

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI, GHANA

**The Penetration of Mobile Money in Ghana:
Opportunities and Threats**

By

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A Thesis submitted to the Department of Accounting and Finance,
College of Humanities and Social Sciences
in partial fulfillment of the requirements for the degree of;

**MASTER OF SCIENCE
(ACCOUNTING AND FINANCE OPTION)**

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DECLARATION

I hereby declare that this submission is my own work towards the requirement for the award of Degree of Master of Science in Accounting and Finance, and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Kwame Nkrumah University of Science and Technology, Kumasi or any other educational institution, except where due acknowledgment is made in the thesis.

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DEDICATION

This thesis is dedicated to my wife, Mrs. Faustina Amoah and my dearest brother Ernest Kofi Sarpong.

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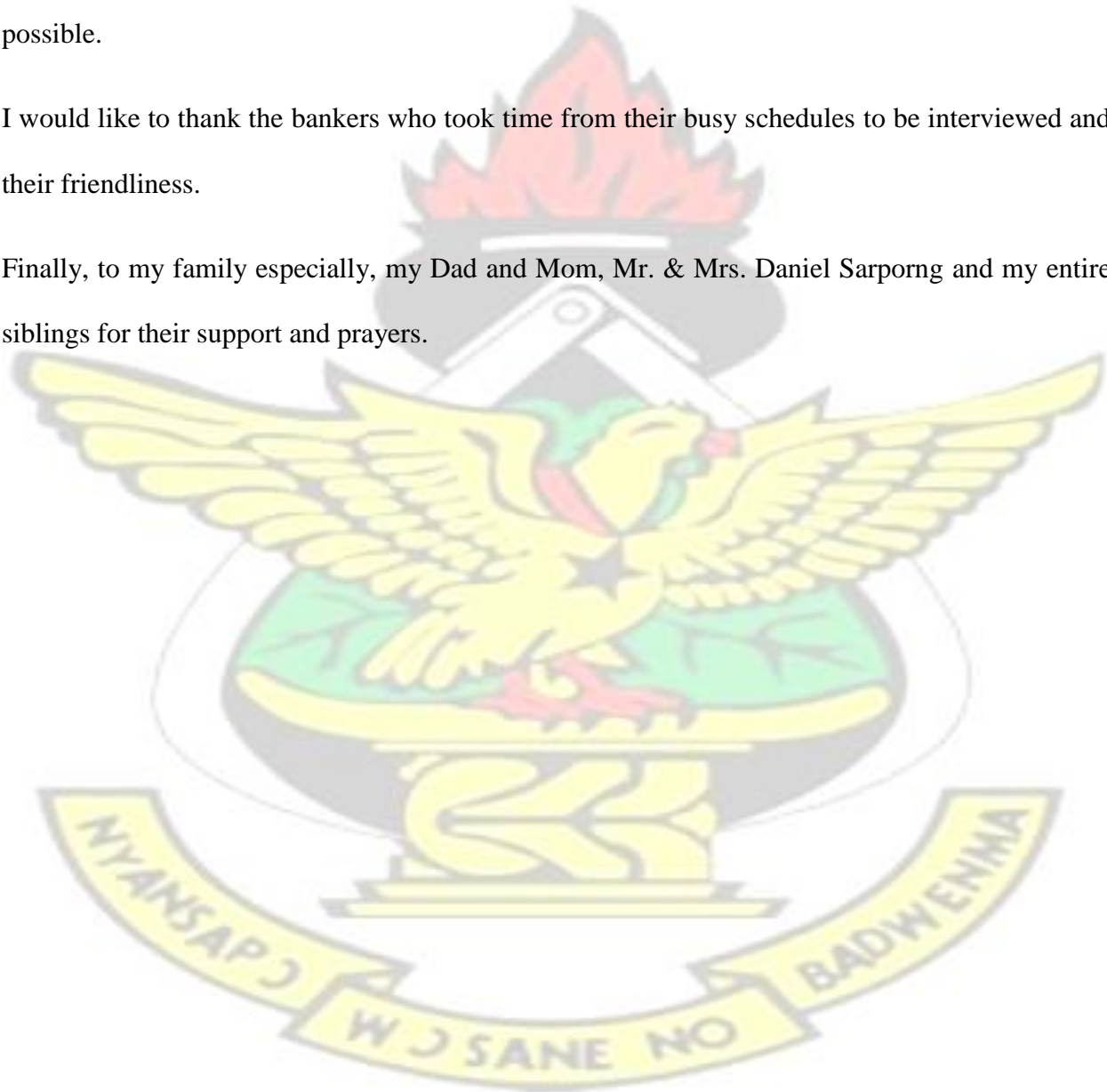
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I give all the Glory to GOD Almighty who through Christ Jesus granted me life, opportunity, strength and resources to accomplish this thesis.

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ABSTRACT

This study explored the opportunities and threats of mobile money usage in Ghana. As the main purpose requires, the key objective sought to evaluate the level and trend of mobile money penetration in Ghana as well as identifying its opportunities and threats. The study employed the mixed-method approach of research with a descriptive focus using the survey strategy. The population was limited to only formal sector mobile money operations, specifically the banks and Mobile Network Operator (MNO) companies. The purposive sampling approach was used to select 19 interview participants for the study. Data used were both quantitative and qualitative which were obtained from secondary and primary sources respectively. Analysis was done via using trend and thematic content analysis. The study found that the penetration of mobile money in Ghana has been phenomenal with active mobile money account holders being 3.78million as at 2012 but increase significantly to 32.55million as at 2018, indicating an increase of 28.77million between the six-year period. The study also found that the value to money transaction of mobile money as at 2012 stood at GH¢594.12m but as at year 2018, it has significantly increased to GH¢223,207.23m, signifying the continuing high level of penetration and adoption. The study found the dominant opportunities which mobile money usage may generate to include: propelling of quick growth in business operations; possibility of serving as a catalyst or vehicle for maximizing financial inclusion; possibility of removal of barriers and complexities in transacting business, and the possibility of creating a cash-lite society in the Ghanaian economy. The study found the dominant threats of mobile money usage to include: threat of MNOs entry into the banking space and the possibility of lost synergies from MNOs, possibility of cyber-attack, and possibility of pressure of adoption. The study concludes that the mobile money technology meets the transaction needs of most customers due to its convenience

and flexibility, hence the government can leverage on to enhance financial inclusion and eventual creation of a cashless society in Ghana.

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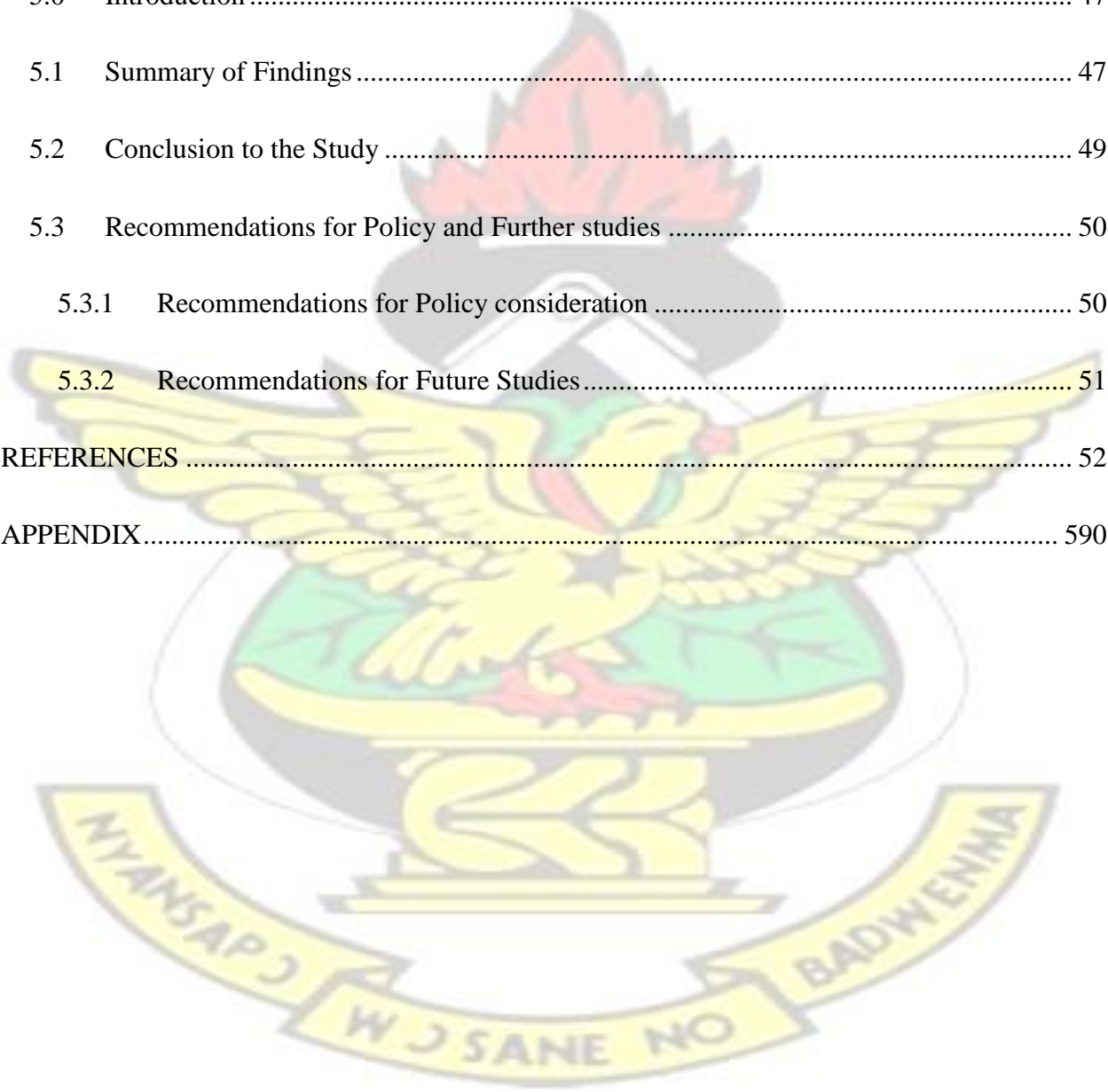
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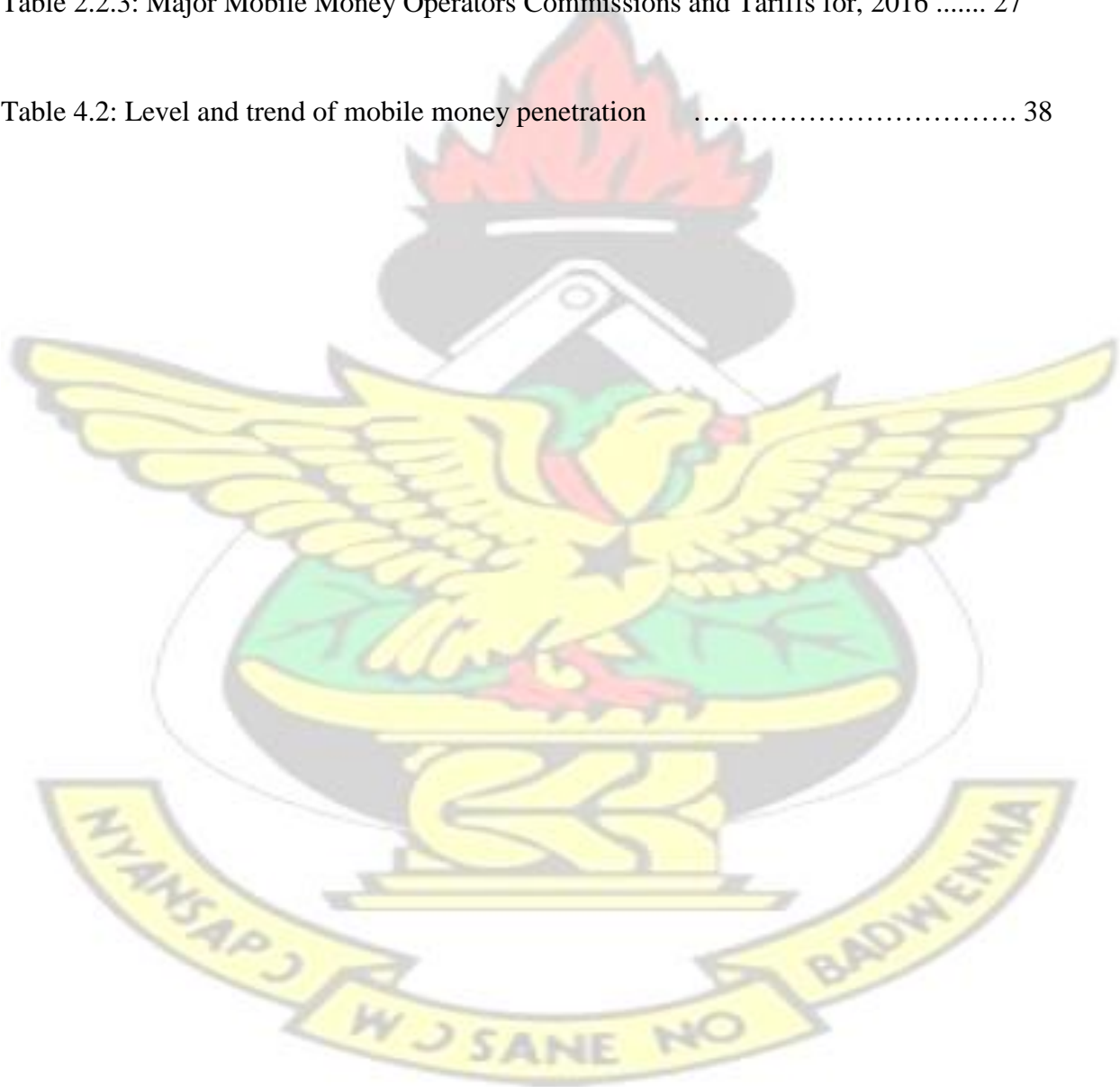


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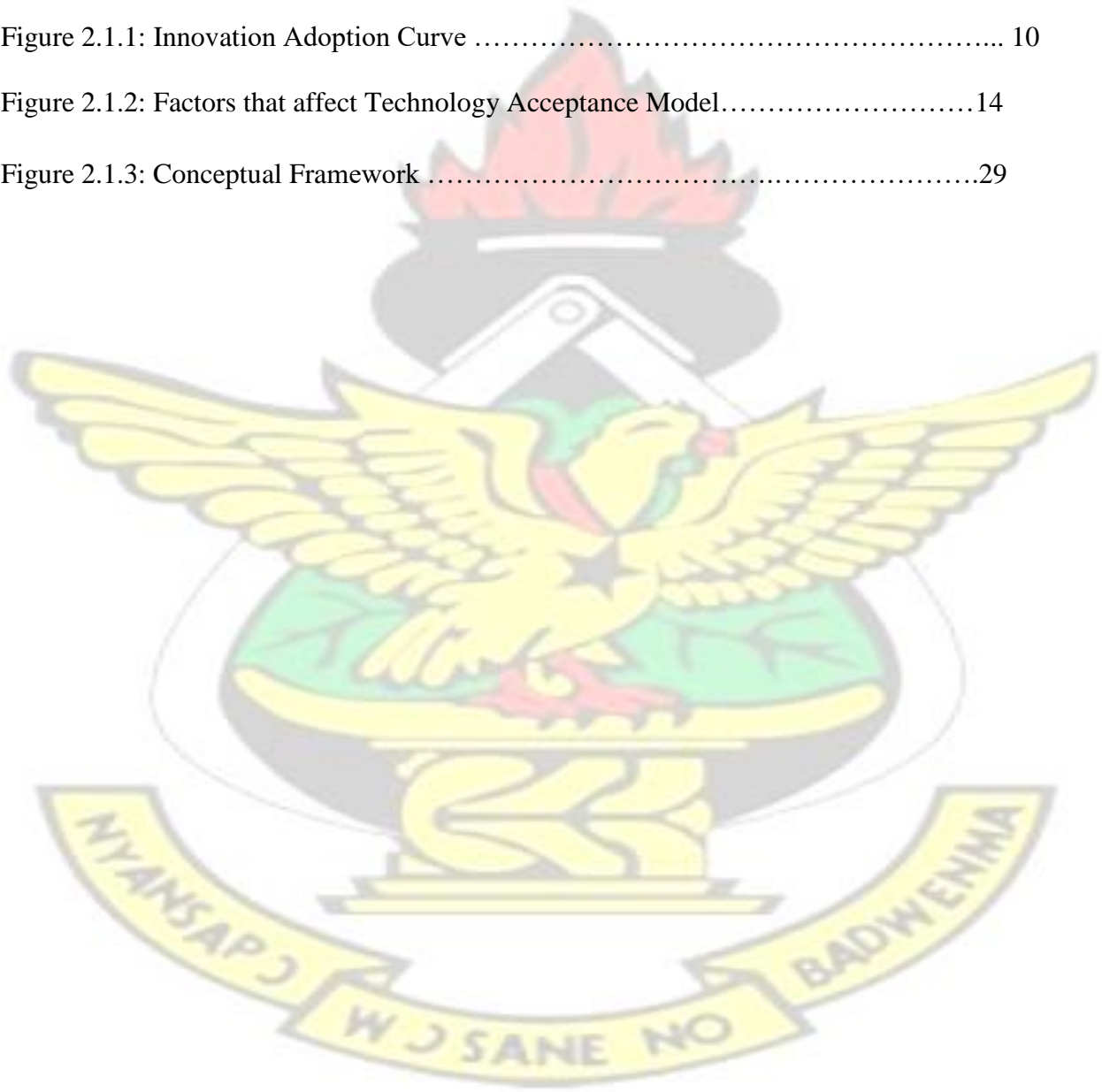
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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The middle-income countries are known to be having poor saving habits when it comes to savings with banks. The World Bank classifies a country with per capital gross national income which measures close to a GDP of USD \$1,026 – USD \$3,995 as low-middle income country of which Ghana and many African countries are included (World Bank Data, 2019). Per this attitude many residents in Africa care less to own a savings account or bank account. For some years now, there has been a dramatic increase in the use mobile phones, especially in the developing country markets. In Ghana alone, 80 percent of the adults own a mobile phone either being smart or basic phones which all are assessable to performing Mobile Money service (Elliott, 2019). As a result of this, the operators who developed mobile networks derived an idea to benefit its subscribers to have access to a platform that can effortlessly operate like a bank account with ad-on features. This brought about mobile payments, popularly known as Mobile Money or MOMO in Ghana. The service of mobile money was given birth in Kenya as MPESA where, ‘M stands for mobile and PESA a Swahili word for money’. It was introduced by Vodafone in 2007.

Many researchers have shown that the Sub-Saharan Africa is a strong front-runner in mobile money, showing about 63% with transactions of nine service providers and across three continents which have successful certified, collectively covering over 133 million mobile money accounts, a report by Global System for Mobile Communications, (GSMA, 2018). The report

also found in 2017 that the worldwide mobile money commerce processed \$1.00 billion each day in transactions and generates direct returns of over \$2.40 billion. According to the business dictionary, “*MOMO, is a broader term of electronic commerce, thus the use of mobile phones to purchase items and also in order to transfer funds between banks or accounts, deposit funds or pay bills or withdraw money.*” This can be summarized as a way to save and manage money in an account which is linked to a mobile phone similar to bank account. It allows people to send and receive money using Short Message Service (SMS) which is low costs, fast speed and no need of having a bank account. Ghana’s first mobile money setting out was launched to flourish in 2019, but the excitement proved short-lived. The number of Ghanaians amounting to about 350000 were actively using mobile money accounts after three years (Mattern, 2018). Reforms and dialogues of the regulations covering it was revisited in 2008 and by 2017 over 11million active accounts and penetration of new use cases had made it possible for Ghanaians to do everything from opening a savings account to purchase governments treasure bills on their phones. This penetration of mobile money in Ghana has proven its doubters wrong by the report in 2017 by Global Findex data, which shows that Ghana is one of the most up-and-coming and fasters growing mobile money markets within the Sub-Saharan Africa.

1.2 Problem Statement

Many opportunities and threats surround MOMO in Ghana and beyond since many developing countries want to run a cashless system. Talking about the opportunities, is not that clear to many people how they can advantageously grasp the numerous opportunities that comes from MOMO penetration in Ghana to improve upon their business and at the same time saving cost. In this modern era, People queue for long hours at the banking hall before they can have access to withdraw or deposit cash for or make other transactions. This hinders efficiency in production

and service rendering as productive operational hours are consumed in the banking halls for these cash and other transactions. Logjams are also seen in other areas other than the banking halls. People queue to pay utility bills (water, electricity, etc.) and make other payments in shopping malls and super markets in some urban places in Ghana. These make transactions sometimes unwieldy and a very fatiguing process for individuals involved and not overlooking the delays that accompanies it. The bank of Ghana and other banks including the other financial institutions run on our roads with their noisy bullion van causing traffic and also giving attention to thieves of which some have been involved in some rubbery cases in Ghana. Robbers who are armed are also patrolling to swoop on innocent marketers and other people in order to rip them of their capital. Trader are at a very high risk with the increase spate of highway robberies. This is because they also carry huge sums of money on their trips to purchase goods. The government also have a burden of printing new denominational currency notes and minting coins to be distributed into the nation whenever necessary. It has hence become very important to inspire the use of more cashless transactions which prevent people from moving around with so much money, making life quite easy and also helps the government to make some savings as a result of reduced printing of Ghana cedi notes and minting coins. Despite all opportunities, there are some numerous threats that the penetration of MOMO holds to its current and potential customers that researchers have not been able to quantify it yet. Threat management in MOMO is a challenge particularly when it involves the threats of fraud or scam. MOMO Scam does not only end-up in monetary loss to users or a MOMO merchant, but it brings about reputation damage of the service to its customer and jeopardies the reputation of the MOMO industries as a whole. By way of such, alleviating the threat of fraud is a crucial objective in a robust risk management strategy. The fact that mobile money growth in Ghana has accelerated even as it has stalled in other African countries like Tanzania and South Africa raises important questions about how far

a Ghana can get on smart regulations weighing the opportunities and threats that comes along to predict its sustainability. This work goes further to look into the penetration of Mobile money in Ghana; its opportunities and the threats that comes along.

1.3 Objectives of the Studies

The key objective is ‘to assess the future role of Mobile Money in Ghana and its impact’. In looking at this addressing this general objective, the following specific objectives were defined and pursued.

1. To evaluate the level and trend of mobile money penetration in Ghana.
2. To examine the opportunities that mobile money usage may generate.
3. To examine the threats that may emanate from the usage of mobile money.

1.4 Research questions

This work seeks answers to the following questions:

1. What is the current level of mobile money penetration in Ghana?
2. What are the opportunities that mobile money usage may generate?
3. What are the threats that may emanate from the use of mobile money?

1.5 Significance of the study

The issue of Mobile Money penetration in Ghana affect the growth being positive or negative of industries or individual is critically significant given the contribution to various economies since its payments has become a major trend in the Sub-Saharan Africa due to the savings it offers to individuals, companies and governments. Therefore, this work seeks to assess the controls in

MOMO either preventive scheme which reduce the possibility of the threats in fraudulent goings-on or are detective scheme which monitors and account movements or activities that have already occurred. This goes a long way to measure and inform the telecoms involved the current and future trends of Mobile Money in Ghana if appropriate measures are not laid down to curb some of these threats posed by Mobile money to its users.

There are some markets that copy mobile money models that are successful from others without taking the pain to know the actual needs of customers that exist in those markets which makes the services quite unsuccessful in certain market. This work then seeks to establish the preference level of MOMO as compared to bank and other cashless transactions. This will be advantageous to some individuals, enterprises and others ready to accept cashless transactions for their businesses, as the findings may make available useful opportunities that can be exploited.

In Ghana telecoms involve in Mobile Money have formulated ways through which their customers can effortlessly pay for utility bills, fees of various educational or training institutions and also receive or pay their wages and salaries through the service, yet, a lot of public institutions are needed to intensify the use of the service. This study goes further to assess the level of Mobile Money penetration in Ghana to know how far it has reached and the speed its travelling in performing these services.

1.6 Brief Literature Review

The literature review would look at some literature that has been done which relate to mobile money penetration in Ghana. It outlines what is identified and not identified about the Mobile Money in Ghana and will also identify the gap that this research hopes to fill.

1.6.1 The Evolution of Mobile Money Penetration

The idea behind Mobile Money started in 2002 when a Department for International Development (DID) UK, sponsored researcher at Gamos and the Commonwealth Telecommunications Organization, it was established that people in Uganda, Botswana and Ghana were instinctively using airtime as a substitute for money transfer. This was done by reselling airtime transfers to them by their families and friends outside their homebased countries (Appiah-Danquah, 2014).

The idea was introduced when researchers researched into Vodafone who was then discussing supporting the microfinance and posterior office banking with the use of Mobile phones. since many African countries had large population who are unbanked, this really enhanced the launch of mobile money services as the individuals could now open wallets through which they can access series of financial services (Tom Jackson, 2018). From 2007 when M-Pesa started in Kenyan it has been noticed of reducing a major unemployment in the system recruiting hundreds of thousands of network agents to facilitate the delivery of services to end users.

But the impact it had in most countries being implemented since M-Pesa was launched in 2007 by Kenyan set-off a movement of related products transversely many of the sub-Saharan Africa has not really been touched.

1.7 Brief Methodology

This study employed the mixed method approach with descriptive survey design. The mixed method was adopted because of the use of both quantitative and qualitative data to enable the achievement of the study objectives. The population of the study comprised formal mobile

money operational institutions, precisely banks, mobile network operator (MNO) companies, and regulator of the financial/banking sector within which mobile money operations is found. The purposive sampling was used to select a sample of 19 key management and senior level officers from five commercial banks which have integrated mobile money services in its operations, the three MNO companies currently operating in the country, and Bank of Ghana. Both primary and secondary data were used. The secondary data were obtained from the Bank of Ghana whilst the primary data were obtained using interview guide. The quantitative data obtained from secondary source were analyzed by means of percentages and trend analysis using the Microsoft Excel software whilst the qualitative data obtained from the field was analyzed by means of thematic content analysis.

1.8 Organization of the Study

This thesis is organized into five chapters as follows:

Chapter One: Introduces of the study. It then contains the background of the study, the problem statement, the objective of the study, the research questions, the significance of the study, brief literature review, the evolution of MOMO penetration and a brief methodology.

Chapter Two: This chapter analyses the appropriate literature by authors that relate to the topic under research. The literature also looks into theoretical framework, empirical reviews and explains basic terminologies used.

Chapter Three: This chapter focuses on the methodology used for the work and describes the various approaches for collecting used and the tools for the analysis.

Chapter Four: this deal generally with analysis, interpretation and analysis of data collected.

Chapter Five: This deals with the conclusions, the summary of findings and the recommendations to be use by the various interested parties, like telecommunication companies, merchants, businesses, regulators and academicians.

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CHAPTER TWO

LITERATURE REVIEW

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2.0 Introduction

This chapter looks into the various works done by other scholars studying the same or related field to review their work done in order to add to knowledge. There are various main areas. Theoretical review; this covers areas such as Diffusions of Innovation Theory, Technology Acceptance Models, and the Credit Theory of Money. Empirical review; which covers the level of mobile money penetration in Ghana and other factors influencing its use, related opportunities of mobile money and the emanate threats of it. Lastly, it looks at the overview of mobile money in Ghana.

2.1 Theoretical Literature

2.1.1 Diffusion of Innovation Theory (DOI)

M. Rogers in 1962 developed the Diffusion of Innovation Theory. This is recognized as an ancient social science theory which was coined in communication to describe how, over time frame, an idea, product or service gains impetus and circulates or diffuses through a specific geographical or social system (Wayne, 2019). The conclusion upshot of this theory is that individuals, as part of a social structure, embrace new ideas, behavior, product or service. This theory explains how, why, and what rate first-hand designs and technology are being adopted or spread throughout a specific populace or social system (M. Rogers, 2003). Several studies focusing on acceptance of mobile services have their roots in the diffusion of innovation theory. The analysis done by Ackah (2016) states that the diffusion theory can be related to the effects of

MOMO on users, therefore the penetration of MOMO becomes an innovation which needs time in other to reach critical mass. The potential acceptance to the nonusers of mobile money in Ghana is a very challenging issue and has been studied by many authors. The diffusion innovation theory by Rogers is one of the leading theories regarding the acceptance and recognition of technological services (Aizstrauta, et al, 2015). Aizstrauta (2015), went further to acknowledge the fact that there are different ways of diffusion innovation of a technology and it is possible to find different approaches to the diffusion of innovations of a technology to look attractive to nonusers, each focusing on specific aspects of diffusion through different perspectives. They argued out that, the main contributions come from economics, marketing, sociology and anthropology. Lai (2017) explained that the innovation and adoption of an electronic payment system materialized after passing through a number of stages including implementation, persuasion, understanding, confirmation and decision, and this was the reason to the development of the S-shaped adoption curve of Roger's (1995) which shows innovators, early adopters, early majority, late majority and laggards as shown in Figure 2.1.1

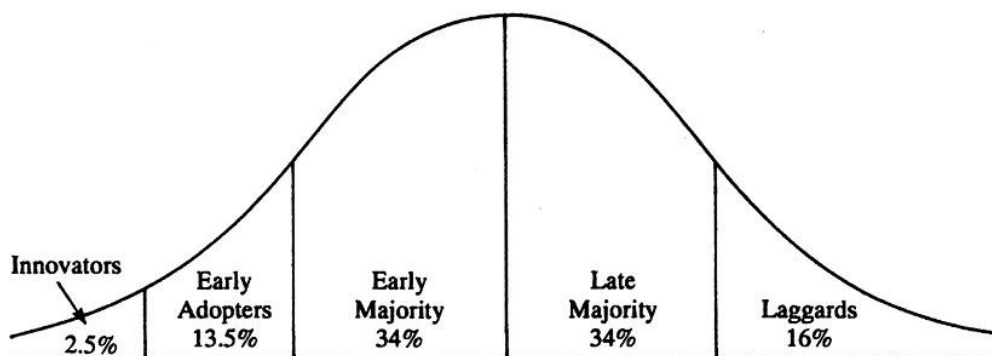


Figure 2.1: Roger's (1995) S-shaped Innovation Adoption Curve

Critically examining the diffusion innovation theory by Rogers, there are some main elements that influence the spread of a new idea: the innovation itself and technological readiness.

Innovation: Innovations are a wide-ranging category, relation to the present-day understanding of the explored unit. It is said to be the process of creating value, which is made up of enhancing the structure of a set variables, describing a system or modernization outcome of the process that paroxysms the description (Yezersky, 2007). Rogers describes innovation as an idea, practice, or object that an individual perceive as new or other unit of Adoption (Rogers, 1983). He also uses innovation and technology as substitutes to each other (Aizstrauta et al, 2014). A technology, as described by E. M. Rogers, is said to be design for instrumental performance that diminutions the uncertainty in the cause-effect affairs which brings about achieving a preferred result. The modernization of technology decision route, according to Him, is the process through which people take decision from first knowledge of an innovation to form an attitude toward the innovation, to decide whether to adopt or reject, to the confirmation of this decision and to implementation of the idea. Further, additional significant issues, Rogers spoke about was features of technology that take part in the innovation acceptance process. Rogers rough idea was that diffusion researchers in the preceding years have a tendency to respect all innovations as comparable divisions from the standpoint of studies and analysis. This was a sweeping statement, and a risky one. Because all technology or innovations are not equivalent units or comparable divisions (although some may be) is demonstrated by the statistic that some new products and services flop and others do succeed (Aizstrauta et al., 2014).

Aizstrauta et al., in their article, *Applying Theory of Diffusion of Innovations to Evaluate Technology Acceptance and Sustainability* outlined some five features of innovations which are;

- Comparative advantage: This is considered as technicality of innovation superiority in terms of functionality, cost, speed, image, etc. than the innovation it took over from or the other technology available on the market offering the same services.
- Compatibility: This talk about the compatibleness of the innovation with surviving technological standards, work practices and skills of prospective adopters. An innovation must have all the necessary features fitting neatly in the available space to solve problems that others may doubt of it.
- Involvedness: The innovation must be relatively challenging to copy and use or imitate to deter potential threats and boosting its uniqueness.
- Trial-Ability: The technology can carry out trial with a trial source and available updates without too much effort and cost. It can be executed incrementally and yet provide a clear progressive profit or more advanced.
- Observability: It must not be difficult in accessing an innovation in terms of decision making. The domino of cost and benefits effect of the innovation usage can be straightforwardly perceived and communicated to others in influencing their decision.

These established attributes of innovation can be known as the main role of Theory.

Technological Readiness: This is a technique for guessing the development of a technology in the course of the acquirement of a program. This was established at National Aeronautics and Space Administration (NASA) during the 1970s. Technological Readiness permits consistent, uniform considerations of methodological maturity across dissimilar categories of technology, which the innovation of mobile money is not exempted (Mihály, 2017). An innovation/technology is determined during a technology readiness assessment that examines the program concept, technology requirements, and demonstrated technology capabilities (Bake,

2017). Mihály (2017) made us to know that, technological Readiness was used in its early stages to define boundaries between different organizational and financial modes of technological development. NASA Content Administrator, Bake, (2017) explained that, technological readiness serves as a level or system a new technology goes through before declared ready for graduation. This makes mobile money a testing innovation of mobile phone for users, whether to accept or reject based on the opportunity or its associate threats considering the period, level and time.

2.1.2 Technology Acceptance Model (TAM)

Several studies focusing on acceptance of mobile money services have their roots in Technology Acceptance Model (TAM), one of the widely tested and applied models in the prediction of future consumer behavior (Ackah, 2016). TAM is known as information systems theory that simulates exactly the way users come to accept and use a technology. It has been one of the utmost dominant models of technology acceptance. TAM has two principal factors impelling an individuals' intention to adopt new technology, thus; Perceived Ease of Use and Perceived Usefulness (Davis, 1989).

Perceived Usefulness: This was defined by Davis as "*the amount to which an individual believes that using a particular system would boost his or her job performance*". This means at all weather someone recognizes that technology innovation like mobile money would be useful for what they want to do. There is broad research work in the field of Information Systems and M-commerce that make available evidence of the noteworthy outcome of perceived usefulness on embracing intention (Davis et al, 1989; Khalifa & Shen, 2008). Hence, perceived usefulness will inspire users' intention to accept or reject MOMO business.

Perceived Ease of Use: This was defined by Davis as *"the point to which an individual considers that using a particular system would require less effort"*. A technology being easy to use, shows that the obstructions are seized but, if not, then the interface is complex and no individual would have an optimistic attitude concerning it. The perceived ease of use of a technology is well-defined as the point to which an individual has confidence in using a particular technology because its free of effort and this theory is suggested to effect behavioral intents to use over and done with two unintentional conduits; a direct effect and an indirect effect through perceived usefulness (Ackah, 2016). Furthermore, Outward variables such as social impacts are one of the significant element to determine the attitude. Many researchers conclude that with the theory in abode, individuals will have the approach and intention to use a different technology. Nevertheless, the perception may variate depending on period, age, gender and geographical location because each person is unlike. This can be interpreted graphically by an extension of the TAM by (Diop et al., 2019).

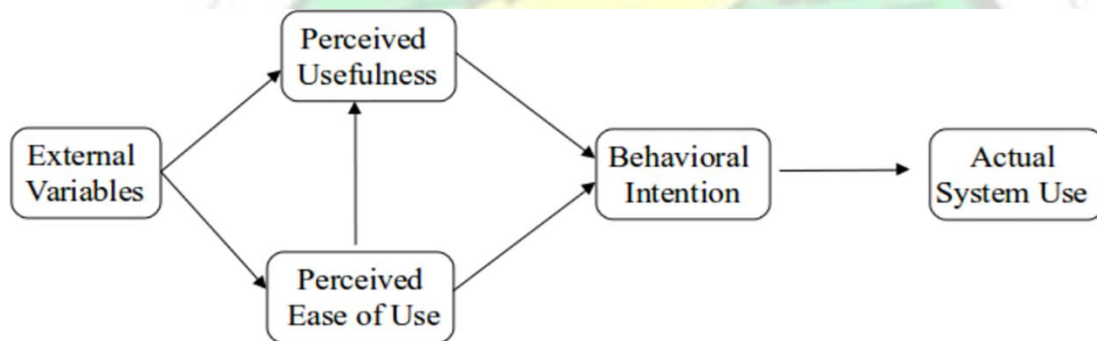


Figure 2.2: factors that affect Technology Acceptance Model

Although, on a numerous of grounds, TAM has been criticized but it still serves as an advantageous universal basis and is stable with a quantity number of surveys into the factors that encourages the grown-up adult's intent to adopt new technology (Braun, 2013). TAM is the

endpoint where it assumes everyone to be able to do with technology, therefore, Behavioral Intention needs to be formed which is a factor that leads people to use the technology (Mamman, et al., 2016). Behavioral intention is simply defined by Mamman (2016) as how hard persons are willing to try and how much determinations they are planning to use towards performing a behavior. Hence, studying and examining the consumer behavior and choice in selecting products and services are a critical matter in marketing strategies. He then concluded that, the behavioral intention is influenced by the attitude which is the general impression of the technology.

2.1.3 Credit Theory of money

Money has moved from various commodities or substances from time and now visualized intangible (digital money) in its demand since it is the worldly accepted mode of payment. At first money was identified with precious metals and the concept money was a summary exposition of the credit theory of money as opposed the Metallic Theory which has before been held by nearly all historians and has formed the basis of teaching of practically all economists on the subject of money (Innes, 1913). Innes (1913) uses money and credit interchangeably since he said they were the same thing but just seen from different point of view. He said that the essential nature of money is credit in an era where money is not backed by a commodity such as precious stone. The position of money creation involves the simultaneous creation of debt. According to the credit theory of money, it is not necessary to have physical money which poses enough threat, because digital money is able to perform all the roles of money with lower costs and higher productivity as seen in Google Wallet, Apple Pay and Danske Bank's MobilePay which are all built on credit card structure and covertly on credit theory of money (Dahlberg, 2015). Naturally, holding more cash reduces the amount of costly credit buyers expect to use,

which delivers a dutiful money demand function and a unique equilibrium with money and credit (Wang et al., 2017).

Looking at this theory we can say that money has changed its faces and commodity dimension but has still not lost its value. The change it undergoes was due to the opportunities of digitization and threats of being physical. The improvement of the money system or its advancement has reduced much burdens, increased productivity and decreased costs for parties and other stakeholders of the ecosystem since mobile payment service providers have adopted similar roles in the payment ecosystem as credit card companies have currently. They have issued credit lines to their mobile payment customers, secured compatibility with merchants' point-of-sale and other systems used to execute payments and to reimburse debt.

2.2 Empirical Literature

2.2.1 Mobile Money Penetration in Ghana

Per the affirmations of Frimpong and Nkrumah, (2014) in their research, *Mobile Commerce: Mobile Money Transfer in Ghana*, clarifies that, MOMO services allow persons to send and receive money through Mobile Phone SMS which comes with a low cost, speed and no need of abstaining an account of a bank. Their work was to explore the socio-economic features of MOMO account users or managers, their MOMO Transfer experience, as well as the agent operations. Their study compares MOMO transfer in Ghana to Kenya's MPESA, which sought to compare the extension lead and impact of the service area as whether being of successful putting into practice. Both quantitative and qualitative methods centered on Positivism and Interpretivism viewpoints were used, which some were in a survey form using questionnaire.

Cross sectional was used in Ghana to an enormous range and the main reason of this was because recipients were connected to a diverse network. Their respondents were users and agents of mobile money transfer in Ghana with sample drawn approximately from the major communities located in the Ashanti part of Ghana. The research also uses a Secondary data. The findings of the study indicated that, although there is much work done in mobile money transfer but mostly the concentration is on the attainment of MPESA and very few is acknowledged with reverence to Ghana. The result of their survey showed that although the service was introduced in Ghana in 2009 later than that of Kenya's MPESA, MOMO transfer was much patronized in Ghana, just as Kenya's.

The study found and concluded that, the level of penetration of MOMO in Ghana is due to the fact that, Ninety-eight percent (98%) of customers in Kenya remained happy using the service and the customers in Ghana remained likewise happy, but, Ghana's percentage was Eighty-eight percent (88%) which represents a higher percentage. Other findings included the Male to Female and other ratios which shows that the male users of MOMO transfer are more than female users which was also concluded by The GSMA which denotes the welfares of mobile operators globally (Pasti, 2018). The ageing sent MOMO to their younger corresponding person and Formal workers use more mobile money than their informal counterparts this is because the enlightening level of the formals were advanced than the enlightening level of the corresponding beneficiaries. Similar in Kenya, Ghana's admiration and use of mobile phones was extensive and echoed the global data of mobile phone usage. About 90% of domestic homes may possibly use mobile phone, dissimilar in Kenya where M-Ticketing is usually preferred; of which is not well-known in Ghana. To withdraw money with MOMO transfer in Ghana was instant and therefore quite good and this motivates the high usage of the service.

In considering the penetration of MOMO in Ghana, (Pasti, 2018) A Senior Manager, Mobile Money Services, GSMA, in his report on the state of industries report on MOMO states that Providers are inviting new monetary benefits and forming corporate partnerships, leveraging data and ground-breaking financial technologies thereby building a stout and interoperable payments systems to expand their returns, products offering and customer base. This strategy has now brought on board processing over \$1.3 billion a day and the MOMO industries adding a record of 143 million registered customers in only 2018. This report was done using the three most populated nations in Africa, Nigeria, Ethiopia and Egypt with a data taken from The Global Findex Database 2017.

The report concluded that in 2018, following a ten year of MOMO penetration and unbelievable growth, the MOMO industries are still getting the fundamentals right. MOMO accounts continue to deliver an access to life-enhancing services, such as, education, employment, financial services, healthcare and social protections, which are reaching customers who have habitually been underserved by the financial systems. Major cash inflow and outflow transactions still represented the majority of MOMO flows and digital transactions grew at twice the rate, driven largely by bill payments and bulk disbursements which came to kill the problem of queuing to do financial transactions. Also, an enhanced customer experience in 2018 saw a dramatic increase in smartphone adoption in emergent markets, unlocking admittance to a wider customer base and allowing providers to offer a broader range of financial products and services through user-friendly applications.

Most employees that receive their wages and salaries through the various financial institutions are more expected to redraw through electronic payment, rather than to spend hours at banks (Ackah, 2016). Most workers, through their persistent contacts with banks are more wide-open to payment products and are therefore likely to patronize the products (Nyaaba et al., 2018). Most users of MOMO receive wages and other contributions, paid not in large payments hence they intend use the MOMO platform as being the safest and convenient. Aizstrauta et al., (2014) and Yezersky, (2007) argued that MOMO being a New technology, providers have to be certain that the probability of disappointments has been reduced in the development phase or in the course of testing and maintenance phase, as dissimilar sociotechnical forces impelling these phases might also lead to letdown of the entire scheme. It was then concluded that the concept of MOMO penetration and sustainability for evaluation through socio-technical factors that let the phone innovation to be, implemented and maintained properly are to be managed and structured well if possible according to the prerequisites of major stakeholders and entice long-standing users and construct positive output or product rendering to the purpose of the technology and primary objectives of its inventors.

Other factors suggested by Hoque, (2012) were that the intercontinental market is developed and the recognized providers of traditional or the old-way money transfer are hindering on the MOMO market due to its low fees charge. The report stressed on the fact that some renowned money transfer organizations like Western Union and Figo moves closely \$1 in every \$5 that is reinforced around the world, sending close to \$80 billion through more or less half a million agents last year, followed by MoneyGram, which transfers about \$20 billion a year and charge much higher fees than startups and sprightly technology focused companies like XOOM and MOMO which are likely to take over the money transfer business. The conclusion was that, MOMO is becoming an obligatory part of peoples subsists, and it is speedily emerging as a

means of doing anything that requires the transfer of funds. Looking into the spy glass, there is no angle of the biosphere that will persist untouched by the market for too long, as request of it grows and the technology makes it simple to operate anywhere as long as you've got a device connection. For most ordinary and day-to-day tasks, like paying bills or shopping on eBay, there is little, if not less, worry or annoyance than doing things the antiquated way.

Specifically, it is known that the level of penetration of MOMO acceptance in Ghana is by capriciousness of results, growing manageability of the progression and greatly reducing risk. Important institutions events such as; quality, cost reduction reliability, performance and productivity improvement as well as letdown prevention has also not been left out.

2.2.2 Opportunities of Mobile Money

The numerous opportunities of MOMO do not go to the operators alone. (Jenkins, 2008) on the report of the “developing Mobile Money Ecosystems” outlines some opportunities to the user, banks and the economy as well. This research was conducted using some African and Asian countries; depending on secondary data. Deepening the opportunities to the user, it was known that in recent time, mobile subscribers in marketplaces such as Ghana are starting to use MOMO for dealings and services such as inland and intercontinental settlements, loan receipt and repayment, bill payment, payroll deposit, and purchases of goods and services reaching from, groceries, prepaid airtime, bus coupons, micro insurance, etc. There is no boundary to the range of industries or transactions and services for which MOMO could in the long run be used. To the individual or user, financial sector inclusion is thus a critical essential for effective market participation that is MOMO has reduces the frustration of losing a half day's work in line at the bank and other industries, which may be expensive as well as unsafe to being able to integrate

one's small business into the value chains of larger market players. In other words, their inclusion in the formal financial services has economic and social impacts which may intensify their poverty and the activities of it prevented them from climbing out of it.

The report concludes that MOMO has substantial implications for financial activity and development across-board. It decreases the cost and intrinsic risk in dealing with cash and conceivably more significantly; it aids in the facilitating of the flow of money from one party to another using a communications set-up or gadgets (Mobile Phone) that already links billions of customers around the globe, far more clients than currently haven bank accounts. These benefits are particularly noticeable in emergent countries like Ghana. MOMO has the ability to assist financial sector inclusion that stretches its enormous potential for developmental impact in an economy.

The ubiquity and opportuneness of the mobile phone is transporting new value, chances that no one anticipated before in the conveyance of financial services (Adaba et al., 2018, and Jenkins, 2008). Jenkins reported that the need and opportunity for MOMO are shared by businesses and their customers. For industries, MOMO offers the prospect to reach new clients as well as to offer better financial service to current customers. In major industries like telecommunications, software developers and retail, it gives the chance to develop unabridged new business channel that may exposed access to financial services and other markets to them, mostly low income consumers who are presently excluded completely.

2.2.3 Threats of Mobile Money

Of all the above opportunities, some major challenges which can turn to be future threats were addressed by (Frimpong and Nkrumah, 2014). Challenges include registration or subscription process. This was quite mild and needs more efforts and restructuring by the Mobile Network Organizations (MNOs) in Ghana for effective MOMO transfer. Some of the reasons for the non-use of MOMO transfer in Ghana were also the complex procedures, delay in withdrawing or sending money due to network jam, inadequate agents or sales point of registration, and distrust. Others were inadequate advertisement and illiteracy. There was a high the high proportion of agents who were Senior High School leavers, the agents' procedure to becoming MMT agent was found to be well structured, however, their training aspects needed to improvement.

Threat of MOMO is a challenging assignment, especially, when it emanates to the risk of scam. (Gilman and Joyce, 2006) argued that the fraud does not only results in threats of financial loss to customers and MOMO merchant, but it also damages the status of the service to the customer and risks the reputé of the industry as a whole. In this, alleviating the risk of fraud is a primary objective in a robust risk management strategy. They concluded that Mobile operators are aware of managing risks on the side of the business and those that have launched it are aware that MOMO carries different kinds of menace or risk that is a threat to all who are involved. Other threats include the market spreads, unplanned purchases and money laundry which are thornier tasks, like sending money to countries predominant with strife and other more to consider. It is likely that regulators and policymakers will need to take far more notice as the prospective for misconduct and corruption widens along with international expansion (Hoque, 2012). (Gilman and Joyce, 2006) concluded that there are risks that occur in MOMO service around the world, such as the potential theft of customers' information or manipulation in the electronic money

reconciliation. The key members who need to be considered are the customers who are likely to face transactional fraud, the agent likely to come across channel or transactional fraud and the employee also to encounter internal fraud.

2.3 Overview of Mobile Money Sector in Ghana

MOMO may be termed as electronic money which is equivalent to the aggregate of the Bank of Ghana (BOG) various denominations (notes and coins) used as a stored of value equal to the function of money using the SIM (Subscriber Identification Module) in a mobile phone as an identifier. MOMO is issued by mobile network operators who keep the automated account on the SIM for the users of MOMO. Sogbodjor, (2016) defines MOMO as money that is effectively stored in the accounts of a mobile subscribers of a telecommunication company that permits the subscribers to buy goods and services without using physical money. Afanu and Mamattah, (2013) further added that Mobile Money permits subscribers to bank or transact financial services directly from their phones without physically going to a financial institution.

Aker and Mbiti, (2010) also well-defined MOMO as a product that permits the customer to use text messages; short message system (SMS) to store value in an account that is accessible by the mobile phone, with the capability to convert cash inflow and outflow of the account, and transfer money between customers. It can then be said that MOMO services are used to facilitate both wholesale and commercial or retail payments, hence encouraging cashless system, prompt payment using SMS approval to facilitate small and medium business growth.

At the early stages, MOMO operated in a comparable way as a traditional money transfer business in which telecommunication establishments operated a network of merchants who would help clients process a money transfer via the agent's own MOMO account. As the

services gain popularity and mobile phones became extra easily accessible, the telecommunication companies were able to register more people with their own MOMO accounts. The central bank supported the services and were allowed to flourish, and this is due to recognized opportunity to help improve the degree of financial inclusion among the unbanked residents (Murphy, 2016). Murphy, (2016) in his report stated that, the most recent Financial Inclusion Insights survey (FII), admission to the fact that the formal financial services in Ghana was increased by 41% between 2010 and 2015, principally acknowledgements to the endorsement of MOMO.

There are almost 400m Worldwide System for Mobile Account (GSMA) subscribers in the sub-Saharan Africa, numerous of whom are registered MOMO users (Dugah, 2018). MOMO in Ghana has been a remarkable journey so far. Analysis shows that nearly one out of five Ghanaians are active customers or users of MOMO, which is more than twice the total a year ago. In the month of June 2016, the Central Bank of Ghana brought out figures showing that MOMO transactions in Ghana had grown 20% since the end of 2015, attaining GHC679.17m (BOG report, 2016). Conferring to the report brought out by the BOG (2016), MOMO is progressively becoming a captain means of payment and receipt of cash for the unbanked and the underserved in the country. The speedy advance in MOMO usage in Ghana is seems to be on account of increasing permeation and application of mobile phones particularly in the local areas. The extensive spread of MOMO among the unbanked and underserved is premised on modern advances in mobile phone functionality, microchip and mobile network technologies, and upgrade in Point of sale set-ups (BOG, 2016). These improvements have upgraded the surroundings for MOMO solutions, and brought together diverse industry players, such as financial institutions and MOMO operators to launch MOMO businesses. The use of MOMO

services as a means of receipt and payment brings a number of assistances and benefits to the users including handiness, rapidity, flexibility and affordability (GSMA, 2013).

The data from the BOG has revealed that MOMO transactions growth continues to be a leading force in the financial sector, growing at more than a double rates as compared to bank transactions. This is a further signal that it holds the key to financial inclusion in the nation. According to the Summary of Economic and Financial data (2019), MOMO transactions detailed GH¢32.8 billion in value as of the end of 2019, signifying more than 45% upturn from the preceding year's value. Conversely, the payment system for banks recorded GH¢16.9 billion in December 2019, a drop of GH¢300 billion from the value recorded in the previous year.

Ghana MOMO service was launched in 2009, when the service was first launched; the market perhaps was not prepared for fully mobile financial services. Around 30% of the population was banked, according to the World Bank, but only a projection of 35% of the population owned a mobile phone (Murphy, 2016). It later took a turn to become a financial stand which offers financial inclusion for rural dwellers and semi-urban as well as work openings for above 100,000 agents and traders (Dugah, 2018). The people migrate from their rural areas in search of jobs in the urban areas; the urban-rural gaps were a clear market chance for low-cost local payment services. Most Ghanaians from the rural areas moved to urban settlements in search of jobs, expecting to send money back home to their relatives in the rural communities.

2.3.1 Mobile Money Growth in Ghana

In the past, the extraordinary growth of mobile financial services in sub-Saharan Africa has challenged all expectations. Although, Kenya is frequently cited as a principal example of digital makeover, Ghana has lately become the fastest growing MOMO market in Africa, with registered accounts growing six-fold from 2012 and 2017 (Ozyurt, 2019). A country like

Tanzania, an early publicized African success story in respects to MOMO, begun a year ahead of Ghana and had 8 million active accounts whereas Ghana had just 350,000 in 2009, yet now more than 39% of adults in both countries have accounts (Murphy, 2016). The country's involvement provides a fresh standpoint on its digital renovation and proves that technology can help modernize the financial structure as well as also to upkeep greater financial inclusion (Ozyurt, 2019). Furthermore, the escalation in MOMO accounts have impressively changed how people make and receive payments by reducing the stretches of transactions as well as the related risks and costs, MOMO solutions better meet the needs of vulnerable customers such as small owned farmers, petty traders and students. With the growing popularity of MOMO, students no longer need sign exeats letters from their school to go out and access financial services. Illiteracy and paperwork no longer present a barricade to rural residents wanting to open an account. MOMO has levelled the playing field, allowing every person access to financial services by operating a MOMO account, if not a bank account (Dugah, 2018). Overall, the nation Ghana has been capable to boast substantial growth statistics in reposes to its financial inclusion. MOMO can greatly be credited to progressing trend, as it has been able to admission populations that face the most barriers to financial account ownership (David and Danso, 2018). Even though, more of the population needs to be reached, Ghana growth rates remain to be progressive.

2.3.2 Ghana's Satisfaction with Mobile Money Charges

There are many elements that disturb consumer behavior towards the acceptance of MOMO transfer in Ghana. Among these is transactional cost which was identified by Sogbodjor (2016). He explained that transactional cost is one of the key determinants for users in the acceptance of MOMO transfer and also influence their intention to use the services. McKay and Pickens (2010) was of the assessment that banking system without branches which largely include the MOMO

services was far inexpensive and more opportune alternatives. MOMO set-up is more fruitful in recent times because it is measured to be very easy and cheaper as equated to the other means of cashless systems in the financial inclusion (Mpiani, 2016). Additionally, the MOMO system can effectively prove to be added commercially important, especially for service providers particularly when it reaches its peak. Although the transaction fees that mobile money providers charge are individually quite small, in total, they can represent an important revenue source and through this the mobile agents at the various sales point may also gain profitable advantage from the charges they take (Mpiani, 2016). Below depict the average charges/fees to all the MOMO operators using the major Mobile Network Operators (MNOs) (MTN Ghana and Vodafone Ghana) found in Ghana using. Although, the other MNOs and platforms may charge lower in other to penetrate the market.

Table 2.2.3: Major Mobile Money Operators Commissions and Tariffs as at December, 2016

Type of Transaction	VODAFON		MTN	
	RANGE (GHS)	Fees (GHS)	Range (GHS)	Fees (GHS)
Send money from a registered customer to another registered customer (same network)	1 – 50	0.50	1 – 50	0.5
	50.01 – 75	0.75	51 – 1000	1%
	75.01 – 100	1.00	Above 1000	GHC 10.00 Flat
	100.01 – 250	1.50		
	250.01 – 500	2.00		
	500.01 – 1000	2.50		
	1000.01 – 2000	5.00		
Send money from a registered customer to an unregistered customer	1 -50	1.5	1 – 50	1.50
	50.01 – 100	2.5	Above 51	3%
	100.01 – 250	4.5		
	250.01 – 500	6		
	500.01 – 1000	10		
	1000.01 – 2000	20		
	2000.01 – 3000	30		
Send money from an unregistered customer to an	Nil	Nil	1 – 50	2.50
	Nil	Nil	Above 51	5%

unregistered customer

Withdrawal by registered customer	1 – 50	0.50	1 – 50	0.50
	50.01 – 100	1.50	51 – 100	1%
	100.10 – 250	2.50	Above 1000	GHC10 Flat
	250.01 – 500	4.00		
	500.01 – 1000	6.00		
	1000.01 – 2000	10.00		
	2000.01 – 3000	5.00		
Withdrawal by unregistered customer	NIL	NIL	1 – 50	Free
	NIL	NIL	51 – 1000	Free

Source: Bank of Ghana

2.3.4 Mobile Money Impact on the Payment System in Ghana

The upbringing of mobile money in many economies has proven to be a good positive movement in both the short and the long run as far as financial inclusion is concerned. The report of BOG (2017) states that, the co-integrating relationship that exist between the volume of mobile money transactions and value of mobile money transactions suggests a long run relationship between deepening of financial inclusion and progress towards cashless economy. The study also found out that, there is an impact from volume of payment system transactions and value of MOMO transactions to volume of MOMO transactions. In the work of Kasapa (2017) also identified that in the short and long run, mobile money services have found to deepen Ghana's financial sector development and found to positively increasing the amount currency in circulation. An explanation given by him through the models used lays the fact that, the service over the years has transformed from being only a money transfer service to mix of other financial services such as payments and saving services.

The assessment of the future role of mobile money in Ghana and its impact sights with the fact that MOMO is widely accepted especially in the developing world of which Ghana is a major

stakeholder. This work supports the evidence that mobile money has come to foster risk sharing, directly promoting welfare and improving savings.

2.4 Conceptual Framework

The conceptual framework which shows the pictorial presentation of the key variables of the study is presented in Figure 2.3. The mobile money system is displayed which shows the penetration of mobile money (i.e. the extent of usage of mobile money) alongside the opportunities and threats which are inherent in the use of mobile money which are the major determinants of its future role.

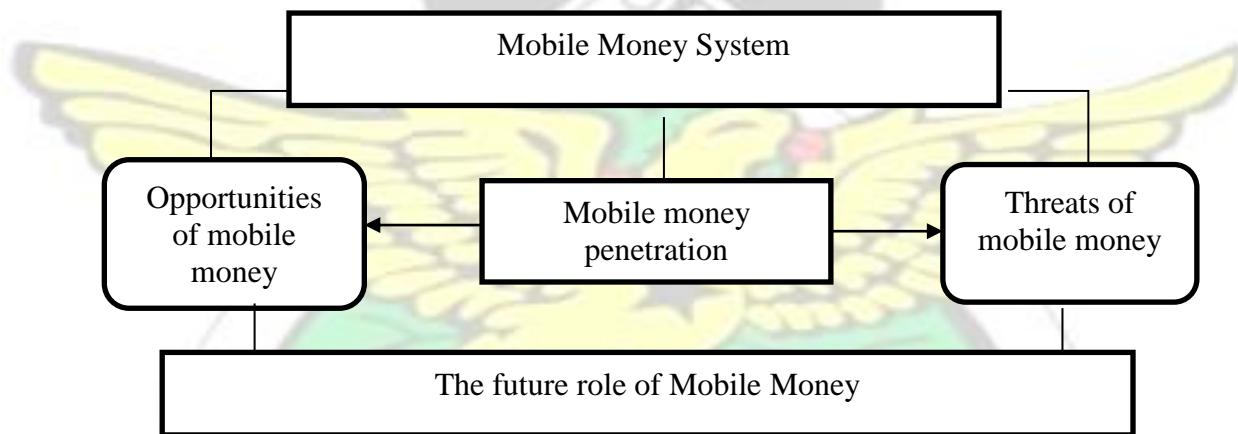


Figure 2.3: Conceptual framework

Source: Author's construct (2020)

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter discusses the methodology used for the study. It highlights the research design, the sampling population, the sample technique and sample size, the data analysis; both the empirical model and the variable measurements, and ethical issues used in the work.

3.1 Research Design

In an attempt to attain the objectives defined for the study, the mixed-method approach to research was adopted with a descriptive design following the survey strategy. The mixed-method is adopted because of the use of both quantitative and qualitative data in the study. The survey design was deemed appropriate because the study focused on scattered group of respondents across different institutions for the appropriate data for the study. The descriptive design was adopted because of its strength of enabling an understanding of the phenomena from the point of view of the actors directly involved with it and it also help to obtain information concerning the current status of occurrence, as well as describing what exist with respect to variables or a condition in a situation (Anastas, 1999). Again, the descriptive research was deemed appropriate for this study as it allows for a deeper analysis of the meanings that study participants attach to mobile money penetration; opportunities and threats and to track performance indicators.

3.2 Sample Population

The mobile money sector in Ghana typically encompasses regulators, mobile network operators, banks, mobile money merchants, and users in both the formal sector and the informal sector. For the purpose of this study, emphasis was placed only the formal sector of mobile money operations. Principally, key officers responsible of mobile money operations in mobile network operator companies, banks, and Bank of Ghana were used for the study.

3.3 Sample Technique and Sample Size

The study used purposive sampling approach to select the key management personnel in charge of mobile money operations in banks and Mobile Network Operator (MNOs) organizations, and the Bank of Ghana. The purposive sampling technique was used to selected respondents because the study focused on mobile money operations and the researcher needed to target officers whose work activities are related to mobile money to be able to obtain detailed appropriate information relevant to achieve the purpose of the study.

Specifically, a sample of 19 officers were selected. The sample was made up as follows: 3 officers from each of the five banks making a total of 15, one officer from the three mobile network operators (MNOs), and one officer from Bank of Ghana. The officers selected from the banks included the Chief Operating Officer, Head of Digital Banking Department, and the Head of Mobile Banking Unit. Officers from the MNOs and Bank of Ghana were managers in charge of Mobile Money Operations.

3.4 Sources of Data

Data for the study comprised both primary and secondary data. In this regard, the primary data were obtained from primary sources using interview guide as the principal data collection

instrument. The secondary data were obtained from the Bank of Ghana. The secondary data were specifically used to address first objective of the study whilst the primary data obtained through interviews was used to address the second and third objectives

3.5 Reliability and Validity Test

Since the study used both primary and secondary data, the reliability and validity of data were tested using two different approaches. With respect to the secondary data which were obtained from the Bank of Ghana, they were subjected to further cross-checking with various reports published by the Bank of Ghana to confirm their accuracy and reliability. With respect to the primary data, the research instrument was taken through a pilot test using 3 key professionals from 3 different banks to ensure the appropriateness of the questions in answering the objectives of the study. This culminated into enhancing the reliability of the data obtained for the study.

3.6 Data Analysis

Given that the objectives of the study required both quantitative and qualitative data, the study employed the quantitative analytical tools of descriptive and trend analysis to the quantitative data to address the first objective. The analysis was done with the help of Microsoft Excel. Regarding the qualitative data, the obtained interview data were transcribed and analyzed using the content analytical procedure.

3.7 Ethical Issues

The Mobile Network Operators (MNOs), banks and mobile money users formed an important part of this research, which are surveyed. With the exception of the users there is competition among the others and therefore had their trade secrets and competitive intelligence. They are in constant process of defining, congregating, analyzing, and distributing intelligence about

products, customers, competitors and any aspect of factors and forces needed to support their agents and leaders in making strategic decisions for their organizations. Performing an investigation as an external researcher is met with disinclination to disclose competitive intelligent information. It is therefore important to address their organizational concerns by assuring them of the confidence, reliability and also competence of the interview and data. In order to address the ethical consideration aspect of this work in an effective manner, the following steps are taken;

- The research sort for voluntary participation of respondents and moreover participants have the right to withdraw from the study at any stage they wish to
- The participants and respondents of this work are being informed first before given any assignment to perform. The principle of informed consent involves is that the researcher provided sufficient information and assurances about taking part to allow individuals to understand the implications of participation and to reach a fully informed, considered and freely given decision about whether to do or not without any pressure or coercion.
- This work maintains a high level of objectivity in discussions and analysis throughout and the use of discriminatory, unacceptable and offensive language are avoided in the formulation of the questionnaires and focused groups.

The adherence to Data Protection is duly followed and acknowledgements of works of other authors used in any part of this work are adhered according to the school referencing code. All codes and the ethical guidelines of these conducts are strictly followed.

CHAPTER FOUR

ANALYSIS AND DISCUSSIONS

KNUST

4.0 Introduction

This chapter contains the analysis of data and its related discussions. It is made up of four main sections. Section 4.1 is the summary profile of interview participants. Section 4.2 is the analysis in respect of the first objective which is level and trend of mobile money penetration in Ghana. Section 4.3 addresses the second objective which is the opportunities in respect of mobile money operations in Ghana. Section 4.4 also addresses the third objective of the study which is the threat of mobile money operations in Ghana.

4.1 Summary Profile of Interview Participants

Out of the sample of 19 respondents, 5 could not be reached for the interview. Therefore, a total of 14 respondents participated in the interview. All the 14 interview participants who participated in the study were senior officers in top and middle level management positions. Again, the interview participants were officers whose roles are related to either directly or has some level of supervisory role related to mobile money operations in the respective banks and MNOs. This means that the officers who participated in the study were people with adequate knowledge regarding mobile money operations within the Ghanaian mobile money operational space.

4.2 Level and Trend of Mobile Money Penetration in Ghana

In this section, the first objective of the study which sought to evaluate the level and trend of mobile money penetration in Ghana is analyzed and discussed. In pursuit of this objective, secondary data covering a period of seven years from 2012-2018 is used.

From Table 4.2, it is noticed that out of the 25.62million mobile voice subscribers, 3.78million representing 15% had active mobile money accounts at the period. In the years 2013 and 2014, out of the total voice subscription of 28.03million and 30.36million, 4.39million and 7.17million have active mobile money accounts, representing 16% and 24% respectively. In year 2015, mobile money account holders were 13.12million (37%) out of total voice subscription of 35.01million. in years 2016 and 2017, mobile money account holders were 19.74million (52%) and 23.95million (64%) out of total voice subscription of 38.31million and 37.45million respectively. Further in year 2018, total voice subscriptions were 40.93million, of which 32.55million (80%) have active mobile money account. A close observation of the proportion of subscribers with mobile money accounts of the period shows that the level of mobile money penetration and adoption been great, with a massive 80% penetration level as at end of year 2018.

A close look at the year on year change in active mobile money account holders using 2012 as the base year shows that active mobile money users increased by 16% in year 2013 from the preceding year users. In the year after 2013, there was a significant increase by 63% from the prior year number of active mobile money account holders. Notwithstanding the significant increase in 2014, the year 2015 also recorded a massive increment by 83% from the number of active account holders in the preceding year. Subsequently, in 2016, there was a further increase in the number of active mobile money subscribers from the preceding year by 50%. The years

2017 and 2018 also recorded further increment from the prior years by 21% and 36% respectively. This shows that although the number of mobile money account holders has been increasing since the year 2013, the trend of year on year increment moved upwards and peaked in the year 2015 with a significant boom, but started seeing a decline in the percentage of yearly increment until 2018 when it shot up again.

With respect to the total monetary value of mobile money transactions, it is seen in Table 4.2 that the total value of monetary transactions with mobile money stood at GH¢594.12m in year 2012 but as at year 2018, the value of monetary transactions with mobile money has shot up significantly to GH¢223,207.23m. The trend of change in total value of mobile money transactions using 2012 as the base year shows that in year 2013 the value of monetary transactions increased by 346% and in year 2014 there was a further increase by 357% from the prior year. Further in year 2015, the value of mobile money transactions increased from the prior year figure by 192%. Again, in years 2016 and 2017, there was further increase by 121% and 99% respectively, and in 2018, it increased further by 43%. It is important to note that an observation of the total value of mobile money transaction shows the value of transaction has been increasing every year since year 2012. It is also important to note that in the years 2013 and 2014, there was substantial increase from the previous year figures by 346% and 357%. However, in the years after 2014, there rate of increment from the prior year began to drop year on year, with the years 2015 and 2016 recording an increase by 192% and 121%, whilst years 2017 and 2018 recorded an increase by 99% and 43% respectively. This indicates that although mobile money penetration in respect of money the total monetary value of mobile money transaction has increased yearly from 2012 to 2018, the trend of percentage increment sharply

rose up in years 2013 and 2014. However, in years 2015 through to 2018, the rate of yearly increment from the previous years has been declining year on year.

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	2012	2013	2014	2015	2016	2017	2018
Total mobile voice subscription (million)	25.62	28.03	30.36	35.01	38.31	37.45	40.93
Mobile money account holders (million)	3.78	4.39	7.17	13.12	19.74	23.95	32.55
Percentage of subscribers with MOMO account (%)	15%	16%	24%	37%	52%	64%	80%
Percentage change in MOMO account holders (%)	-	16%	63%	83%	50%	21%	36%
Total value of MOMO transactions (GH¢M)	594.12	2,652.47	12,123.89	35,444.38	78,508.90	155,844.84	223,207.23
Percentage change in total value of MOMO transactions (%)	-	346%	357%	192%	121%	99%	43%

Table 4.2: Level and trend of mobile money penetration

Source: Bank of Ghana

4.3 Opportunities of Mobile Money Penetration in Ghana

Here, the analysis of data obtained from the interview with participant is presented. For the purposes of convenience, the analysis is presented based on the dominant themes the featured in the interview responses. Under the opportunities for mobile money, the major themes that featured include growth

in business, quick growth in business operations, vehicle for financial inclusion, removal of barriers in transacting business, creation of a cash-lite society.

4.3.1 Quick Growth in Business Operations

There was consensus significant number of the respondents that the advent of mobile money operations the country has provided an opportunity for quick growth in business operations among both financial and non-financial service organizations. This was evidenced in their responses given:

“I think that since the beginning of mobile money one great opportunity it has created is the swift growth in business operations. Because there has been a significant improvement in our operational activities”.

“Mobile money activities are quite good because it has help to enhance business operations in organization in term of facilitating payments which is a great boost to businesses and I think there is still great opportunity in it that businesses can tap from it to help growth of their operations”.

“Ever since we integrated mobile operations into our activities there has been quite a substantial improvement in our operations”.

Per the finding as above, it is seen that indeed, the introduction of mobile money operations in the country has created the opportunity to enhance banking operations. It is evident from the outcome that the opportunity which mobile money has created to enhance business operations is not only limited to banking operations but extend to other circles because mobile money has created the opportunity to facilitate certain key business activities among most organizations. This outcome synchronizes with the finding of the study by Reaves et al. (2017) where growth in business operations merged as a significant opportunity that mobile money has created for business.

4.3.2 Vehicle for Financial Inclusion

Analysis of the interview responses shows that one great opportunity which has emerged out of the mobile money operations is that the system has adequately served as a vehicle for financial inclusion. The responses depict that mobile money activities have created an opportunity for the unbanked individuals, especially those in the informal sector to have some form of formal account which helps in capital accumulation. It is important to emphasize that this finding from the interview responses coincide with the outcome of the work by Ndiwalana, Morawczynski, and Popov (2010) which discovered opportunity for the poor and unbanked to own a formal account as one significant opportunity for mobile money implementation in Kenya. Again, there this outcome finds support with the findings from the work of another school of thought where creation of formal medium for savings just like a bank account emerged as a prominent opportunity which come as a result of emergence of mobile money system (Dzokoto and Appiah, 2014).

The following are some of the remarks from the respondents.

“I think one greatest opportunity mobile money has created and should be explored further is the creation of a miniature banking system where most previously unbanked people now have some sort of account for savings”.

“Personally, I see mobile money as a greater platform to rope all or at least greater percentage of the population to participate in the financial system by owning an account”.

“In fact, I must confess that although mobile money has created enormous opportunities, one that stands out is the enabling platform it has created for people who didn't have account with banks or financial institutions to own some sort of a formal account”.

“As you know the banking system has a limited reach in term of people who have active bank accounts but I think the mobile money system has extended the limited reach of the financial sector to bring on board people who were less privileged to have accounts with the bank to also have account for transacting business. I think this is good opportunity created by the MOMO system and I believe it can extend further from its current reach”.

4.3.3 Reduction of Barriers and Complexities in Payments and Fund Transfers

Analysis of the interview data portrays that there is consensus among majority of the interviewees that one bigger opportunity that the mobile money system has offered and still has a great potential to unlock is the removal of previous chaotic modules of transacting financial services. The interview responses point out that the emergence and penetration of mobile money has drastically reduced the complexities that surrounded financial services transactions. It is evident from the responses that the mobile money system has helped to bring out more innovative way of meeting the transaction needs of the most ordinary people. This result supports the finding of studies pursued by Yaqub et al. (2013) and Diza, Munyanyi and Gumbo (2017) where both studies reported that mobile money services has the potential to eliminate the rigidities of funds transfers.

The following are some of the comments made by the respondents:

“I see the mobile money system has a great potential of eliminating the complex chain of processes customers have to endure in effecting some transactions. As you know we the banks have systems and procedures that we are required to follow but it appears sometimes the procedures are too complex for customers, so frankly speaking the mobile money system has cut-off some of the processes which I think it’s a great thing, although I think it still has the potential to eliminate some of the processes”.

“A great future holds for the mobile money system and I think the earlier we accept it the better because if you look at you realize that the MOMO system has made it more convenient for people to transact business by reducing the long chain of processes in our banking procedures. Now with the integration of mobile money into our banking system our customers feel as ease because they see the system as less complex which make them more satisfied”.

“As regulators we ought to strike a balance between reducing the risk exposures of the banks and the convenience of customers. But in doing so you realize that it tends to bring some sort complexities in the banking system. But I think the mobile money highly placed to reduce all those complexities, although it’s an evolving thing which risk is regularly assessed to ascertain the kind of controls to implement to ensure it doesn’t put depositors and the entire public at higher risk”.

4.3.4 Creation of Cash-Lite Society

Most of the respondents reported that the mobile money has the greater prospect in pushing towards a cash-lite economy. It is found from the analysis of the interview responses that in our part of the world where majority of people are average income earners with low levels of literacy, there are no two about it that the mobile money system is the ideal means of pushing towards a cashless economy where most transactions are done electronically. This result is in consonance with the finding of Banstola (2007) which reported electronic banking as a great prospect for a cashless economy in Nepal. However, emphasis ought to be made that the study by Banstola (2007) reported on electronic banking in general and did not specifically single out mobile money system as in the case of this study. The outcome of another work by Bećirović, Plojović, and Ujkanović (2017) find similar result by pointing out the mobile money system as

the best bet for a cashless society because of the high level of convenience it offers its users. In contrast with these outcomes, the study by Morawczynski and Pickens (2009) documents that a cash-lite economy through the mobile money system is quite a challenging one due to the low level of education among most people in Kenya.

Some of the people remarked as follows:

“You notice that prior to the emergence of mobile money system the banks and other financial institutions facilitated a cashless system through credit and debit cards but it is obvious that none of them achieved the level of penetration and subscription that mobile money has achieved so far, so I foresee mobile money to have a great opportunity to of facilitating the agenda of a cashless society”.

“The level of acceptance of mobile money system by Ghanaians is very great and with this I foresee that the system has a great potential to push the country towards the culture where most financial transactions will be made via the electronic means limited levels of cash transactions”.

“One great opportunity I see with the mobile money system is that it has the potential to drive the country to a cashless economy. Because it’s a fact that the mobile money system has come to stay considering the rate of adoption by Ghanaians, so I think it’s the best system the government can use to make the country run more on cashless transactions.

4.4 Threats of Mobile Money Penetration in Ghana

Again, the analysis of data obtained from the interview with participants in respect of the threats of mobile money penetration in Ghana and the related discussions are presented in this section. For the purposes of convenience, the analysis is presented based on the dominant themes the featured in the interview responses. Per the interview responses, the dominant threats of mobile money penetration

that featured include: threat of MNOs entering into the banking space with the possibility of lost synergies from MNOs, cyber-attack, pressure of adoption.

4.4.1 Threat of MNOs Entering into Banking Space

Analysis of data obtained from the interview shows that there was consensus in the responses that the emergence of mobile money has created the threat MNOs entering into the banking space. Majority of the respondents were of the view that now the mobile network operators are acting as miniature banks and if they are acting as miniature banks then they are practically banks. The comments from the respondents emphasize that once the MNO enter into the banking space there is the possibility diminishing synergy which currently exist between the banks and the MNOs at the moment.

Below are some of the responses obtained from the interviewees:

“The mobile money system has opened the floodgates for the MNOs to enter into the banking space. Although their entry into the banking space is not much of a problem, the threat I foresee is that such an entry may weakened the current synergy between the banks and the MNOs which may not auger well for the economy in general”.

“The existing competitive advantage which both the banks and the MNOs enjoy from each other under threat because with the level of penetration the MNOs may be tempted to enter set up their own banks which may not auger well for the banks”.

“With the current level of technology into banking activities, you notice that the banks are highly reliant on MNOs for internet services and other wide range of services. But now the MNOs are more like playing a dual role of financial service providers and telecommunication service providers. So, if care is not taken and they are allowed into the mainstream banking, it may

erode some of the existing synergies between banks and the MNOs because they will now see the banks as competitors in the same industry and this may threaten the financial system”.

4.4.2 Cyber-attacks

Analysis of the interview responses shows that a majority of the interview participants mentioned cyber-attacks as one prominent threat of mobile money. It is found from the responses that the emergence of mobile money has escalated cyber-attacks on both banks and customers. The interviewees indicated that the cyber-attack is a major threat to banking operations as well as the overall future of mobile money operations. This outcome agrees with Reaves et al. (2017) which reported similarly that cyber-attack continues to be a number threat to the survival of mobile money system.

The following are some of the comments by the interviewees:

“Although banking systems has not been free from cyber-attacks long ago, I think the introduction of mobile money system has increased the incidence of cyber-attacks on banking systems in recent times and this is a serious threat”

“Cyber fraud is a major issue that the mobile money system has brought into the system and I think this is a threat to the system itself as well as the larger financial system”.

“Regarding the threats of mobile money system, the prominent one is cyber manipulations and attacks on both financial institutions and customers. Because unlike the period prior to the coming in of mobile money system the rate of cyber manipulation was low but for now it is a very serious concern for all stakeholders in the financial sector”.

4.4.3 Pressure on Adoption

A consensus was also found from the analysis of the interview responses that another major threat of mobile money is the extreme pressure it is exerting on various financial institutions, non-financial sector entities, as well as individuals to adopt the mobile money system. The respondents hinted that the mobile money system has gained extensive penetration and adoption in the country far more than any other financial service technological product. Hence, it has exerted and continue to exert extreme pressure on institutions and individuals to adopt it. This finding supports the result of the studies conducted by Yaqub (2013) and Ajayi (2014) which revealed the mobile money as the new norm in undertaking transaction, thus compelling people to subscribe to it whether they are okay with the service or not.

Some of the comments by the respondents are as follows:

“Although we have seen that the banks have been very prompt and innovative in using financial technologies to outdoor various financial products and services, I think in the case of mobile money system the banks were not prompt with because they could have initiated the mobile money system and use the MNOs to provide the service but it has been the other way round. And considering the level of penetration and adoption of the mobile money service, the banks have no option to adopt it optimize the best outcome they can get because that is what most people are using now”.

“The mobile money system good because of the convenience it offers but it seems there isn't any financial app which matches similar to it in terms of it works so there seem to excessive pressure on both individuals and institutions to adopt it whether they like it or not because that is order of the day and I think that is a great”.

“In my personal view given my experience with the mobile money system, I see that it is what most people prefer because they feel its relatively convenient to use, so that’s pushing almost everyone to adopt it. For instance, now corporate organization and even churches have no option than to also join the system and I see that’s a big threat because it seems to be compelling people join, otherwise people may not be patronizing your services or you may not be able to transact business with other people since that is their most preferred option now”.



CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

KNUST

5.0 Introduction

This chapter contains the summary of study findings, conclusion, and recommendations. It is made up of three main sections. Section 5.1 is the summary findings. Section 5.2 is the conclusion of the study. Section 5.3 provides recommendations for both policy and further study.

5.1 Summary of Findings

This study has broadly focused on the opportunities and threats of mobile money penetration in Ghana. Three main objectives which were constructed to shape the direction of the study were three. The first one was to evaluate the level and trend of mobile money penetration in Ghana. The second was to identify the opportunities of mobile money operations. The third is to identify the threats that may emanate from usage of mobile money.

Regarding the first objective of the study, it is found that mobile money penetration in terms of the proportion of mobile voice subscribers with active mobile money accounts increased significantly from the total number of active mobile money account holders of 3.78million in year 2012 to a 32.55million in year 2018. The yearly increment reveals that the year on year change in active mobile money account holders using 2012 as the base year shows that active mobile money users increased by 16% in year 2013 from the preceding year number of mobile account holders. In the year after 2013, there was a significant increase by 63% from the prior year number of active mobile money account holders. Notwithstanding the significant increase in

2014, the year 2015 also recorded a massive increment by 83% from the number of active account holders in the preceding year. Subsequently, in 2016, there was a further increase in the number of active mobile money subscribers from the preceding year by 50%. The years 2017 and 2018 also recorded further increment from the prior years by 21% and 36% respectively. This shows that although the number of mobile money account holders has been increasing since the year 2013, the trend of year on year increment moved upwards and peaked in the year 2015 with a significant boom, but started seeing a decline in the percentage of yearly increment until 2018 when it shot up again. With respect to the total monetary value of mobile money transactions, it is seen in Table 4.2 that the total value of monetary transactions with mobile money stood at GH¢594.12m in year 2012 but as at year 2018, the value of monetary transactions with mobile money has shot up significantly to GH¢223,207.23m. The trend picture of total value of mobile money transactions show that the total value of mobile money transactions has increased yearly from 2012 to 2018, but the trend of percentage increment sharply rose up in years 2013 and 2014, and subsequently started seeing a year on year decline in percentage increase in value from years 2015 through to 2018.

In respect of the second objective of the study, the study found that there exist some dominant opportunities that the use of mobile money may emanate. The study found from the consensus among the interview participant that the dominant opportunities which mobile money usage may generate include: propelling of quick growth in business operations; possibility of serving as a catalyst or vehicle for maximizing financial inclusion; possibility of removal of barriers and complexities in transacting business, and the possibility of creating a cash-lite society in the Ghanaian economy.

On the last objective of the study which sought to identify the threats which may emanate from use of mobile money in Ghana, the study found the dominant threats of mobile money usage to include: threat of MNOs entering into the banking space and the possibility of lost synergies from MNOs, possibility of cyber-attack, and possibility of pressure of adoption.

5.2 Conclusion to the Study

It is undeniable that the emergence of mobile money operations across the globe is among the significant successes in financial technologies. Especially in developing and transitioning countries where there are proportion of lower to middle income population is the highest coupled with low literacy and fairly weak financial system, the advent of mobile money has created relieve to chunk of the population. In Ghana penetration and adoption of mobile money has been phenomenal since its introduction with some stakeholders emphasizing that mobile money is the financial service that meets the transaction needs of most people. This study has addressed the opportunities and threats of mobile money usage in Ghana, emphasizing on evaluation of mobile money penetration in Ghana and subsequent look at the opportunities and threats which the use of mobile money may generate. The study has found that mobile money penetration in Ghana has been widespread with 3.878million active mobile money account holder in the year 2012 increasing to 32.55million in 2018. The study has revealed that the dominant opportunities which the use of mobile money stand to generate include propelling of quick growth in business operations; possibility of serving as a catalyst or vehicle for maximizing financial inclusion; possibility of removal of barriers and complexities in transacting business, and the possibility of creating a cash-lite society in the Ghanaian economy. The dominant threats found include: threat of MNOs entering into the banking space and the possibility of lost synergies from MNOs, possibility of cyber-attack, and possibility of pressure of adoption. Following the findings, the study concludes that the mobile money system is a financial

technology which meet the transaction needs of most customers due to its relatively high degree of flexibility and convenience, hence the it must be managed and regulated well to maintain the level of trust that consumer of mobile money service has in the system.

5.3 Recommendations for Policy and Further studies

5.3.1 Recommendations for Policy consideration

- It is recommended that thorough assessment of the cost and benefit that any move by MNOs in Ghana to enter into the banking space in the Ghanaian economy be made to ascertain the overall cost and benefit that any such move may have on the entire banking and financial sector of the country. Because any such attempt has the possibility of diminishing the existing synergies that the banking sector enjoys between the relationship of the banks and MNOs in the current mobile money operations.
- It is recommended that bank executives look ahead to develop strategies to enable banks in Ghana withstand any possible shocks that an entry of MNOs into the banking space in Ghana and its threat of lost synergies may have of their business operations.
- It is recommended that MNOs and banks in Ghana partner to intensify public education of cyber-fraud to enable consumers stay safe in the use of mobile money. This will continue to enhance their trust and confidence in the mobile money operational system.
- It is also recommended that the government of Ghana leverage on the good qualities of the mobile money system to enhance financial inclusion and the eventual creation of a cashless economy since mobile money has the inherent quality to enable successful implementation of any such move. This will enable the government to obtain quality database that can be used to increase the existing tax net.

5.3.2 Recommendations for Future Studies

- It is recommended that future studies look at investigating the opportunities and threats and of mobile money usage by improving on the scope of this study to include other relevant stakeholders in mobile money operations including mobile money users and agents.
- It is also recommended that future studies explore the opportunities and threats of mobile money usage across different sectors of the Ghanaian economy since there may be a threat in one sector may be an opportunity in another sector.



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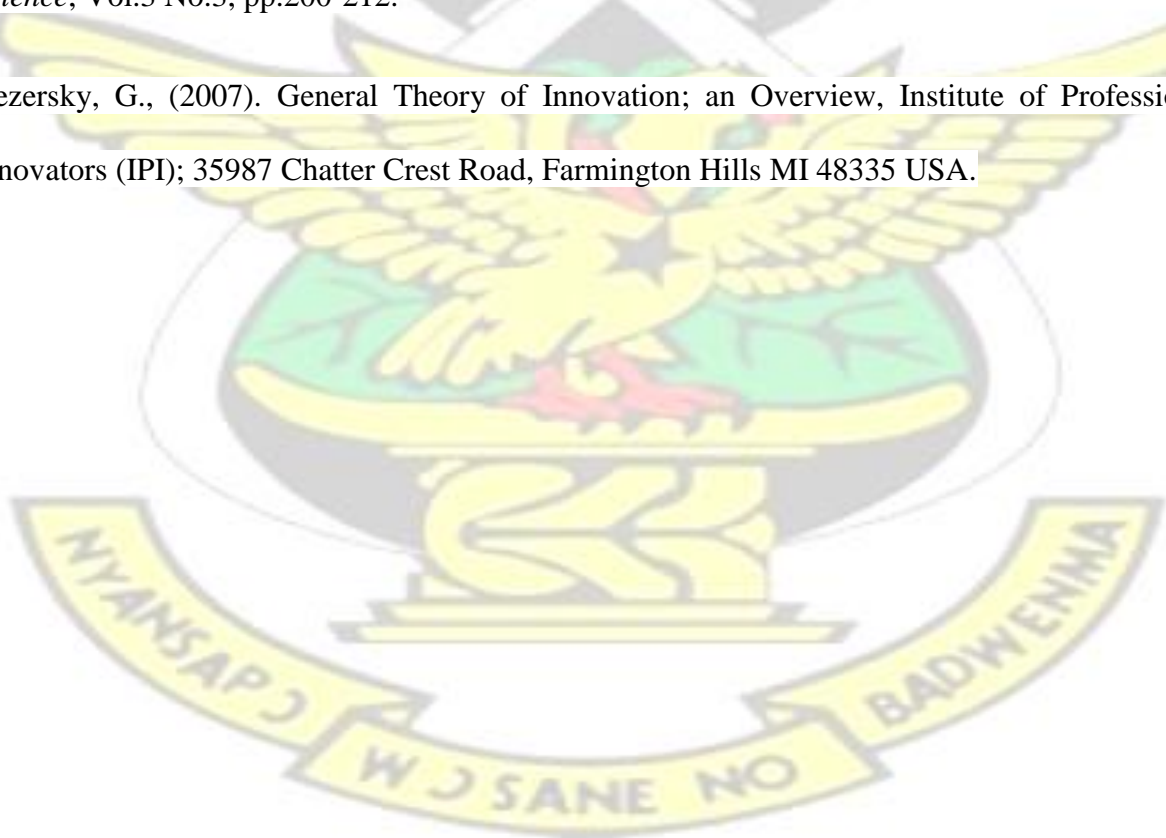
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APPENDIX

INTERVIEW GUIDE



Interview Guide No.: **Date of Interview:**

Institution of Interviewee: **Position of Interviewee:**

Interview start time: **Interview End time:**

Part A: Opportunities of Mobile Money System

1. What is your view on mobile money operations in the Ghanaian financial service space?
2. What opportunities have the advent of mobile money created for financial service operations in Ghana?
3. What opportunities have mobile money created in the general economy?
4. What opportunities do you perceive mobile money operations to create in the future for financial services operations?
5. What opportunities do you perceive mobile money operations will create to help the general Ghanaian economy?
6. Has Mobile Money positively impacted the way business is conducted in your organization and in the economy in general?

Part B: Threats of Mobile Money System

7. What threats have the emergence of mobile money created for financial service operations in Ghana?
8. What threats have mobile money created in the general economy?
9. What threats do you perceive mobile money operations to create in the future for financial services operations?
10. What threats do you perceive mobile money operations will create to help the general Ghanaian economy?
11. Has Mobile Money negatively impacted the way business is conducted in your organization and in the economy in general?

