that capture the concept of effort expectancy include: perceived ease of use (TAM), complexity (MPCU), and ease of use (IDT). The similarities among these construct have been noted in several studies (Davis et al. 1989; Moore and Benbasat 1991; Plouffe et., al, 2001; Thompson et., al. 1991).

It is measured based on the perception about the purpose of a given innovation, its intended use and the ease or difficulty one has to go through in using it. Hence it is suggested that complexity may have a negative influence on the behavioural intention. In other words, consumers will be reluctant to adopt an innovation that is difficult to understand and use.

Researches such as Bem and Allen 1974; Bozionelos 1996), Venkatesh and Morris (2000), suggest that effort expectancy is more salient for *women* than for *men*. Others also noted the gender differences predicted could be driven by cognitions related to gender roles (e.g., Lynott and McCandless 2000; Motowidio 1982; Wong et al. 1985). Plude and Hoyer (1985) also noted that increased *age* has been shown to be associated with difficulty in processing complex stimuli and allocating attention to information on the job, both of which may be necessary when using software systems.

Prior research supports the notion that, constructs related to effort expectancy will be stronger determinants of individuals' intention for women (Venkatesh and Morris 2000; Venkatesh et al. 2000) and for older workers (Morris and Venkatesh 2000).

Based on the above arguments, the researcher hypothesises:

H2: *Effort expectancy will have a positive influence on the intention to adopt mobile money in Ghana such that the effect will be stronger for women than men***.**

Social influence (SI)

Social influence is the degree at which an individual perceive other peoples opinion to be important in order to use a new system. Social influence as a direct determinant of behavioural intention is regarded as subjective norm in the other models (TRA, TAM, TPB/DTPB, and C-TAM-TPB), social factors in MPCU, and image in IDT.

In defining their construct, Thompson et al. (1991) used the term *social norms* and acknowledge its similarity to subjective norm within TRA. Although comparatively they have different labels, each of these constructs contains the explicit or implicit notion that the individual's behaviour is influenced by the way in which they believe other individuals will perceive them as a result of having used the technology. SI therefore

represents a measure of the values and beliefs of the customers; the embody ideas adopted in the past as well as the ability of an innovation to meet their current needs (Rogers, 1983).

According to Venkatesh and Davis (2000), the effect of social influence could be attributed to compliance in mandatory contexts that causes social influences to have a direct effect on intention. On the other hand, social influence in voluntary contexts operates by influencing perceptions about the technology. Social influence constructs are therefore not significant in voluntary context, they however become significant when use is mandated.

Venkatesh and Davis (2000) further suggest that in mandatory settings, social influence appears to be important only in the early stages of individual experience with the technology, with its role eroding over time and eventually becoming non-significant with sustained usage.

In theory, women tend to be more sensitive to other people's opinions and therefore find social influence to be more salient when forming an intention to use new technology (Miller 1976; Venkatesh et al. 2000), with the effect declining with experience (Venkatesh and Morris 2000). Rhodes' (1983) meta-analytic review of age effects concluded that affiliation needs increase with *age*, suggesting that older workers are more likely to place increased salience on social influences, with the effect declining with experience (Morris and Venkatesh 2000). The researcher therefore hypothesises:

H3: *Social influence will have a positive effect on user's intention to use mobile money in Ghana such that the effect will be stronger for women***.**

Facilitating conditions (FC)

Facilitating conditions is the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system.

The other models capture this construct as perceived behavioural control (TPB/DTPB, C-TAM-TPB), facilitating conditions (MPCU) and compatibility (IDT). According to Venkatesh et al. 2003, facilitating conditions is insignificant in predicting intention when both effort and performance expectancy constructs are present. The researcher therefore hypothesises:

H4: *Facilitating conditions will have a positive influence on the intention to adopt mobile money in Ghana and that it will be moderated by gender such that the effect will be stronger for men*

4 Empirical research

Based on the work of Venkatesh et al., (2010), one can argue that the Unified Theory of Acceptance and use of Technology (UTAUT) may be key in explaining the full adoption of mobile money services in Ghana. The theory may also partly explain why despite the availability, numerous financial services and products on the mobile money platform seem to be only used for money transfer. The study therefore used the Unified Theory of Acceptance and Use of Technology to answer the research questions.

4.1 Research method

The study employed quantitative method to answer the research questions. According to Bhattacherjee (2012), quantitative data can be analysed using quantitative data analysis techniques such as regression or structural equation modelling. The main focus of quantitative research is to prove and confirm hypothesis through a deductive method intermixed with a number of theories. In other words it is concerned with testing hypothesis derived from theory and also being able to estimate the size of a population of interest.

Qualitative method on the other hand focuses more on gaining a deeper understanding of a subject or phenomenon under study, therefore data is collected from different source, meaning the basic structure of this research type cannot be based on theory (Bhattacherjee , 2012). Mcleod (2001) also mentions that qualitative research does not intend to test hypothesis but rather focuses on describing, analysing and interpreting in a natural setting.

Thomson (2008) talks about the distinction between qualitative and quantitative research methods that whiles qualitative researches prefer to create a picture which covers the whole image in it, quantitative researches often focus on measuring the parts in an issue. Myers (1997) sums it all by saying that the choice of method influences the way in which data is collected and analysed therefore it is important to state clearly how the research questions guide the data collection process.

On the basis of the above conclusions, the study applies quantitative research method particularly in the case study as the nature of the enquiry leads itself to quantitative methods of data collection, specifically, questionnaires and structured interviews. Quantitative research focus on measuring the parts in an issue in this case, the cause of full adoption of mobile money services unlike qualitative which seeks to create a picture which covers the whole image in it. Besides quantitative research is concerned with testing hypothesis derived from theory in this case the hypothesis is tested based on UTAUT theory unlike qualitative method which does not intend to test hypothesis but rather focuses on describing, analysing and interpreting in a natural setting.

4.2 Data collection and analysis

Questionnaires and face-to-face structured interviews will be used to collect primary data for the study. The questionnaire was prepared based on the theoretical framework. The questionnaire will utilize checklist and five-point Likert scale (rating scale) ranging from strongly disagree (1) to strongly agree (5). These tools enable the researcher to quantify human behaviours and attitudes.

The data gathered will be subsequently analysed using regression analysis. SPSS software will be used for the analysis. The choice of this technique was inspired from Hair et al. (2010) as well as from similar studies conducted on the topic under study (Chong, Ooi, Lin and Tan, 2010; Brown, Cajee, Davies and Stroebel, 2003).

The literature review was done following a thorough literature search that was conducted to determine and categorize concepts and variables that have been used in similar studies in the past.

4.2.1 Target Population

The population of interest in this study will include merchants (agents) as well as mobile money subscribers in Accra and Kumasi. These cities are the major commercial centres in Ghana.

4.2.2 Sample size and sampling technique

Of the total number of merchants and mobile money subscribers in the commercial centres of Accra and Kumasi, a representative sample will be drawn for the purpose of this study. The sample size for this study will therefore be a smaller group of elements drawn using the simple random sampling procedure. With regard to the simple random sampling, each respondent of sound mind and a member of the population will have an equal chance of being selected.

Taking into consideration time and financial constraints, a sample size of 200 respondents will be drawn from the population for this study. Despite the smaller sample size, the conclusions and recommendations of this study will be useful in understanding the factors responsible for the limited usage of mobile money in Ghana.

4.3 Reliability & validity

Babbie and Mouton (2001) noted that validity is based on the view that a particular instrument actually measures what it purports to measure. Hamersley (1992) quoted in Ary et al., (2002), "*an account is valid or true if it represents accurately those features of the phenomena that it is intended to describe, explain, or theorize*". In short an account is the degree of accuracy of an instrument.

Maxwell (2009) identified two threats to validity: the effect of the researcher on the participatory environment and research bias. Since research bias is more important to this study, the validity of the study will be how well I have avoided the threats that will influence the data collection process to be distorted.

The process which will be used in the selection of participants to be involved in the study will be done in a manner that will not influence the results to be obtained, and therefore the validity might not be compromised.

The reliability analysis of the questionnaire for respondents will be ensured using the approved statistical techniques to ensure internal consistency for items in the questionnaire.

5 Presentation of result

This section presents the findings from the field survey which was made possible using questionnaire and interview administered to subscribers of mobile money in selected market centres in the greater Accra and Ashanti regions of Ghana. Results obtained from the survey are summarized in the form of tables and charts using SPSS.

Regression analysis and correlation will be used to test the relationships between the intention to use mobile money and performance expectancy as well as effort expectancy, facilitating conditions, social influence, and behavioural intention.

5.1 Demographics of respondents

The research was conducted using survey as well as interviews. The questionnaire was paper based. It was administered with the help of research assistants in the commercial centres of the greater Accra and Ashanti regions of Ghana where majority of the people reside. The questionnaire was meant to collect information about the four constructs of UTAUT. The role of the interview was to give a qualitative view of the study as well as serving as a basis for comparative analysis with the Unified Theory of Acceptance and Use of Technology (UTAUT).

For the survey, 240 questionnaires were administered to respondents, out of which 213 were registered for mobile money and 27 had not. For the interview were 90 respondents.

The *age distribution* of respondents is presented in figure 4 below. The results indicate that majority (38.8%) of respondents were between the age group 26-35, (25.8%) were between age group 36-45, (20%) were between age group 18-25 and (15.4%) belong to the age group 46-55. The implication of this finding is that majority of subscribers were between age 26-45.

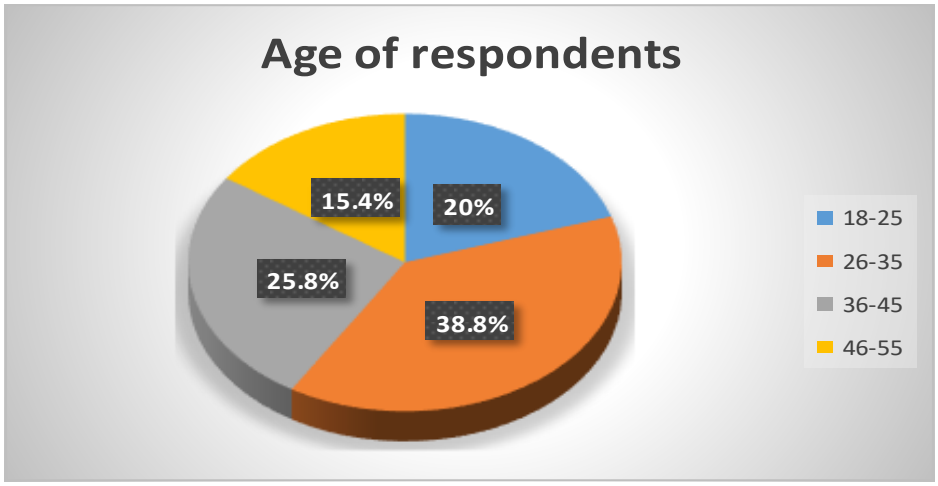

Figure 4 Age distribution

The *sex distribution* of respondents is presented in figure 5 below and the results show that 42.1% of mobile money subscribers were males and 57.9% were females. This finding suggests that there is not much difference in terms of sex distribution of our respondents.

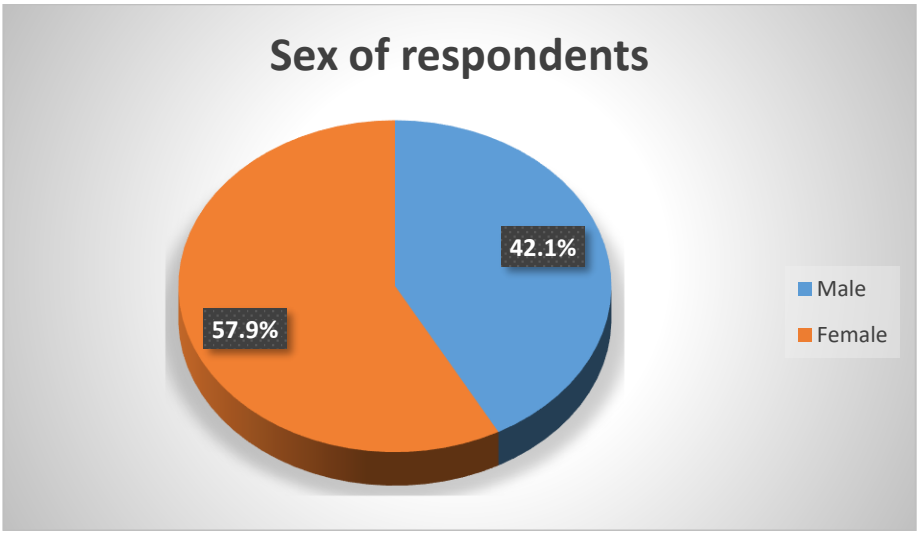

Figure 5 Sex distribution

The *level of education* of respondents is presented in figure below. The results also show that majority (46%) of respondents had Junior High School education, (34%) had Senior High School, vocational education and technical education, and (16%) had degree or High National Diploma and only (4%) of registered mobile money respondents had postgraduate level of education. In Ghana, the Junior High School, Senior High School, High National Diploma, Vocational education and technical education all have three years duration whiles University education is four years.

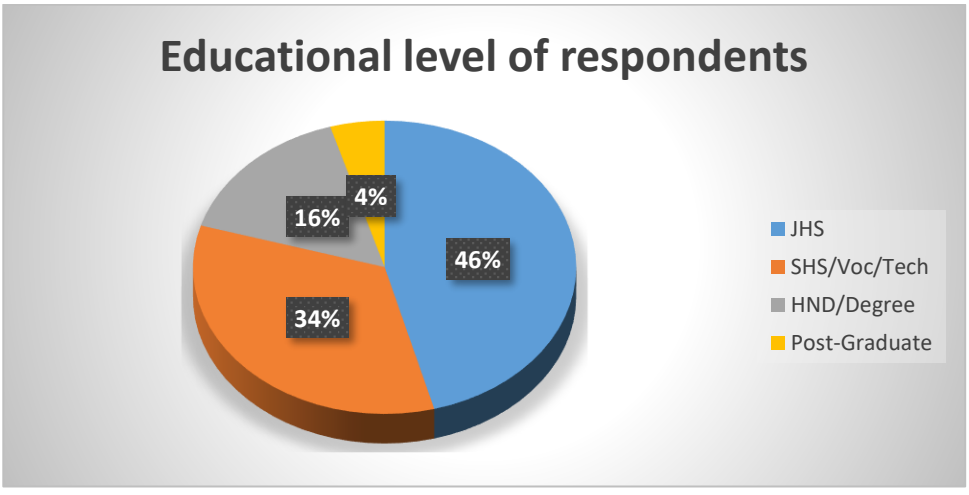

Figure 6 Level of Education

5.2 Mobile money usage

5.2.1 Mobile money registration

On the registration of mobile money (89%) of respondents had registered for mobile money and 11% had not, see figure 7. All registered mobile money users use at least one of the mobile money services.

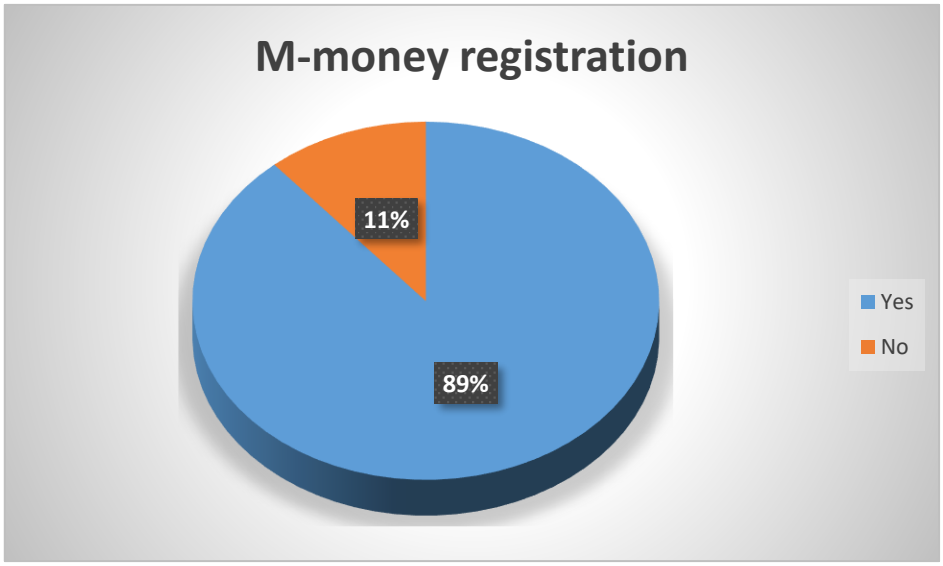

Figure 7 Registration of mobile money

5.2.2 Types of service

When respondents were asked on the type of mobile money service they used, majority (48%) of respondents indicated that they used the mobile money platform for cash transfers, (16%) use the service to check their account balance, (7%) used it for checking mini statements, (5%) used it for the payment of goods and services, (13%) used it to top up air time while (11%) do not use any of the mobile money services simply because they have not registered for the mobile money service, see table 1 below.

Table 1 Mobile money services

	Frequency	Percentage
Cash transfers	115	**48**
Checking account balance	39	**16**
Checking mini statements	16	**7**

Payment for goods and services	11	**5**
Top up air time	32	**13**
None of the above	27	**11**
Total	**240**	**100**

5.2.3 Mobile money frequency

On the number of times mobile money was used, the result indicate that 41% of respondents used mobile money once a day, 25% used mobile money twice a day, 14% used mobile money thrice a day, 9% used mobile money four time or more a day and only 11% never used mobile money, see table 2 below.

Table 2 Frequency of m-money used per day

	Frequency	**Percentage**
Once	98	**41**
Twice	61	**25**
Three times	33	**14**
Four or more	21	**9**
Never	27	**11**
Total	**240**	**100**

5.2.4 Value of transaction

The value of mobile money transaction per day is presented in table 3. The result indicate that (39%) of mobile money subscribers have the value of their mobile money transactions between GH₵100- GH₵200 per day, (30%) have the value of their mobile money transaction less than GH₵100 per day, (18%) have the value of their mobile money transaction between GH₵200- GH₵300 whiles only (7%) and (6%) have the value of their daily transaction between GH₵300- GH₵400 and more than GH₵400

respectively. The implication of this result is that majority of mobile money subscribers have the value of their mobile money transaction up to GH₵400 per day.

Table 3 Value of transaction on m-money platform per day

Value	Frequency	Percentage
Less than GH₵100	65	**30**
GH₵100- GH₵200	83	**39**
GH₵200- GH₵300	38	**18**
GH₵300- GH₵400	15	**7**
More than GH₵400	12	**6**
Total	**213**	**100**

5.3 Construct reliability and validity analysis

To test the reliability of the constructs, the study used Cronbach alpha in SPSS. Cronbach alpha is the most popularly used measure of internal consistency

As a rule of thumb, a reliability coefficient of 0.70 or higher is considered "acceptable" in social science research (Nunnally, 1978; Hair et al., 2010). Table 5 shows that all the Cronbach alpha values are 0.70 and above, hence the constructs are proven to be reliable.

The mean and standard deviations for all the questions under each construct are presented in table 4 below.

Table 4 Means and standard deviations of survey questions

Performance Effort	**Mean**	**Std. Deviation**
It is easy to use the mobile money platform	2.5352	1.19942
Using mobile money enables me to accomplish financial transactions more quickly	2.4507	1.14252
Am satisfied with m-money services	2.5117	1.21938
The procedures for conducting payments is not complex	2.4742	1.37551
The cost per transaction is relatively low.	2.6009	1.30507
Effort Expectancy		

My interaction with mobile money would be clear and understandable	3.9812	1.63673
It would be easy for me to become skilful at using the mobile money platform	4.0141	1.27190
I would find the mobile money platform easy to use.	4.0376	1.40030
Learning to operate the mobile money platform is easy for me.	3.6808	1.71053
Social Influence		
People who influence my behaviour think that I should use mobile money.	2.2535	1.61699
People who are important to me think that I should use mobile money.	2.4225	1.36667
The staff operators of mobile money have been helpful in the use of the system.	2.3803	1.32856
In general, the operators have supported the use of the mobile money platform.	2.2441	1.47831
Facilitating Conditions		
I have the resources necessary to use	2.5915	1.89272
I have the knowledge necessary to use mobile money.	2.5587	1.58489
The mobile money platform is not compatible with other systems I use.	2.7136	1.41009
A specific person (or group) is available for assistance with system difficulties.	2.3803	1.62265

Table 5 Reliability measures

Element	**Cronbach alpha**
Performance expectancy	0.702
Effort expectancy	0.725
Social influence	0.706
Facilitating conditions	0.705
Behavioural Intention	0.708

5.3.1 Result of factor analysis

Communalities is the amount of variance in each variable that can be explained by the factors. Table 6 below shows the communalities before and after extraction but the

principal component analysis works on the initial assumption that all the variance is common before extraction and as a result before extraction all the commonalities are 1. The communalities after extraction also show the common variance in the data set. For instance, the results show that 55.8% of the variance is associated with the first question.

Table 7 below presents the eigenvalues associated with each linear component (factor) before extraction, after extraction and after rotation. From the table, four factors were retained and so there are four rows, one for each retained factor. The linear components within the data set were identified before extraction. The eigenvalues associated with each factor represent the variance explained by that particular linear component and it is displayed in terms of percentage variance. For instance, from the table 7, factor 1 explains 33.127% of the total variance.

The columns labelled "*Extraction Sums of Squared Loadings*" correspond to the number of factors retained. The values in this part of the table are the same as the values before extraction, except that the values for the discarded factors are ignored. The final part of the table labelled "*Rotation Sums of Squared Loadings*" displays the eigenvalues of the factors after rotation. One of the effects of rotation is that it optimizes the factor structure and one key consequence of this is that the relative importance of the four factors is equalized.

From the table, before rotation, factor 1 accounted for considerably more variance than the remaining three (33.127% compared to 9.938%, 7.365% and 6.649%), however after extraction it accounts for only 18.313% of variance (compared to 16.998%, 12.985% and 8.783% respectively).

The Rotated Component Matrix in table 8 below shows the factor loadings for each variable. Rotation actually does not change anything but makes the interpretation of the analysis easier. From the table, it can be observed that questions including "My interaction with mobile money would be clear and understandable, it would be easy for me to become skilful at using the mobile money platform, I would find the mobile money platform easy to use, learning to operate the mobile money plat-form is easy for me and the staff of the operators of mobile money has been helpful in the use of the mobile money platform" were all substantially loaded on factor 1.

In addition, questions including "People who are important to me think that I should use mobile money, I have the knowledge necessary to use mobile money, the mobile money platform is not compatible with other systems I use and a specific person (or group) is available for assistance with system difficulties" were also substantially loaded on factor 2.

Furthermore, questions including "It is easy to use the mobile money platform, using mobile money enables me to accomplish financial transactions more quickly, the proce-

dures for conducting payments is not complex and the cost per transaction is relatively low" were also substantially loaded on factor 3.

Finally question like "I am satisfied with m-money services and I have the resources necessary to use" were significantly loaded on factor 4.

Table 6 Communalities

	Initial	Extraction
It is easy to use the mobile money plat-form.	1.000	.558
Using mobile money enables me to accomplish financial transactions more quickly	1.000	.619
I am satisfied with m-money services	1.000	.701
The procedures for conducting payments is not complex	1.000	.697
The cost per transaction is relatively low.	1.000	.680
My interaction with mobile money would be clear and understandable.	1.000	.679
It would be easy for me to become skilful at using the mobile money plat-form.	1.000	.450
I would find the mobile money platform easy to use.	1.000	.622
Learning to operate the mobile money plat-form is easy for me.	1.000	.508
People who influence my behaviour think that I should use mobile money.	1.000	.494
People who are important to me think that I should use mobile money.	1.000	.540
The staffs of the operators of mobile money have been helpful in the use of the mobile money platform.	1.000	.550
In general, the operators have supported the use of the mobile money plat-form.	1.000	.335
I have the resources necessary to use	1.000	.486
I have the knowledge necessary to use mobile money.	1.000	.584
The mobile money platform is not compatible with other systems I use.	1.000	.625
A specific person (or group) is available for assistance with system difficul-ties.	1.000	.575

Extraction method: Principal component analysis

Table 7 Variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.632	33.127	33.127	5.632	33.127	33.127	3.113	18.313	18.313
2	1.690	**9.938**	43.065	1.690	9.938	43.065	2.890	**16.998**	35.311
3	1.252	**7.365**	50.430	1.252	7.365	50.430	2.208	**12.985**	48.296
4	1.130	**6.649**	57.079	1.130	6.649	57.079	1.493	**8.783**	57.079
5	.936	5.505	62.584						
6	.826	4.857	67.441						
7	.747	4.395	71.836						
8	.695	4.091	75.926						
9	.617	3.629	79.555						
10	.574	3.377	82.932						
11	.539	3.169	86.101						
12	.490	2.880	88.981						
13	.454	2.669	91.650						
14	.397	2.338	93.988						
15	.381	2.242	96.230						
16	.340	2.002	98.232						
17	.301	1.768	100.000						

Extraction method: Principal component analysis

Table 8 Rotated Component Matrix[a]

	Component			
	1	2	3	4
It is easy to use the mobile money plat-form.	.278	-.120	.682	-.041
Using mobile money enables me to accomplish financial transactions more quickly	.447	.015	.617	.195
Am satisfied with m-money services	.138	-.038	.204	.799
The procedures for conducting payments is not complex	-.119	.165	.680	.440
The cost per transaction is relatively low.	.044	.392	.724	-.019
My interaction with mobile money would be clear and understandable.	-.764	-.027	-.072	-.300
It would be easy for me to become skillful at using the mobile money platform.	-.601	-.245	-.087	.147
I would find the mobile money platform easy to use.	-.706	-.314	-.152	-.047
Learning to operate the mobile money plat-form is easy for me.	-.564	-.155	-.395	-.102
People who influence my behaviour think that I should use mobile money.	.416	.487	.288	-.017
People who are important to me think that I should use mobile money.	.489	.523	.166	.008
The staffs of the operators of mobile money have been helpful in the use of the mobile money platform.	.598	.321	.027	.298
In general, the operators have supported the use of the mobile money platform.	.337	.370	.078	.280
I have the resources necessary to use	.119	.444	-.066	.520
I have the knowledge necessary to use mobile money.	.056	.757	.022	.081
The mobile money platform is not compatible with other systems I use.	.224	.725	.058	.212
A specific person (or group) is available for assistance with system difficulties.	.300	.680	.124	-.088

Rotation method: Varimax with Kaiser normalization

5.4 Determinants of intention to adopt mobile money in Ghana

Since the construct of the research model cannot be directly observed, each construct were measured with multiple questions. A five point Likert scale where "1= (SA) Strongly Agree, 2 = (A) Agree, 3 = (N) Neutral, 4 = (D) Disagree, 5= (SD) Strongly Disagree" was used to measure the statements of the respondents with regards to performance expectancy.

The questions were made in such a way that all respondents will have a fair understanding of the questions in order to get a true and accurate responses as well as reducing uncompleted questionnaires. In addition, following the recommendations by Bou-

dreau et al. (2001), the questions for each construct were drawn from prior IS literature to ensure construct validity, see table 9 below.

Table 9 The survey instrument

Measurement Item	Source
Performance Effort	(Davis 1989; Davis et al, 1989)
It is easy to use the mobile money plat-form.	
Using mobile money enables me to accomplish financial transactions more quickly	
Am satisfied with m-money services	
The procedures for conducting payments is not complex	
The cost per transaction is relatively low.	
Effort Expectancy	
My interaction with mobile money would be clear and understandable.	(Davis 1989; Davis et al, 1989)
It would be easy for me to become skilful at using the mobile money platform.	
I would find the mobile money platform easy to use.	
Learning to operate the mobile money plat-form is easy for me.	
Social Influence	
People who influence my behaviour think that I should use mobile money.	(Ajzen 1991; Davis etal. 1989; Fishbein and Azjen1975; Mathieson 1991; Taylor and Todd 1995a,1995b) and (Thompson et al. 1991)
People who are important to me think that I should use mobile money.	
The staffs of the operators of mobile money have been helpful in the use of the mobile money platform.	
In general, the operators have supported the use of the mobile money platform.	
Facilitating Conditions	
I have the resources necessary to use	(Ajzen 1991; Taylor and Todd 1995a, 1995b) and (Thompson et al. 1991)
I have the knowledge necessary to use mobile money.	
The mobile money platform is not compatible with other systems I use.	
A specific person (or group) is available for assistance with system difficulties.	

5.5 Result of regression analysis

The results of the regression analysis are presented in table 10 below. The dependent variable in the regression is behavioural intention and the independent variables include performance expectancy, effort expectancy and social influence and facilitating conditions.

Table 10 Regression results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.115	.154		13.766	.000
	Performance Effort	.080	.025	.131	3.175	.002
	Effort Expectancy	.033	.023	.063	1.415	.158
	Social Influence	.047	.023	.092	2.085	.037
	Facilitating conditions	.009	.019	.020	.471	.638

The first hypothesis was to test the relationship between performance expectancy and the behavioural intention to use m-money in Ghana. Specifically, this was to test the hypothesis:

H1: *Performance expectancy will have a positive influence on the behavioural intention to adopt m- money in Ghana and that it will be moderated by gender, such that the effect will be stronger for men.*

The result in table 10 above indicates that there exist a positive significant relationship between ***performance expectancy*** and the intention to use mobile money with a p-value of 0.002 significant at 5% significant level. That is **p-value (0.002)** < (0.05) significance level, we therefore conclude that performance expectancy significantly influences the intention to use m-money in Ghana.

To test whether performance expectancy is moderated by gender, regression analysis is applied. Table 11 below shows that there exist a significant moderation effect by *gende*r on performance expectancy as both males (p-value = 0.000) and females (p-value = 0.030). In addition, the parameter estimates (coefficients) for females and males also seem to suggest that performance expectancy is moderated by gender and the effect is stronger for males (0.363) than for females (0.193).

In summary, performance expectancy has a significant positive effect on the intention to use mobile money in Ghana and that it is moderated by gender such that the ef-

fect is stronger for males than females**.** This supports the hypothesis (H1) therefore we **accept** H1.

Table 11 Moderating effects on males and females

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.800	.289		6.228	.000
	Male	.363	.093	.359	3.880	.000

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	**(Constant)**	2.231	.264		8.454	.000
	Female	.193	.088	.207	2.196	.030

The second hypothesis was to test the relationship between effort expectancy and the behavioural intention to use m-money in Ghana. Specifically, this was to test the hypothesis:

H2: *Effort expectancy will have a negative influence on the intention to adopt mobile money in Ghana such that the effect will be stronger for women than men***.**

On the relationship between ***effort expectancy*** and the intention to use m-money in Ghana, there exist a positive but *insignificant* relationship since **p-value (0.158)** > (0.05) significance level, see table 10 above. We therefore conclude that effort expectancy does not influence the intention to use m-money in Ghana.

To test the relationship between effort expectancy and gender, regression analysis is applied. Table 12 below shows that there exist a significant moderation effect by males (p-value = 0.002) but no significant interaction by females (p-value = 0.277).

In summary effort expectancy has no significant relationship with the behavioural intention to use m-money in Ghana and that it is moderated by males but no interaction exists between females therefore we **reject** hypothesis (H2).

Table 12 Moderating effects on males and females

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.842	.370		13.099	.000
	Male	.372	.120	.295	3.114	.002

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.154	.334		12.444	.000
	Female	.121	.111	.104	1.092	.277

The third hypothesis was to test the relationship between social influence and the behavioural intention to use m-money in Ghana. Specifically, this was to test the hypothesis:

H3: *Social influence will have a positive effect on user's intention to use mobile money in Ghana such that the effect will be stronger for women.*

On the relationship between ***social influence*** and the intention to use m-money in Ghana, there exist a positive and *significant* relationship since **p-value (0.037)** < (0.05) significance level, see table 10 above. We therefore conclude that social influence significantly influences the intention to use m-money in Ghana.

To test the relationship between social influence and gender, regression analysis is applied. Table 13 below shows that there exist no significant moderation effect by gender on social influence as both males (p-value = 0.123) and females (p-value = 0.739) show no significant interaction with social influence.

In summary, there exist statistically significant relationship between social influence and the intention to use m-money in Ghana but social influence is not moderated by gender. Therefore we **accept** the hypothesis (H3) and conclude that social influence has a positive effect on user's intention to use mobile money in Ghana.

Table 13 Moderating effects on males and females

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.270	.392		5.794	.000
	Male	.197	.127	.152	1.555	.123

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.836	.343		8.272	.000
	Female	.038	.114	.032	.334	.739

The fourth hypothesis was to test the relationship between facilitating conditions and the behavioural intention to use m-money in Ghana. Specifically, this was to test the hypothesis:

H4: *Facilitating conditions will have a positive influence on the intention to adopt mobile money in Ghana and that it will be moderated by gender such that the effect will be stronger for men.*

With regards to the relationship between *facilitating conditions* and the intention to use mobile money in Ghana, there exist a positive but insignificant relationship since **p-value (0.638)** > (0.05) significance level, see table 10 above. We therefore conclude that facilitating conditions has no influence on the intention to use m-money in Ghana.

To test the interaction between *facilitating conditions and gender*, regression analysis is applied. Table 14 below shows that there exist no significant moderation effect by gender on facilitating conditions as both males (p-value = 0.077) and females (p-value = 0.390) show no significant interaction with facilitating conditions. The implication of this result is that facilitating conditions is not moderated by gender.

In summary, there exist positive but insignificant relationship between facilitating conditions and the intention to use m-money in Ghana. Therefore we **reject** the hypothesis (H4) and conclude that facilitating conditions have a positive but insignificant relationship on user's intention to use mobile money in Ghana and that facilitating conditions are not moderated by gender.

Table 14 Moderating effects of males and females

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.979	.426		4.644	.000
	Male	.246	.138	.174	1.787	.077

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.889	.372		7.774	.000
	Female	-.107	.124	-.083	-.863	.390

5.6 Summary of determinants

Hypothesis	Supported / Not supported
H1: *Performance expectancy will have a positive influence on the behavioural intention to adopt m-money in Ghana and that it will be moderated by gender, such that the effect will be stronger for men*	Supported
H2: *Effort expectancy will have a negative influence on the intention to adopt mobile money in Ghana such that the effect will be stronger for women than men.*	Not supported
H3*: Social influence will have a positive effect on user's intention to use mobile money in Ghana such that the effect will be stronger for women.*	Supported
H4: *Facilitating conditions will have a positive influence on the intention to adopt mobile money in Ghana and that it will be moderated by gender such that the effect will be stronger for men*	Not supported

5.7 Interviews with consumers

A qualitative analysis using interviews was conducted to give a better understanding of the quantitative analysis as well as enrich the findings. The interview followed concepts in the questionnaire.

In all 50 interviews were made and the interviewees were drawn from low income groups (described as urban poor) and individuals in the higher income group living in the commercial centres of the greater Accra and Ashanti regions of Ghana. The urban poor were selected from individuals such as market porters, unemployed, street sellers, food hawkers, hair dresser assistants, shoe makers, labourer's, truck pushers, bus conductors and squatters.

The sample size was made up of 44.4% females and 55.6% males. Majority (57%) of respondents interviewed belong to the age group 18-25 and (30%) belong to the age group 26-45 years with only (13%) belonging to the age group over 45 years.

5.7.1 Results

The result demonstrates that poor communication network was expressed by majority of interviewees as the single most important barrier to the use of m-money in Ghana. *"It is very embarrassing for me not to be able to access my own money due to poor network"*, one interviewee laments. Another interviewee, " *This will be the last time I am using this service, what kind of nonsense is that, I was promised it was faster and better than joining queues in the banking hall, yet I have still not been able to withdraw my own money after two days*". These quotes among others explain how customers are unhappy about the frequent network failures of the mobile money platform. This highlights the findings in the quantitative analysis on the significance of *performance expectancy* on m-money usage in Ghana.

The second top barrier is the unwillingness of users to use the m-money service for the payment of goods and services. Ghana to a large extent is not a cashless economy as most transactions are done with physical cash and it was not surprising that most customers preferred cash payments to m-money payments for goods and services. This was evident in the interview: would you use m-money to pay for goods and services? *"Hahahaha! Me, never, for what? Nobody accept m-money payments".* This result also give a better understanding of the results of the quantitative analysis which suggests that attitude towards technology influences the use of m-money in Ghana.

The third highest barrier according to m-money users was the problem with agents. Some of the m-money agents were either absent or did not have any/did not have enough e-float or cash. "*I only wanted to withdraw GH₵300, but he did not have*

enough cash" says an interviewee. This shows how facilitation conditions can affect the use of m-money in Ghana despite the fact that it was not significant in the quantitative analysis.

Other interviewees also claim to have registered for m-money but have never used it simply because they don't see the need of it while others believe m-money is generally difficult to use. The following quotation describes the issue: "*I sometimes find it difficult to use m-money", says an interviewee.* This result highlights the results of the quantitative analysis which indicates effort expectancy has no significant influence on the intention to use m-money in Ghana.

The education on m-money also seems to be low as some interviewees claim that though they have heard about it, they don't know how to use it. This finding also highlights the effect of facilitation conditions on the use of m-money in Ghana as explained by the quantitative analysis.

Some interviewees also indicated that the m-money platform is not used in their area (e.g. market) or their relatives don't use the m-money platform. The following quotation describes the issue: *"Everybody knows that we don't use it here in the market"*. This result gives a better clarity on the findings of the quantitative analysis on social influence on the use of m-money which is the fact that social influence significantly influences the use of m-money in Ghana.

The other responses from interviewees include the fact that some respondent think they don't need the m-money platform, lack of trust of m-money use and the perception that it is for rich people.

5.8 Interview with retailers and results

In all, 25 store merchants were sampled from greater Accra and Ashanti regions of Ghana. In addition 15 market women were selected from the same area.

At the end of the interview, majority of interviewees were of the view that trust of the m-money platform was a major problem with major concerns about network problems at the point of transaction as well as the susceptibility of the m-money platform.

6 DISCUSSION

This study empirically investigated the critical factors determining the limited usage of mobile money in Ghana. Specifically, the study attempted to investigate the barriers hindering the full adoption of mobile money platform and its auxiliary services in Ghana by adopting the Unified Theory of Acceptance and Use of Technology (UTAUT). In addition, face to face interview was used to establish better understanding of the quantitative analysis.

The findings of the study provide evidence on the suitability and reliability of the model used in the Ghanaian m-money context. Findings of the study show that Ghanaian consumers are willing to use m-money but there exist significant impediments towards the adoption and use of m-money in Ghana.

6.1 Key findings

The study found that the effect of *performance expectancy* was significant in influencing the intention to use m-money in Ghana and moderated by gender such that the effect was more salient to males than females. Likewise, the interview analysis confirms that the major performance expectancy barrier as expressed by respondent was network or service failures.

The effect of *effort expectancy* was found not to influence the intention to use m-money in Ghana and the effect was not moderated by gender. This was confirmed by the interview analysis suggesting that in Ghana effort expectancy do not constitute a barrier to m-money usage.

The study further revealed that the effect of *social influence* was found to significantly influence the intention to use m-money in Ghana but was not moderated by gender. In addition the interview analysis confirms it. Thus both the quantitative and interview analysis suggests that social influence significantly influences the intention to use m-money in Ghana.

The study finally revealed that whiles the quantitative analysis indicates that *facilitating conditions* statically do not significantly influence the intention to use m-money; the result from the interview analysis suggests that facilitating conditions could influence the intention to use m-money in Ghana.

6.2 Theoretical implications

The study adopted the Unified Theory of Acceptance and Use of Technology (UTAUT) to examine the influence of performance expectancy, effort expectancy, social influence and facilitating conditions as direct predictors of the intention to use m-money in Ghana.

As expected by the (UTAUT) model, the study confirms a direct effect of ***performance expectancy*** on the intention to use m-money in Ghana. This relates to studies by Laukkanen and Kiviniemi (2010) who found that relative advantage has a significant positive influence on the intention to adopt m-money in Finland. It is also supported by Riquelme and Rios (2010), Lin (2010), Puschel, Mazzon and Hernandez (2010) as well as Cruz, Neto, Gallego and Laukkanen (2010) who found similar results in the case of Singapore, Taiwan and Brazil, respectively.

The effect of ***effort expectancy*** contradicts the expectations of the (UTAUT) model as it was found not to influence the intention to use m-money in Ghana plus the effect was further not moderated by gender. Findings from Lewis, Palmer and Moll (2010) support this position. Their findings while studying the case of Germany revealed that complexity does not have any influence on the intention to adopt m-money.

On the other hand, Laukkanen and Kiviniemi (2010) found that complexity has a negative influence on the intention to adopt m-money in Finland. Similar results was found by Riquelme and Rios (2010) and Lin (2010) in the case of Singapore and Taiwan respectively, as well as Gu, Lee and Suh (2009) and Lee, Park, Chung and Blakeny (2011) both in the case of South Korea.

As an addition to prior studies on m-money, the study has demonstrated that indeed it is not all cases that effort expectancy is moderated by gender and that in Ghana effort expectancy is not only insignificant in influencing m-money but also it is not moderated by gender.

The effect of ***social influence*** on the intention to use m-money in Ghana is also in line with the model (UTAUT) as it was found to significantly influence the intention to use m-money but was not moderated by gender. This to a large extent confirms the expectations of the model (UTAUT). Besides the findings of the study is also compatible with the findings of Venkatesh and Davis (2000), who found that the effect of social influence could be attributed to compliance in mandatory contexts that causes social influences to have a direct effect on intention. Lombard and Ditton (1997) also argued that perceived social presence has a profound impact on enjoyment and delight. Furthermore, Hassanein & Head (2007) found perceived social presence to be a predictor of both perceived usefulness and enjoyment in the online shopping context. The finding is therefore supported by prior studies.

Facilitating conditions was non-significant as a determinant of the intention to use m-money in Ghana, thus even though it does not support the hypothesis (H4); it is fundamentally in line with the expectation of the (UTAUT) model as the quantitative analysis portrayed a positive-intention relationship. This relates to the findings of Cruz, Neto, Gallego and Laukkanen (2010) which confirms that that facilitating conditions may not have any significant influence on the intention to adopt m-money in the case of Brazil.

However Laukkanen and Kiviniemi (2010) discovered in their studies that facilitating conditions have a positive influence on the intention to adopt m-money in Finland. Lin (2010), Lewis, Palmer and Moll (2010), Puschel, Mazzon and Hernandez (2010) also found similar results in Taiwan, Germany and Brazil, respectively.

6.3 Implications for practice

The *positive relationship* between performance expectancy and the intention to use m-money means that increase performance of m-money operators are likely to increase m-money usage in Ghana. Thus it calls for improvement in operator performance such as improved network, education, sufficient floats among others which will not only benefit the end user but also increase the market share of the operator. Moreover, the fact that the effect of performance expectancy on the intention to use m-money was stronger among males calls for a more detailed understanding of *gender differences* and perceptions of m-money in Ghana.

Given the substantial influence of social influence on the intention to use m-money, it is expedient on the part of m-money providers to continuously encourage families, groups, organization and other social groupings to use the m-money platform which will obviously serve as a great marketing opportunity for m-money service to reach more people. To substantially increase their market share and profit margins, m-money providers need to continuously strive to simplify the m-money application used for transactions.

Since lack of knowledge and understanding of the m-money service among users is one of the factors limiting the use of m-money in Ghana, m-money operators need to craft appropriate strategies that will create the required knowledge for using the m-money platform.

M-money providers should try as much as possible to design their user interface to require minimal effort in using the m-money service and should provide facilitating conditions for the continuous learning of the features of the m-money platform.

6.4 Limitations

The study was done in selected commercial centres of the Greater Accra and Ashanti regions of Ghana with the sample of 303 (both questionnaire and interview). This sample size is considered to be small as compared to the total number of m-money users in Ghana and as result may not represent the true picture of the whole country.
In addition, random sampling was not used in the study; hence the results cannot be generalized in a statistical sense. There is therefore the need to expand the sample size to cover greater part of the country for future research on the topic.

Since this study was conducted in the urban centres, future research on the topic should be carried out in the rural areas where conditions for m-money use are different to establish the factors limiting m-money usage in rural Ghana.

6.5 Conclusion

This study empirically investigated the critical factors determining the usage of mobile money in Ghana. Specifically, the study attempted to investigate the factors influencing the full adoption of mobile money platform and its auxiliary services in Ghana by adopting the Unified Theory of Acceptance and Use of Technology (UTAUT). In addition, face to face interview was used to establish better understanding of the quantitative analysis.

Based on the findings, the study concludes that performance expectancy and social influence significantly influence the intention to use m-money in Ghana while effort expectancy and facilitating conditions do not significantly influence the intention to use m-money in Ghana.

The study further concludes that poor network connectivity, problems with agents and cash balancing, lack of information and understanding among m-money users and social influence and the fact that Ghana is not a cashless economy remain the major factors limiting m-money usage in Ghana.

The study finally concludes that Ghanaian consumers are willing to use m-money but there exist significant impediments towards the adoption and use of m-money in Ghana.

6.6 Recommendation

The study recommends an urgent effort by m-money providers to improve the poor network problems and provide a reliable network connection for customers to make

transactions free of delays and the risk of losing their moneys. More improvement in network related issues are required especially in urban centres where the population for m-money use is high.

In addition, the study recommends widespread education by m-money operators about their valued added services varieties rather than concentrating on only cash withdrawals and transfers, since cash is scarce and no one can afford sending cash limitlessly. This is required to give users the necessary understanding of the services of the m-money platform.

The study also recommends that m-money operators should train and improve the presence of agents as well as improving the financial capability of agents. This is required to equip agents with the necessary tools to improved transaction volume per day.

Furthermore, m-money operators should encourage friends, colleagues, relatives and family members who are already users of m-money to educate their friends and relations about the importance of the m-money platform. For example, refer-a-friend campaigns to incentivize users to help friends sign up for the service could be an effective tactic for operators with a core base of early adopters looking to improve their m-money user base.

Likewise customer promotions (offering them discounts or bonuses for performing certain transactions) can be an effective marketing tool to incentivize customer behaviour. Promotions are more effective to drive repeat use rather than first-time use because previous users may have stopped using the service due to loss of PIN, or because of absence of agent or some other reason but not because they don't need the service. As such targeting such users is likely to improve m-money usage in Ghana.

Finally the study recommends improved security against fraud/risk and customer care facilities. This is necessary to improve security, starting from the m-money agents who may likely share information on the confidential PIN numbers of some m-money users in the process of undertaking a transaction on users behalf. This will build the trust for m-money users and would ultimately improve m-money usage in Ghana.

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Appendix: Questionnaire

QUESTIONNAIRE ON THE FACTORS DETERMINING THE LIMITED USAGE OF MOBILE MONEY IN GHANA

This questionnaire is for academic purpose. It is designed to find out the factors determining the limited usage of mobile money in Ghana. Any information given will be treated as confidential. In filling this questionnaire, kindly read each item carefully and make sure you understand it. Indicate in one of the boxes by ticking [√]; Strongly Agree (SA), Agree (A), Strongly Disagree (SD) and Disagree (D) to show how relevant the item applies to you. You may also be required to fill in where necessary. Please respond to the following.

Section A: General information

Q.1 Gender (1) Male [ ], (2) Female [ ]

Q.2 Age (1) 18-25[ ], (2) 26-35[ ], (3) 36-45[ ], (4) 46-55[ ]

Q.3 Level of education
(1) JHS/MSLC [ ] (2) SHS/Voc/Tech [ ] (3) HND/Degree [ ] (4) Post-Graduate []

Q.4 Have you registered for mobile money?
(1) Yes [ ], (2) No [ ]

Q.5 Have you ever used the mobile money platform for any transactions?
(1) Yes [], (2) No [ ]
(If NO; skip to Q.6)

Q.6 If yes, which of the following activities did you use the mobile money platform for?
(a) Cash transfers [ ] (b) Checking account balance [ ] (c) mini statements [ ]
(d) Payment for goods/services [ ] (f) none of the above [ ]

Section B: Direct determinants

Direct determinants of intention to adopt technology

The following tables have statements about mobile money services. Rate your agreement with each of the statements by using the scale provided in the table.

Performance Expectancy

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

	STATEMENT	**SA**	**A**	**N**	**D**	**SD**
		1	2	3	4	5
Q7	I would find the system useful in my job.					
Q8	Using the system enables me to accomplish tasks more quickly.					
Q9	Using the system increases my productivity.					
Q10	If I use the system, I will increase my chances of getting a raise					
Q11	I would find the system useful in my job.					

Effort Expectancy

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

	STATEMENT	**SA**	**A**	**N**	**D**	**SD**
		1	2	3	4	5
Q12	My interaction with the system would be clear and understandable.					
Q13	It would be easy for me to become skilful at using the system.					
Q14	I would find the system easy to use.					
Q15	Learning to operate the system is easy for me.					

Social Influence

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

	STATEMENT	**SA**	**A**	**N**	**D**	**SD**
		1	2	3	4	5
Q16	People who influence my behaviour think that I should use the system.					
Q17	People who are important to me think that I should use the system.					
Q18	The staff operators of mobile money have been helpful in the use of the system.					
Q19	In general, the organization has supported the use of the system.					

Facilitating Conditions

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

	STATEMENT	**SA**	**A**	**N**	**D**	**SD**
		1	2	3	4	5
Q20	I have the resources necessary to use the system.					
Q21	I have the knowledge necessary to use the system.					
Q22	The system is not compatible with other systems I use.					
Q23	A specific person (or group) is available for assistance with system difficulties.					

Behavioral intention to use the system

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

	STATEMENT	SA	A	N	D	SD
		1	2	3	4	5
Q37	I intend to use the system in the next 12 months.					
Q38	I predict I would use the system in the next 12 months.					
Q39	I plan to use the system in the next 12 months.					

Section C: Recommendations

Recommendations to solve the problem of limited mobile money usage in Ghana

Q40. What should be done to minimize the problems associated with the limited adoption of mobile money in Ghana?

(a) ……

(b) ……

(c) ……

(d) ……

(e) ……

Thank You.