UNIVERSITY OF CAPE COAST

EFFECT OF MOBILE MONEY ON FINANCIAL INCLUSION AMONG RURAL COMMUNITIES IN THE ASIKUMA-ODOBEN-BRAKWA DISTRICT OF THE CENTRAL REGION OF GHANA

ABDULAI YAKUBU

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BY

ABDULAI YAKUBU

Dissertation submitted to the Department of Finance of the School of Business and School of Graduate Studies, College of Distance Education of the University of Cape Coast in partial fulfilment of the requirements for the award of Master of Business Administration degree in Finance.

MAY 2021

DECLARATION

Candidates' Declaration

I hereby declare that this dissertation is the results of our own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature……. Date……

Candidate's Name: ABDULAI YAKUBU

Supervisor's Declaration

I hereby declare that the preparation and presentation of this dissertation were supervised in accordance with the guidelines on the supervision of dissertation laid down by the University of Cape Coast.

Supervisor's Signature:……. Date:……

Supervisor's Name: MR. LAWRENCE ACHEAMPONG

ABSTRACT

The concept of mobile money has become very relevant tool for promoting financial inclusion (FI) in many rural and hard to reach communities globally. This study examined the effects of mobile money (momo) on FI in rural communities in the Asikuma-Odoben-Brakwa District in the Central Region of Ghana. The study used description research design with multistage sampling technique to interview 388 adults from 10 of the 14 rural communities using structured interview guide.

The study found very high level of awareness of, access to, preference for, and usage of momo than any other financial service in the study area. The study also found that in terms of access by both distance and ratio of adults to branch or agent, momo is momo is more than twenty times than banks/NBFIs. Mobile money has therefore contributed greatly to financial inclusion in the study area. However, momo interoperability has less patronage with majority using momo mainly for cash-in and out, saving and transfers. Benefits derived from momo include convenience, ease of sign-up, ease of use and affordability. Low income, illiteracy and fear of safety of funds are some factors that hinder respondents from accessing formal financial services. Cyber fraud was found to be the biggest threat to momo.

Momo service providers should focus on educating people about the existence of the momo interoperability and possibly reduce the transaction charges to increase it usability. Also, there should be a strong collaboration between mobile telecommunications companies, National Communication Authority and Security Agencies to vigorously fight fraud in the mobile money business.

KEY WORDS

Financial exclusion

Financial Inclusion

Mobile Money

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DEDICATION

To my late father, Alhaji Abdulai Yakubu; my mother, Hawabu Zuu Iddi; my wife, Rahima Asibi Atia; and children – Abdul-Haq, Habibullah Suglo and Muhammad-Awal Suhudoo

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LIST OF ACRONYMS

ACRONYM	MEANING
A 'Level	Advanced Level
ATM	Automated Teller Machine
ATMs	Automated Teller Machines
AU	African Union
BoG	Bank of Ghana
CGAP	Consultative Group to Assist the Poor
Ci	confidence interval
e-cash	Electronic Cash
EIB	European Development Bank
e-money	Electronic Money
FI	Financial Inclusion
Findex	Financial Inclusion Index
Fintech	Financial Technology
Fintechs	Financial Technologies
GDP	Gross Domestic Product
GhIPSS	Ghana Interbank Payment and Settlement Systems

GSMA	Global Systems for Mobile Telecommunications
GSS	Ghana Statistical Service
ILO	International Labour Organisation
IPO	Initial Public Offering
JHS	Junior High School
LEAP	Livelihood Empowerment Against Poverty
MAgent	Mobile Money Agents
m-banking	mobile banking
MDGs	Millennium Development Goals
MFS	Mobile Financial Service
MM	Mobile Money
MMAAG	Mobile Money Agents Association of Ghana
MMFI	Mobile Money Financial Inclusion
MMOs	Mobile Money Operators
MNOs	Mobile Network Operators
MoMo	Mobile Money
m-payment	mobile payment
MS Excel	Microsoft Excel

MSLC	Middle School Leavers' Certificate
MSubs	Mobile Money Subscribers
MTN	Mobile Telecommunication Networks
NABCO	Nation Builders Corps
NBFI	Non-Bank Financial Institution
NBFIs	Non-Bank Financial Institutions
NCA	National Communication Authority
NHIA	National Health Insurance Authority
O' Level	Ordinary Level
PEOU	Perceived Ease of Use
Popn	Population
PoS	Point of Sales
PU	Perceived Usefulness
PWC	Pricewaterhouse Coopers
SDGs	Sustainable Development Goals
SHS	Senior High School
SIM	Subscriber Identification Module
SMEs	Small and Medium Enterprises

SMS	Short Message Service
SPSS	Statistical Package for Social Sciences
TA	Technology Acceptance
TAM	Technology Acceptance Model
Telcos	Telecommunication Companies
TF	Tolerance Factor
TRA	Theory of Reasoned Action
UK	United Kingdom
UN	United Nations
UNCDF	United Nations Capital Development Fund
USA	United States of America
USSD	Unstructured Supplementary Service Data
VIF	Variance Inflation Factor
YEA	Youth Employment Authority

CHAPTER ONE

INTRODUCTION

This chapter introduces the study of the role of mobile money in financial inclusion. It provides background to the study, statement of the problem, objective of the study, research questions, hypothesis, significance of the study, delimitations, limitations and organization of the study.

Background to the study

Financial inclusion is one of the niche for economies due to its rippling effects on savings, credit, investments and economic growth and development. Financial inclusion has its root in social inclusion. Very often, the socially excluded are those financially excluded. For this reason, rural areas, the poor, women, physically challenged and illiterates are those mostly excluded in the formal financial sector. The emergence of mobile money seemed to be a good remedy for financial inclusion of these socially excluded groups. Mobile money is responsible for 16% of accounts in Kenya, 9% in Zimbabwe (Du, 2019), and a total of 32 million mobile accounts exist in Ghana with 13million accounts being active mobile money accounts (BoG, 2018).

Though a number of studies have been done in the area of financial inclusion. Digital financial inclusion continues to assume different dimension as technology evolves. It has variously transformed from credit and debit cards to smart cards, automated teller machine (ATM) cards, visa, MasterCard. In Ghana, there has been an introduction of e-zwich and smartcard (Gh-Link card) as means of accelerating digital financial inclusion. The impact of financial technology (fintech) on financial

inclusion continues to take different shapes as different platforms rolled out by financial service providers target different segments of the market (Beck, 2020). Internet banking for instance does not really target the illiterates and in extreme cases, the information technology illiterates. The e-zwich introduced by Ghana Interbank Payment and Settlement Systems (GhIPSS) in partnership with the Bank of Ghana targeted not only the elite, but illiterates and people in rural communities (Albrecht-Heider, 2020).

Among the digital financial platforms, Mobile Money has received general and universal acceptance by the Ghanaian market. It was noted by the World Bank to be one of the drivers of financial inclusion in Ghana. Thus, according to the World Bank there has been a significant growth in number of financial access points over the past five years, and that is primarily related to the spread of mobile money and government commitment to driving digitization and innovation in payments (World Bank, 2019). Mobile Money is an innovation that has not been limited to only the rich or educated; it has proven to have received high patronage by the poor and the illiterates in Africa with Kenya leading the innovation drive. MTN, Vodafone, and AirtelTigo are the companies which have penetrated the length and breadth of the country. The economic impact of mobile money in Ghana cannot be understated (BoG, 2017).

Giving this dimension, there is the need to deepen research into digital financial inclusion, especially mobile money and its impact on financial inclusion. Studies have shown that sound financial systems and services have substantial benefits for consumers, especially women and adults (Demirgue-Kunt, Klapper, &

Singer, 2017), as such, countries continue to invest in financial inclusion due to its multiplier effects on savings and investment. In 2015, it was reported that between 2 billion to 2.5 billion of adults worldwide do not use formal financial services (World Bank, 2015). That represented about 34.25% of the world's population of 7.3 billion as at 2015 (United Nations, 2015). Recent reports show that 69 % of adults (3.8billion people) globally have an account signalling a significant improvement from 51 and 62 percentages recorded in 2011 and 2014 respectively. The report also showed that 515 new accounts were opened within four years; from 2011 to 2014 (World Bank, 2018). These improvements notwithstanding, 2.33 billion people still do not have an account defeating the target of universal financial inclusion needed to propel economic growth and development. Table 1 gives a picture of the global progress of financial inclusion.

Table 1: Global Financial Inclusion Progress

YEAR	% Financial Inclusion	Adult Population Included Financial (billion people)
2017	69	3.8
2014	62	3.3
2011	51	2.6

Source: Demirgue-Kunt, Klapper & Singer (2017)

It is globally recognized that social exclusion correlates with financial exclusion. This is evidenced by the high financial inclusion rate among developed countries than developing or underdeveloped countries (Ozili, 2010). It is not also surprising that in Africa and for that matter Ghana, socially excluded groups such as the disabled, the poor, rural dwellers, and other marginalized and socially excluded groups are generally financially excluded. Despites this, mobile money is

gradually making it possible for socially excluded groups to be financially included. This is evidenced in the introduction of e-zwich to make payment to beneficiaries of government social interventions such as the Livelihood Empowerment Against Poverty (LEAP), the Youth Employment Authority (YEA), and the Nation Builders Corps (NABCO). Introduction of the mobile money interoperability platform has also made it easy and accessible for the use of the e-zwich accounts as beneficiaries can easily transact at mobile money merchants instead of struggling to do transaction at limited service centres or traditional banks (McKourage, 2021).

Despite the great potential of mobile money in deepening financial inclusion, insecurity occasioned by cyber fraud and robbery of mobile money agents remain the biggest threat to its growth and development. Mobile money agents generally operate under dangerous conditions and a number of them resort to closing before their usual closing hours due to robbery attacks which has left some agents wounded and others killed (JoyBusiness, 2018). This incident has led to Mobile Money Agents Association of Ghana (MMAAG) demanding insurance policy from mobile companies (Mobile World Live, 2018). Aside the robberies, a number of agents and subscribers are scammed almost on daily basis. The scam or fraud takes a form of anonymous calls from fraudsters, cash out fraud, fake promotional SMS, among others. These frauds are found to be caused by weak controls and systems, lack of sophisticated technologies to detect the menace, inadequate education and training, poor remuneration of employees and failure of state agencies to successfully prosecute offenders (Akomea-Frimpong, Andoh, Akomea-Frimpong, & Dwomooh-Okudzeto, 2019). The incident if not checked

could hamper the ability of mobile money to deepen financial inclusion especially in rural areas where literacy rate is low.

The threats to mobile money notwithstanding, the achievements are still very enormous. It may therefore be conclusive that Mobile money as a tool for financial inclusion could be ideal for Ghana due to its high patronage. The PWC (2016) Ghana Banking Survey indicated that mobile money in Ghana so far has been mainly driven by mobile network operators, and advised that partnership between telcos and banks could bring significant impact on banking in coming years as it is helping to address one key concern of Government and bankers in financial inclusion.

Statement of the problem

The prevalence of financial exclusion contineous to remain a challenge despite successes chalked with the use of technology over the past decade. The World Bank reported that between 2 - 2.5 billion of adults worldwide do not use formal financial services (World Bank, 2015) and that represents about 34.25% of the world's population of 7.3 billion as at 2015 (United Nations, 2015). The most recent report showed that despite steady progress made in the past few years, 1.7 billion (31%) adults worldwide still do not have access to bank account (Forbes, 2018). Financial exclusion statistics seems to be tilted towards more of people in the low income bracket, women, illiterates, and rural areas. For instance, in 2018, over 90.0% of the high income earners were financially included compared with less than 70.0% of the low income earners. Also, in the high income bracket, 94.5% of men were financially included compared with 92.9% of women; and in the low

income bracket, the ratio was not different as it was 67.5% and 58.6% for men and women respectively (World Bank, 2019).

The traditional banking system cannot be said to be enough solutions to financial exclusion as it has its own limitations. In Ghana, mobile money has proven its worth by increasing and kept growing at appreciable level than traditional banks. Available data summarised in Figure 8 showed that until 2014, banks had the highest number of accounts (clients) than mobile money. After 2014, the number of mobile money accounts have grown to outnumber the number of traditional bank accounts by almost twice which suggests that mobile money could be an ideal solution to the financial exclusion for selected social groups in Ghana (BoG, 2017).

Though there has been appreciable number of studies on financial inclusion, same cannot be said about mobile money. This is due to the fact that mobile money emerged in the early decade of the 21st century and was yet to gain prominence. Earlier studies on mobile money in Africa focused more attention on Kenya with the introduction of the M-Pesa by Vodafone in 2007.

Akomea-Frimpong et al (2019), BoG (2017), PWC (2016), Aker and Wilson (2013), Tobin and Kunorwu (2011), have done some studies on mobile money in Ghana. However, these studies show little or no link between mobile money and financial inclusion especially in rural areas. For instance, the study by Akomea-Frimpong et al (2019) focused on control of momo fraud; the BoG (2017) study in mobile money looked at the impact of momo on payment systems in Ghana using econometric analysis; Aker and Wilson (2013) study dealt with the impact of momo on savings among residents of Northern Ghana; the PWC (2016) banking

survey dealt with how banks can gain in the era of growing mobile money, Tobin and Kunorwu (2011) both looked used the structure equation modelling approach and consumer behaviour analysis to explain adoption of mobile money transfer technology.

This study attempts to fill the gap by providing the missing link through the provision of comprehensive and objective report on Mobile Money, Financial Inclusion and Rural Communities; focusing on impact, relationships and approaches that could be used to envelop the rural community into the digital financial ecosystem through mobile money.

Purpose of the study

Over the years, it has been observed that rural areas have low financial inclusions than urban areas. Traditional banks branches are not commonly found in rural areas. This leaves a chunk of the rural population outside the formal financial system. With the emergence of mobile money, it has become possible for rural communities to transact with minimal barriers. But how has mobile money impacted financial inclusion in the rural areas? The purpose of this study is to examine the impact of mobile money on financial inclusion in selected rural communities in the Asikuma-Odoben-Brakwa District in the Central Region of Ghana.

Research objectives

The main objective of the study is to find out the effect of mobile money on financial inclusion among rural communities in the Asikuma-Odoben-Brakwa

district of the Central Region of Ghana. Specifically, the study seeks to achieve the following objectives.

(1) Measure the level of awareness and interest in mobile money among rural communities.

(2) Measure the extent of usage or patronage of mobile money by rural dwellers.

(3) Find out the types of financial transactions the rural dwellers use their mobile phones for.

(4) Find out the respondent's perceived benefits of mobile money transactions,

(5) Determine factors that hinder the rural communities from accessing formal financial services.

Research questions

In order to achieve the objectives of the study as set out above, the study seeks to answer the following questions:

(1) What is the level of awareness and interest of rural communities in mobile money?

(2) What is extent of access and usage of mobile money in rural communities?

(3) What type of financial transactions do rural dwellers perform on their mobile phones?

(4) What benefits do rural communities derive from the use of mobile money?

(5) What factors hinder rural communities from accessing formal financial services?

Significance of the study

Mobile Money which has become widely used in the country and has a great potential of increasing financial inclusion. Hence, the study will map out strategies that can be adopted to use mobile money as tool for deepening financial inclusion. The study provides an insight into the need to reconceptualise and redefine financial inclusion to include digital financial inclusion especially mobile money. The Bank of Ghana and the NFIDS of the Ministry of Finance are guided by the study to shift from the policy of using traditional banks and the NBFIs to facilitate financial inclusion to using simple, convenient and easy tool like mobile money to quicken financial inclusion especially in the rural areas.

Results of the study will also give mobile telecoms and operators of mobile money a fair idea about usage and challenges of mobile money in the study area which is rural. Suggestions from the studies in this regards will then aid the telecoms to map out strategies to ensure deeper penetration and usage of mobile money in rural areas.

Last but not least, the study will add to the stock of knowledge in the field of finance, especially in areas of digital financial inclusion. Thus, the study will contribute significantly to to the stock of knowledge in financial inclusion and its relationship with financial technologies. Specifically, the knowledge gap in the link between momo and financial inclusion will be filled by this study. It would explores furthers knowledge gaps in the field of financial inclusion, digital finance and other areas of mobile money and/or financial inclusion that are not the main focus of this study. The results of the study will therefore become a reference material for further

studies in other areas of financial inclusion and digital finance that are revealed, but could not fall within the main scope of this present study.

Delimitations

The study broadly deals with a specific area of finance which has gained global attention (i.e. financial inclusion and mobile money). The study only looks at the relationship between mobile money and financial inclusion and seeks to unravel how the former can be used to promote the later especially in the rural areas of Ghana. Critical areas of mobile money such as how mobile money impact economic growth and development, employment, incomes, among other are not issues for consideration under this study. Also excluded are gender and financial inclusion which is crucial and could be considered by subsequent studies. Moreover, the speed with which mobile money has over taken services of traditional banks and getting towards non-bank financial services calls for worry and there is the need to determine whether mobile money is in competition or coopetition with traditional banks. All these are not covered by the study.

Limitations

The study was constrained by unavailability of up-to-date longitudinal data on financial inclusion. Almost all literature on financial inclusion in Ghana by Bank of Ghana and National Financial Inclusion Development Strategy (NFIDS), relied on the Consultative Group to Assist the Poor(CGAP) data which only shows financial inclusion and poverty data for 2010 and 2015. No or very little data on financial inclusion data was available for periods from the past years to 2010. Current data are also based on secondary sources. This made it difficult for the study to precisely analyse trend of annual progress in financial inclusion. This

notwithstanding, the researcher developed a model to estimate mobile money financial inclusion rates to aid the analysis.

In estimating the momo financial inclusion, the study used the number of active mobile money accounts as a percentage of adult population. It thus, assumed that each active momo account is used by unique individual. In reality however, one adult may be using more than one active accounts. This reality has a potential of affecting the validity of the momo financial inclusion rates estimated. It was observed that subscribers with more than one account often have some account(s) being inactive. Therefore, using only active momo accounts was the surest way of minimizing errors in the estimation of the momo financial inclusion rate.

Definition of Terms

In a bit to making understanding of this study easier, the following key terminologies are defined – financial inclusion (exclusion) and mobile money.

Financial inclusion (exclusion)

Financial inclusion is the situation in which the individual has easy and convenient access to and utilizes financial service (typically, bank account or financial service of similar feature) at a cheaper cost. On the other hand, financial exclusion occurs where and when such financial services are non-existent or barriers (such as cost, distance, social, and religious factors) exist thereby denying the individual access to and utilization of basic financial services of owning and utilizing a bank account.

In this study, financial inclusion is loosely defined to mean availability of, easy access to and usage of any financial services at an affordable fee to all manner

of persons above age 18. Financial inclusion rate is the percentage of the adult population who owns and utilise a bank or NBFI account.

Financial services

For the purpose of this study, financial service means basic services conventionally offered by the financial markets and financial service providers such as banks, non-bank financial institutions, and generally include owning and using a bank account (whether traditional bank account or electronic bank account such as e-zwich or mobile money account), deposits, withdrawals and transfer of funds or cash (whether physical or electronic) investing, insurance, among others.

Mobile Money (MoMo)

Mobile money, also called momo, mm, e-cash, mobile cash, or e-money is an electronic cash backed by equivalence of the central bank's currency notes and coins that is stored and operates on a Subscriber Identification Module (SIM) card in a mobile phone using an Unstructured Supplementary Service Data (USSD) Code.

Organisation of the study

The study is grouped into five chapters. The first chapter focus on the background to the study, statement of the problem, research objectives, research questions, hypothesis, significance of the study, limitations, delimitations and definition of terms. Chapter two dealt with review of literature in relation to the research study. It considered the theoretical, empirical and conceptual review. The third chapter discussed the methodology employed in the study. Specific issues included the research design employed, population of the study, study area, sample size and sampling technique, instrumentation, data collection, processing and

analysis The fourth chapter focused on discussion, analysis and presentation of results from the study. The fifth and final chapter summarises the study, gave conclusions and recommendations based on the research findings.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter provides theoretical review focusing on theoretical concepts of financial inclusion (exclusion). The theoretical review also looked at the theory of social (exclusion) inclusion – financial (exclusion), financial inclusion and poverty reduction, and access to income, inequality and growth.

Next, the chapter reviewed empirical evidence and literature on mobile money and financial inclusion. First, it provides justification for more study on financial inclusion and importance of financial inclusion. Then, financial technologies are discussed and zeroed to mobile money development in Ghana and its comparison with the traditional banking. The final part of the chapter deals with the conceptual framework of financial inclusion and mobile money.

Theoretical Review

The concept of financial inclusion

Financial inclusion is a theoretical concept which has been defined in different ways by development and finance experts depending on the trend in financial services available and mechanisms for delivering financial services. Mader (2016) posited that, in the context of development, there is no single, universally accepted definition of financial inclusion. The concept of financial inclusion is said to have had its root in the late 1990s when the United Nations Capital Development Fund (UNCDF) considered efforts towards support of microcredit institutions (UNCDF, n.d.), and became one of the complements of both the MDGs (Thorat, 2006) and the recent SDGs (Klapper, 2016).

According to a United Nations report, financial inclusion is the sustainable provision of affordable financial services that bring the poor into the formal economy (United Nations, 2016). Financial inclusion may also be defined as the use of formal financial services by the poor (Beck, Demirgue-Kunt, & Levine, 2007; Bruhn & Love, 2014). The Centre for Financial Inclusion (2009) indicated that full financial inclusion is a state in which all people who can use them have access to a full suite of quality financial services, provided at affordable prices, in a convenient manner, and with dignity for the clients. Financial services are delivered by a range of providers, most of them private, and reach everyone who can use them, including disabled, poor, rural, and other excluded populations (CFI, 2009). This view of the concept broadens it to encompass other social factors that might exclude some people from using certain financial services even when they are made available at no cost. For instance, in some Muslim communities, people may be reluctant to consume some financial services such as interest bearing loans and savings due to their prohibition in the Shari'ah (Qur'an 2:275).

In contrast to the concept of financial exclusion as a state (*being excluded*), others view financial inclusion to be a process of *becoming included*: 'a process that ensures the ease of access, availability and usage of the formal financial system for all members of an economy' (Sarma & Pais, 2011). According to Ledgerwood and Gibson (2013), financial inclusion is a *conceptual innovation vis-à-vis* microfinance, connecting a broader range of actors and ideas. The authors posit that financial inclusion is a multidimensional, pro-client concept,

encompassing increased access, better products and services, better-informed and equipped consumers, and effective use of products and services.

ADA (2019) defined financial inclusion as the entirety of the schemes put in place to combat banking and financial exclusion, and encompasses a whole range of products and services that are either financial or non-financial made accessible to the poor population. Hannig and Jansen (2010) defined financial inclusion as the absence of price or non-price barriers in the use of financial services. They emphasised that financial inclusion aimed at improving access of financial services, which entails improving the degree to which financial services are available almost at all times at a fair price.

The Ghana's NFIDS Steering Committee defines financial inclusion as 'universal access to, and regular use of, a broad range of affordable formal financial services, including credit, saving and investment products, insurance, payment and money transfer services and mobile money, which meet consumers' needs and trust. They noted that the definition is broad and incorporates a multidimensional perspective of financial inclusion, which is necessary because of the diverse approaches available to promote financial inclusion. In essence, the importance of broadening the menu of products and services and building consumers' trust and capability to use these services are highlighted. It also reflects the particular context of Ghana, which is characterized by the limited number of available products suitable for the excluded population, as well as low levels of financial literacy (NFIDS, 2019).

For ease of comprehension, a person is said to be included financially if he/she has and utilizes a bank account or product/service that work as nearly the same as a bank account. By this, the person is able to perform basic banking services of savings, withdrawals, funds transfer, and investment. Technological advancement led to growth and development of fintech which gave birth to mobile money (Albrecht-Heider, 2020). Mobile money, as it currently operates in Ghana, aid users to own a digital SIM based secure financial account with the ability to save, withdraw, transfer funds, pay third parties for goods and services purchased or donations, buy shares, buy insurance products, invest, generate account statements, and even with the ability to connect the SIM based mobile money account to a conventional bank account and fintech platforms such as e-zwich card and online payment accounts (MTN Ghana, 2018). By this, holders and users of mobile money account cannot be said to be financially excluded. A holder and user of a mobile money account is financially included. Increased in usage and access of mobile money services means increase in financial inclusion to the unbanked population.

The concept of financial exclusion

Accredited with the earliest definition of the concept was Leyshon and Thrift (1995) who defined financial exclusion as processes that serve to prevent certain social groups and individuals from gaining access to the formal financial system. In Sinclair's (2001) view, financial exclusion means the inability to access necessary financial services in an appropriate form. Put in a similar manner, Carbo, Gardener, and Molyneux (2005) referred to financial exclusion as inability of some societal groups to access financial system. This definitions is supported by Conroy

(2005) who posits that financial exclusion is a process that prevents poor and disadvantaged social groups from gaining access to the formal financial systems of their countries.

What is common in the definitions of financial inclusion (exclusion) is access and usage of financial services; hence it has also been narrowly defined as the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as the weaker sections and low income groups at an affordable cost. Sarma (2008) then summarized the concept as the process that ensures the ease of access, availability and usage of formal financial system for all members of an economy. Elimination of financial exclusion invariably leads to deepening financial inclusion. As noted, financial exclusion is associated with social exclusion. Social excluded individuals include dwellers of deprived rural areas, the poor, and illiterates which is the cardinal feature of the study area. Hence, it is expected that mobile money which has been widely accepted by social excluded persons will be an enabler of financial inclusion among the excluded groups.

Basic theories in financial inclusion

Basic theories that underpin the financial inclusion are social exclusion and financial exclusion theory espoused by Aduda and Kalunda (2012), financial inclusion and poverty reduction by Shehu (2012), Zins and Weill (2016), Demirgue-Kunt, Klapper and Singer (2017). Another prominent view advocated is financial inclusion and access to income, inequality and growth.

Social exclusion versus financial exclusion

The concept of social exclusion do not have a universally accepted definition due to its wide application. The socially excluded is generally made up of the mentally and physically handicapped, suicidal people, aged invalids, abused children, drug addicts, delinquents, single parents, multi-problem households, marginalized, asocial persons, and other social misfits (Silver, 1995).These groups are mostly excluded from livelihood, secure and permanent employment, earnings, property, credit, land, education, skills and cultural capital; the benefits provided by the welfare state; citizenship and equality before the law; participation in the democratic process; public goods and personal fulfilments (Silver, 1994 as sighted in Mathieson et al., 2008).

Aduda and Kalunda (2012) suggested that financial exclusion has its roots in social exclusion, but there appear to be no very strong relationship between financial exclusion and poverty (Hannig & Jansen, 2010) which is a key feature of the social excluded. Financial exclusion has, therefore, been defined in the literature in the context of social inclusion or exclusion (Sarma, 2008). However, many sociologists generally agree that an aggravated level of social exclusion leads to further exclusions, including financial exclusion. Fraioli (2012) supported this view and concluded that availability of financial services alone will not solve financial exclusion, rather, tackling social exclusion is a necessary condition for tackling financial exclusion.

Contrasting the above views with findings of the World Bank (2018 & 2019) and Klapper (2016) which all showed that socially disadvantaged are those mainly financially excluded, it may be conclusive that making financial service

cheap and available need to be complemented with social inclusiveness in order to ensure high level of financial inclusion. The present study looks at the effect of mobile money on financial inclusion among rural communities in the A.O.B District. The general nature of rural communities is that they are socially excluded. This is evidenced in the high level of illiteracy, poverty, and lack of access to important social and financial services such as banks. The social exclusion – financial exclusion theory will therefore aid the study to examine the extent to which rural communities (socially excluded) could be financially included through the introduction of mobile money.

Financial inclusion and poverty reduction

Closely related to the social exclusion – financial exclusion theory is the relationship between financial inclusion and poverty reduction. The poor are the least financially included, yet financial inclusion is said to have positive impact on poverty reduction. This bring to mind an interesting relationship between financial inclusion and poverty reduction.

The World Bank noted and acknowledged that financial inclusion is a key enabler of reducing poverty and boosting prosperity (World Bank, 2019). Also, The World Bank Global Financial Development Report (2014) highlights a strong proposition that access to financial services has a crucial role to play in reducing poverty. This assertion gained wide acceptance by many researchers (Shehu, 2012; Zins & Weill, 2016; Demirgue-Kunt, Klapper, & Singer 2017; Amadou, 2018; World Bank, 2018 & 2019). On the contrary, Ayensu (2017) found that financial inclusion does not have any meaningful impact on poverty reduction, but credit to

the private sector by banks and financial institutions (financial depth) significantly reduces poverty. It can also be argued that financially excluded cannot access credit from banks and other financial institutions. Whiles emphasizing the importance of financial inclusion on development and poverty reduction, it was found that financial development is associated with fall in the percentage of people living on less than $1.00 a day (Beck, Demirguc-Kunk, & Levine, 2007).

Some other studies have shown that Mobile Money penetration has a direct impact on financial inclusion as well as economic growth and development. People who access bank accounts and other variety of financial services have a reliable and verifiable means by which their financial transaction history can be tracked. Their savings can be monitored and they are most likely to be considered for credit than those who are completely excluded from the formal financial system.

Access to credit means extra inflows of funds that can be channelled into investment, subsequent savings and generation of extra income for consumption and investment. In contrast with the financially excluded, they rely on orthodox means of keeping their monies, their credit worthiness can be difficult to assess and they stand a less chance of accessing credit in the formal banking system. For the poor who are excluded, this could worsen their situation as financial exclusion could lead vicious cycle of poverty. This was evidenced by 16% growth in assets of women in Nepal who were offered bank accounts as a result (Prina, 2013) and 17% reduction in poverty levels in India as a result of government's effort at opening banks in rural communities (Burgess & Pande, 2005).

It is also worth noting that poverty and financial inclusion are interrelated. Whereas there are evidence to show that high incomes correlates with high financial inclusion (Demirgue-Kunt, Klapper & Singer, 2017; World Bank, 2018 & 2019), it has also been found that increased access to and usage of financial services increases incomes and reduces poverty (Burgess & Pande, 2005; Prina, 2013; World Bank, 2019), though the finding of Ayensu (2017) fails to accept the later finding. Further research on the relationship between poverty and financial inclusion is required in this instance.

Access to income, inequality and growth

Financial inclusion is noted to have an impact on economic growth and development. First, developed economies with huge GDP and high incomes have high inclusion rate than developing economies (World Bank, 2018). A high financial inclusion rate is a signal of development. Apart from this, financial inclusion is said to be positively correlated with economic growth and development. In developing economies, one percent increase in active ATMs or any similar payment platform could lead to 0.0082% increase in GDP and reduction in poverty (Williams, Adegoke, & Dare, 2017). A growth in financial inclusion rate means increase in demand for financial services which presents an opportunity for banks and non-bank financial institutions to grow thereby positively affecting economic growth.

Studies have shown that in many developing countries, less than half of the population has access to formal financial services, and in most of African countries, less than one in five households has access to bank account. Lack of access to finance is often the critical mechanism for generating persistent income inequality,

as well as slower economic growth (Beck, Demirguc-Kunt, & Honohan, 2009). The World Bank Policy Research Report emphasised that finance is at the core of the development process. Backed by solid empirical evidence, development practitioners are becoming increasingly convinced that efficient, well-functioning financial systems are crucial in channelling funds to the most productive uses and in allocating risks to those who can best bear them, thus boosting economic growth, improving opportunities and income distribution, and reducing poverty (World Bank, 2008).

A large theoretical body of literature identifies difference mechanisms through which access and use of financial systems can enable individuals alter their product and employment choices and thereby exit poverty (Burgess & Pande, 2005). In India, Burgess and Pande (2005) found that reduction in rural poverty were linked to increased savings mobilization and credit provisions in rural areas. The authors found that opening banks in rural communities helped cut poverty by up to 17 percentage points. In Nepal, Prina (2013) found that women who were offered a simple bank account increased their total assets by 16 %. These evidences points to the fact that if financial inclusion is deepened it could reduce the gap between the rich and the poor especially in the rural communities.

It goes without a doubt that access to financial services need to be deepened among the poor, the deprived and less educated in Ghana. Once these services are expanded to rural communities, the rippling effects are great. In Ghana, for instance, mobile money alone employs over 44,000 agents/merchants (Konutsey,

2016). This is partly due to low capital requirement and loose regulatory systems in which license become easier to acquire than in conventional banking.

Empirical Review

The empirical review examines existing studies on the mobile money-financial inclusion and provides justification for the present study. Financial inclusion in African and Ghana is analysed with its importance and relationship with the SGDs. This review ends with a look at financial technologies, mobile money in Ghana and the relationship between mobile money and traditional banking in Ghana.

The need to deepen research in financial inclusion

The review is necessitated by the fact that it is almost impossible to have an entirely new knowledge in any subject area. The review will help avoid unnecessary repetition of same results or avoid mistakes made in previous studies on the same or similar subject matter. As noted by Hart (1989), literature review is needed as it distinguishes what has been done from what needs to be done, covers important variables relevant to the topic, synthesising and gaining new perspectives, among others. Review may result in altering the original research objectives or continuing with them. Review of literature helps to reveal knowledge gaps that require further exploration and investigation, comparison of previous findings and to critique existing findings as well as suggest areas for further research. The review helps abreast the researcher of thorough understanding of the topic under consideration and identification of potential areas of research as well as similar works done on the subject matter.

In 2017, the Bank of Ghana's Payment Systems Department conducted a study on the impact of mobile money and observed that researchers' paid very little attention to mobile money until around 2007. It noted in the BoG (2017) report, much of the studies were reviews of papers by Dahlberg et al (2008), Duncombe and Boateng (2009), and Deniz, et al (2011),. It gave a pictorial view of existing global studies as follows Figure 1.

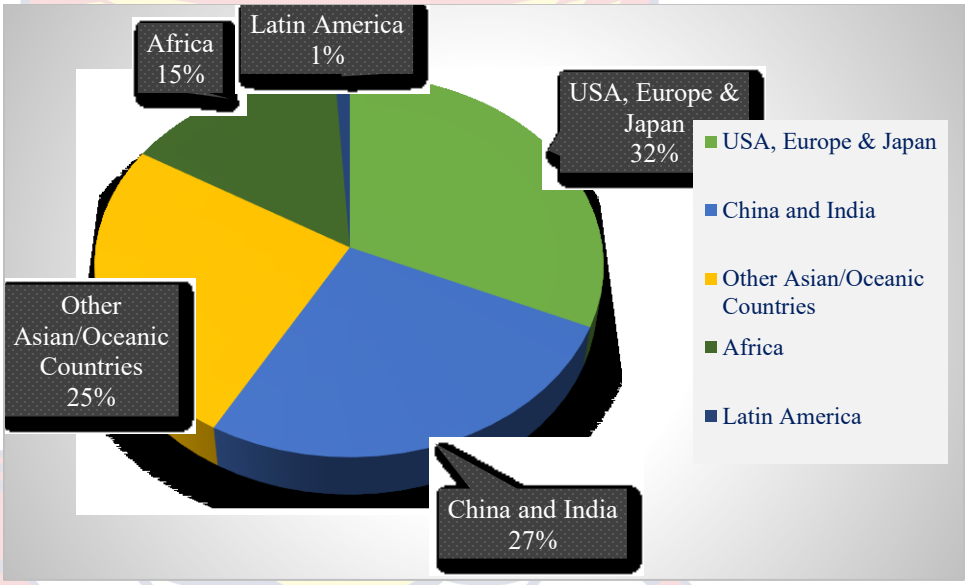


Figure 1: Coverage of Reviewed Papers on Mobile Money
Source: BoG (2017)

Figure 1 clearly indicates Africa's share of papers reviewed on mobile money, and perhaps, the knowledge base in Ghana and Africa relative to the world and other regions is still low. A further break down of Africa's 15% could reveal deep knowledge gap in mobile money studies in Ghana and Africa. Kenya had attracted the attention of researchers due to the impact of the 'M-Pesa' which was introduced there by Vodafone in 2007 and has gained grounds.

In Ghana, studies on mobile money can be attributed to a number of prominent institutions and researchers such as (Aker & Wilson, 2013), (Akomea-Frimpong, Andoh, Akomea-Frimpong, & Dwomooh-Okudzeto, 2019), (BoG, 2017), (PWC, 2016), (Tobbin, 2010), and (Tobin & Kunorwu, 2011) sighted in the BoG (2017).

Tobin and Kunorwu (2011) used the structure equation modelling approach and consumer behaviour analysis to explain adoption of mobile money transfer technology. Their focus was on using the Technology Acceptance Model (TAM) and Diffusion of Innovation (DoI) theory to determine factors that influence Ghanaian consumers'' acceptance and use of mobile money transfer technology. The results were consistent with the key TAM and DoI constructs. Their study, though important, had significantly nothing to do with linkage between mobile money and financial inclusion.

Aker and Wilson (2013) study dealt with the impact of momo on savings among rural residents of Northern Ghana. Their research sought to understand how m-money can promote financial inclusion among the world's poor, particularly those living in rural areas. It tried to address some of the potential barriers to m-money adoption and usage in Ghana, with a goal towards providing insights into whether m-money services could be used to provide cash transfers to extremely vulnerable populations, facilitate savings within rural areas, either by allowing individual members of savings groups to save, facilitating savings among different savings or promoting savings objectives; or allow households to receive remittances from migrants. They used interactive approached to understand types

of mobile money services available. Their study also used action-oriented research to understand how rural household demand for formal and informal financial services. They found that rural communities' likelihood of using mobile money is extremely high in the Northern Region. However, the nature of Northern Ghana rural communities differ substantially from Southern Ghana due to differences in occupation and literacy level. Similarly, rather than using existing data on how mobile money has impacted savings and general financial inclusion, their study was more experimental rather and narrowed mainly towards savings only. Since the present study is about rural communities in the Southern-Coastal Ghana, the likelihood of different results is possible. Their study was not specific on the extent to which mobile money has actually impacted financial inclusion as the present study did.

The PWC (2016) banking survey dealt with how banks can gain in the era of growing mobile money which is seen to be posing a significant threats to traditional banks. The PWC study did little or nothing about how mobile money advances the financial inclusion agenda. It was mainly about the prospects of banks adapting to mobile money as a means of survival and growth.

The BoG (2017) looked at the impact of momo on payment systems in Ghana using econometric analysis. Though the BoG study was not primarily on mobile money and financial inclusion, it suggested that improvement in the mobile money sub sector leads to development of the payment ecosystem, deepening of financial inclusion and promotion of cash-lite economy. It further suggested that that factors that promote mobile money usage lead to deepening of the financial

system and promote a cash-lite economy. It however, failed to explain how mobile money has impacted financial inclusion.

Akomea-Frimpong et al (2019) focused on cause of mobile money fraud in Ghana and measures that can be taken to control the menace. It had nothing to do with linking mobile money to financial inclusion.

What the above studies failed to do was to look at how mobile money has impacted financial inclusion using evidence from field work or data from state agencies. Mobile money is gaining high patronage in Ghana as the telcos try to extend services to cover not only the rich, educated, and city dwellers, but also the rural poor due to family ties that exist between Ghanaian city dwellers and their rural relatives. The need to strengthen intensive research on the effect of mobile money on financial inclusion is long overdue, and this study aims at aching that.

Financial inclusion in Africa

Most African countries are categorised as either developing or least developed with few countries finding their class among the list of middle income economies. With high poverty rates and illiteracy in Africa, financial inclusion is expected to be low on the equation. For instance, in 2004, Kenya which was the most financially included country in Africa was ranked 40th in the world using Sarma's 2-dimensions of financial inclusion index. Only four African countries made it to the top 50 countries with Ghana ranked as the 91st (Sarma, 2008). This trend is not entirely different from the World Bank report on financial inclusion which showed high level of inclusion in high income economies than in low income economies. Whilst high income economies record up to 94% in account ownership,

developing economies record 63% account ownership (Demirgue-Kunt, Klapper, & Singer, 2017).

In West African, the biggest challenge to companies, especially SMEs is access to finance. Despite progress in financial inclusion among individuals and businesses, access to finance is still a challenge in Sub-Saharan Africa (EIB, 2018).

The global trend of more men being included that women is in tandem with statistics in Africa. Thus, more men are included financially than women in Africa even though more women tend to dominate the SMEs and the informal sector. In view of this the 25th AU summit made financial inclusion an agenda to be pursued to deepen the inclusion of women in the formal financial sector. An action plan was developed to be implemented among member countries to make it happen (AU Directorate of Information and Communication, 2015).

With high patronage of mobile phones in Africa (Egbedi, 2016) coupled with the introduction of Mobile Money to augment mobile phone usability, there is growing hope for Africa in terms of financial inclusion. In Africa, Kenya continuous to dominate the Mobile Money market with their M-Pesa service. Digital financial Inclusion is increasingly yielding results with advancement in technology. In the 2017 Financial and Digital Inclusion Project Report, Kenya, for the third time, top a list of 26 economies drawn from around the world with a score of 86% and approximately 90% in terms of country's commitment, mobile capacity, regulatory environment, and adoption (Lewis, Villasenor, & West, 2017).

Financial inclusion in Ghana

Financial inclusion is low across regions and demographics in Ghana, especially among women, poor and rural citizens (World Bank, 2019). This is in line with global trend where more men and the high income class are more included than women and the low income class. For instance, in 2010, the top five poorest and relatively rural regions (Upper West, Upper East, Volta, Northern and Brong Ahafo regions) in Ghana recorded the lowest financial inclusion of 19, 24, 27, 30, and 37 percentages respectively with rural average inclusion rate of 26%. This was in sharp contrast with the rich regions such as Greater Accra and Ashanti regions with inclusion rates of 57 and 48 percentages respectively whose rate exceeded the national average of 36.1% as shown in Figure 1. The year 2015 recorded some gains in the financial inclusions in some of the regions. For instance, Upper East region recorded 58%, Brong Ahafo 46% and Volta region 54%. Despite this progress in Ghana, the poorer regions remain more excluded than the rich regions in Ghana (World Bank, 2018). Figure 2 shows details of financial for 2010 and 2015.

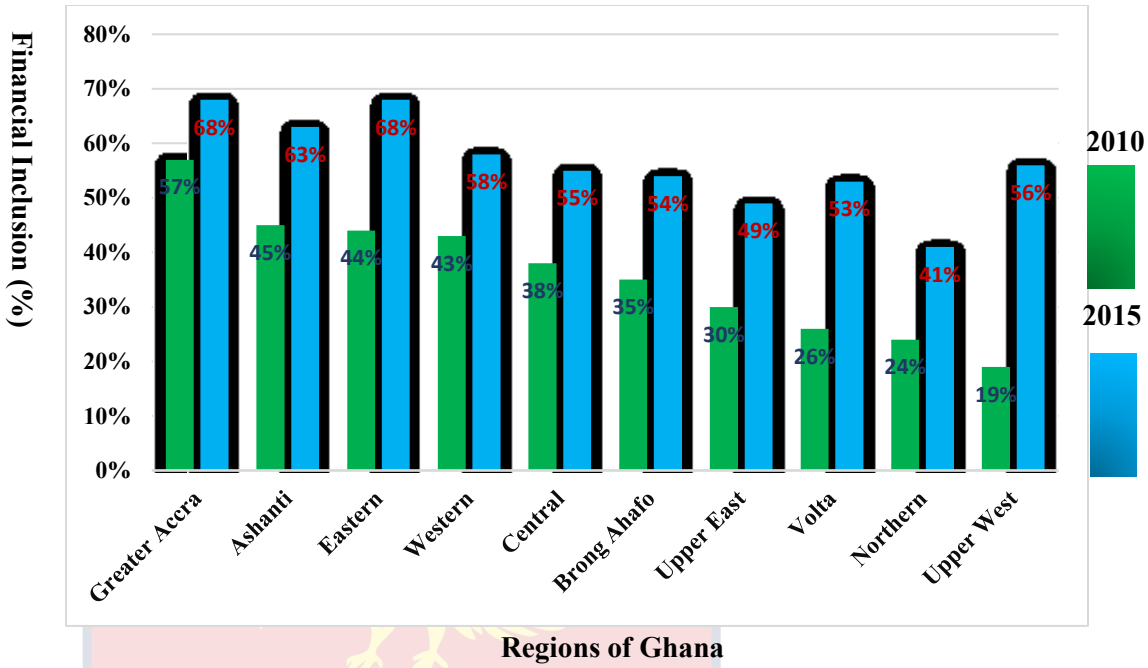


Figure 2: Ghana Regional Distribution of Financial Inclusion
Source: CGAP sighted in World Bank (2018)

It is worth noting that between 2010 and 2015, rural access almost quadrupled from 26 to 51%, though this is still lower compared to the urban inclusion rate of 65%. The drivers of the rural financial inclusion was not really the traditional banks as banks' contribution was just 6 percentage points (from 21 to 27%). Rather, the rural progress was driven by non-bank financial services (including mobile money) which contributed 19 percentage point (from 5 to 24%). Even in the urban centres where financial inclusion improved from 61 to 65%, banks contribution reduced and the nonbank financial institutions (including the mobile money) grew by 13 percentage points (from 9 to 22%). Available data show that in Ghana, 59% of the poor are financially excluded compared with 35% of the non-poor (World Bank, 2018). It is estimated 83.1% of Ghanaians have mobile money account, which has taken savings and other forms of financial services to the doorstep of the ordinary citizen. This has also resulted to a rise in the level of

making/receiving payment digitally from 22% in 2014 to 44% in 2017 among rural dwellers (Boateng, 2019).

In terms of gender, men remain more included than women in Ghana, and the later tend to rely more on nonbank financial services such as mobile money and e-zwich. Between 2010 and 2015 financial inclusion rate had improved from 57% to 62% for men, whereas that of women recorded 37% to 45%. Women relied more on the nonbank formal sector (26%) than informal financial services (20%) compared with men with 19 and 12 percentages for non-bank formal and informal financial services respectively (World Bank, 2018). Figure 3 gives details of gender breakdown of financial inclusion.

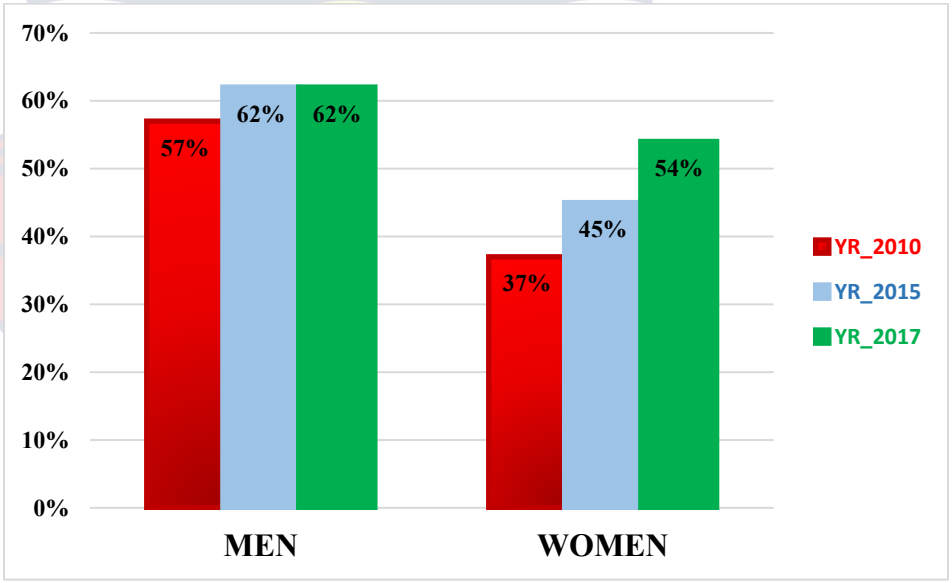


Figure 3: Gender Distribution of Financial Inclusion in Ghana
Source: World Bank (2018) and World Bank (2019)

Financial Technologies (Fintech)

Financial technology is increasingly becoming a greater tool for financial inclusion especially for developing economies. Fintech includes smartcards such as

Visa, MasterCard, E-zwich, internet banking, USSD banking, and more recently and commonly, the mobile money. These technologies are gaining wide acceptance in African due to ease of use and availability (IMF, 2019).

Households, businesses and governments are switching towards cash-lite economies and digital financial payments due to their enormous benefits. Fintechs have been noted to have a capacity of reducing corruption and improving efficiency. India recorded 47% drop in leakage of pension funds when payments were made through biometric smartcards rather than through cash. Also in Niger, variable cost of administering social benefits dropped by 20% when transfers where done through mobile money (World Bank, 2018).

It is worthy of note that sub-Saharan Africa is the only region where the share of mobile money accounts exceed 10% as at 2017; and in 2014, the East Africa was the region's mobile money hub. In recent times, mobile money account has spread to new parts of sub-Saharan Africa and Cote D'Ivoire and Senegal record over 30% and Gabon records over 40% of mobile money accounts. (Demirgue-Kunt, Klapper, & Singer, 2017).

Attempts to increase financial inclusion in Ghana has not been without a challenge especially in rural communities, poor and marginalized groups. In its bit to salvaging the situation, the Bank of Ghana licenses different classes of banks and financial institutions to target different groups. Apart from the universal banks, Ghana also has microfinance institutions, rural banks and cooperative credit unions who target mainly specific groups such as low income groups, rural communities and groups of people with common interest (NFIDS, 2019).

Realizing the importance of fintech in solving the financial exclusion, the government of Ghana began its journey in the digital financial inclusion in 2008 by becoming the first country to launch e-zwich in which the Central bank collaborated with other banks to provide the service (Addo, 2008). The e-zwich has received wide acceptance and has proven to have contributed towards the financial inclusion drive. It has helped to include the rural poor and vulnerable groups who are on government Livelihood Empowerment Against Poverty (LEAP) programme in to the formal financial system. The LEAP beneficiaries receive payments through the e-zwich and in 2015, over 3,300 beneficiaries were paid through the e-zwich (GNA, 2015) and that has continued since. National Service allowances, Nations Builders Corpse (NABCO) monthly stipend, Youth Employment Agency (YEA) beneficiaries and other beneficiaries of government social interventions programmes receive payments through the platform. This has helped minimized non-existent ('ghost') beneficiaries, minimize leakages, corruption in the payment process, and most importantly brought the rural poor into the formal financial system.

When the Bank of Ghana set a target of achieving 75% financial inclusion by 2023 from 58% as at 2017, it was clear that this was going to be done through digitisation of financial service. It was revealed at the Citi Business Festival's Fintech Summit 2018 that there exist over 70 fintech firms that operate in partnership with traditional banks (Graphic Online, 2018). The penetration of fintech in Ghana is assuring and this could be capitalised on to deepen financial inclusion.

E-zwich has gained wide acceptance and evidence abound about its progressive performance over the past decade. The total cards issued currently stands at 2.77 million and the growth trend has continued with 17.35% in 2018. The value of wealth on each card averages GH¢ 83.38 with a group rate of 34.33% in 2018. Total value on all card grew from GH¢ 8.76 million in 2014 to GH¢ 123.19 million in 2018 with annual growth rate of 65.52% in 2018. Additionally, the value of transactions has always been on the positive trend starting from GH¢ 272.70 million in 2014, it stood at GH¢ 5.65 billion in 2018 (BoG, 2018). In the first quarter of 2019, the value of transactions recorded an annual growth of 102% (GhIPSS, 2019). These positive strides are an indication that Ghana's surest way out of the financial exclusion is through digital finance or fintech driven by public-private sector collaborations. This is supported by the Bank's recent analysis which showed that Ghana can reach universal financial access cross regions and key demographics using innovative technology (World Bank, 2019).

Mobile Money in Ghana

Ghana has 42% (12.6 million) of her population outside the formal banking system (JoyBusiness, 2018), but is making massive improvement in the financial inclusion with the use of mobile money. Mobile money was first introduced in Ghana in July 2009 by Ghana's leading telecom giant, MTN Ghana (MTN Ghana, 2018) and has since won the hearts of many Ghanaians including rural communities and women in the informal sector. Boom in mobile money market led to then Airtel and Tigo (now AirtelTigo) introduction of same service and Vodafone Ghana joined later with the Vodafone Cash. There are currently three mobile money service providers – MTN, Vodafone and AirtelTigo. The Mobile Money Operators

(MMOs) provide mobile infrastructure, customer base and agents' network. The MMOs are profit-maximizing entities which issue electronic-money which is held in the banks. Banks provide infrastructure for flow of money between two parties and therefore provide physical custody of the electronic money. Every unit of electronic money that is issued by the Mobile Network Operators (MNO) is backed by an equivalent amount of Bank of Ghana notes and coins held in a bank to ensure equilibrium in the mobile money (BoG, 2017).

The GSMA (2013) quoted in BoG (2017) report observed that the boom in the mobile money market is accounted for by increasing penetration and application of mobile phones particularly in rural areas. Ghana is one of Africa's largest mobile money market with 34.5 million subscribers and penetration of 119% (JUMIA, 2018), but the latest data showed 138.37 percentage penetration rate with 41.36 million mobile subscribers (NCA, 2019) . The GSMA (2013) report sighted found that advancement in handset functionality, chip, mobile network technologies, and upgrade in Point-of-Sale infrastructure, and the collaborations between banks and telcos as factors that have contributed to the mobile money expansion. The mobile money service is noted for its key benefits in terms of convenience, speed, flexibility and affordability.

Mobile money may be described as an electronic cash backed by equivalence amount of Bank of Ghana notes and coins using the Subscriber Identification Module (SIM) in a mobile phone as an identifier. It is issued by a mobile money operators who keeps electronic account on the SIM in the mobile phone for users of mobile money (BoG, 2017). Mobile money operates with an

Unstructured Supplementary Service Data (USSD) code giving users the chance to transact irrespective of the mobile phone type or functionality.

Mobile Money Services in Ghana

Porteous (2006), Weber and Darbellay (2010), and Dias and McKee (2010) divided mobile money services into mobile banking (m-banking) and mobile payment (m-payment) models in Sub-Saharan Africa which they described as additive and transformative models respectively. According to them, in the additive models, customers' banks accounts are linked to their mobile sim cards accounts and they are able to perform banking transactions such as checking account balances, transfer funds between accounts or view cheque images. With the transformative models the unbanked population (financially excluded) are able to open an account on their mobile sim card to access financial products without existing bank accounts, mainly through their mobile phones. With the introduction of mobile money interoperability, Ghana is seen to be operating a hybrid model which combines the functions of additive and the transformative models. Thus, the unbanked are able to access financial service with the mobile money. Those with existing bank accounts are able to link their bank accounts to mobile money accounts for rich functionality.

Mobile money service was traditionally for cash-in (deposits), cash-out (withdrawal), making payments, transfers and receipts of funds. Of late, mobile money services have become very rich offering almost everything that a traditional bank and non-bank financial institutions offer. It now offers, in addition to payments, receipts and transfers of funds, payment for goods and services such as

apps, online stores, airtime, school fees, utilities, DSTV bills, salaries, taxi fares, and general goods and services. A unique USSD code are usually assigned to non-profit making organisations to raise funds by way of donations. Statements of account, just as in traditional bank, can be requested and received via email, insurance policies and investment products are sold by mobile money service provides as well as traditional banks and non-bank financial institutions (MTN Ghana, 2018). In 2018, Ghana became the first country in the world to sell shares in an Initial Public Offering (IPO) through mobile money when MTN launched its IPO (Biztech Africa, 2018). MTN, AirtelTigo, and Vodafone all offer their unique insurance products in addition to insurance premiums received through mobile money in partnership with the traditional insurance companies. MTN offers the Mi-Life Insurance (MTN Ghana, 2018), Vodafone partnered with BIMA to launch the Fishers' Future Plan insurance product (BIMA, 2017) and AirtelTigo Insurance was also launched in partnership with BIMA (AirtelTigo, 2018).

Again, MTN offers savings account called Y'ello Save which allows subscribers to own a saving account and earn interest. MTN and afb collaborated to launch QwikLoan which currently offers soft loans to subscribers. MTN also offers pensions and other financial services including purchase of government treasury bills (MTN Ghana, 2018). Subscribers can also receive foreign remittances via mobile money from over 100 countries including Germany, France, UK, and USA (MTN Ghana, 2019).

Additionally, GhIPSS in partnership with Bank of Ghana, telcos and Banks launched mobile money interoperability platform in May 2018. The platform

makes it possible for funds to be moved between mobile money accounts and e-zwich as well as bank accounts. Also, subscribers can withdraw at agent points and banks withdraw money at selected Gh-Link ATM and E-zwich machines. The mobile money interoperability has witnessed total volume and value of transactions of GH¢ 2,266,631.00 million and GH¢ 212.89 million respectively as at December 2018 (BoG, 2018).

Growth of Mobile Money in Ghana

Recent reports of BoG (2018) shows that the number of active mobile money agents stood at 396,599 and the number had always been on the increase from 5,900 in 2012. The number of mobile money accounts stool at 32.55 million (BoG, 2018) exceeding Ghana's population of 30 million then. The Figure also showed 17.4% increase from 2017 which was 23.95 million. Value of transactions grew from GH¢ 155.84billion in 2017 to GH¢ 223.21 billion in 2018 with float balance of GH¢ 2.63 billion representing 13.5% increase from 2017. The combined effect of this statistics is that mobile money has come to stay and grow, and is currently the most viable option for Ghana if she is to get rural communities, the poor, women and other marginalized groups out of the financial exclusion zone. The World Bank Findex data mentions Ghana as one of 13 markets with mobile financial services (MFS) penetration above 10% in 2014. BMI Research, in its June 2015 report, indicated that 13% of adult Ghanaians report having access to a mobile account, as compared to the Sub-Saharan Africa average of 11.5% in 2014 (Konutsey, 2016). A report by the 2015 Financial Inclusion Insights survey executed by InterMedia, indicated that whilst access to banking increased only

marginally from 34% to 36% of Ghanaian adults, access to Mobile Money increased from nearly zero to 29% in the last five years (Konutsey, 2016).

Mobile money float balance has continued to increase from the inception of mobile money. As at the end of 2018, the balance of e-cash held as mobile money stood at Ghs 2.63 billion. Latest data showed an increase of 39.94% in the first half of 2019 which showed a float balance of Ghs 3.032 billion compared to the first six months of 2018 which recorded Ghs 2.18 billion (BoG, 2019). Breakdown of Mobile Money float in shown in Figure 4 below.

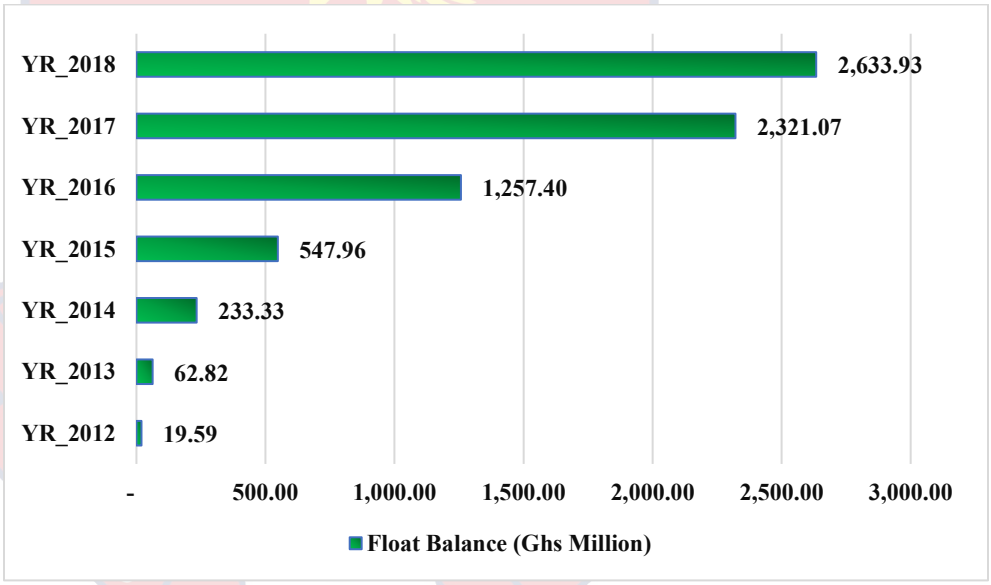


Figure 4: Mobile Money Float Balance (2012-2018)
Source: BoG (2018)

The growth in mobile money float corresponds with the growth in volumes of mobile money transactions over the years. As at the end of 2018, the volumes of transactions stood at 1.4 billion against 1.03 billion recorded at the end of 2017. The growth has continued in the positives from inception to date. The first six months of 2019 showed volume of mobile money transactions of 915,795,074 up

by 39.81% compared to 655,002,089 transactions recorded in the first half of 2018 (BoG, 2019). Figure 5 shows growth in mobile money volumes of transactions.

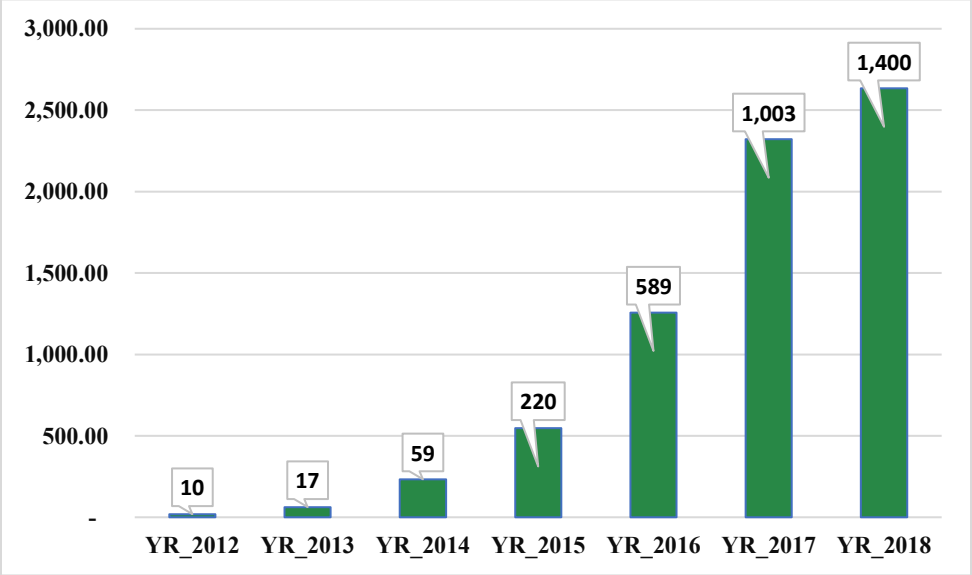


Figure 5: Volumes of Mobile Money Transactions (2012 - 2018) in millions
Source: BoG (2018)

The value of mobile money transaction has also surged upwards from 2009 up to date. The value of mobile transactions as at end of 2018 stood at Ghs 223 billion representing 13.5% increase from 13.5% increase. Value of transactions in the first six months of 2019 stood at Ghs 140 billion represent 43.01% increase from 2018 which saw Ghs 104 billion within the first half of the years (BoG, 2019). Figure 6 shows details of the growth.

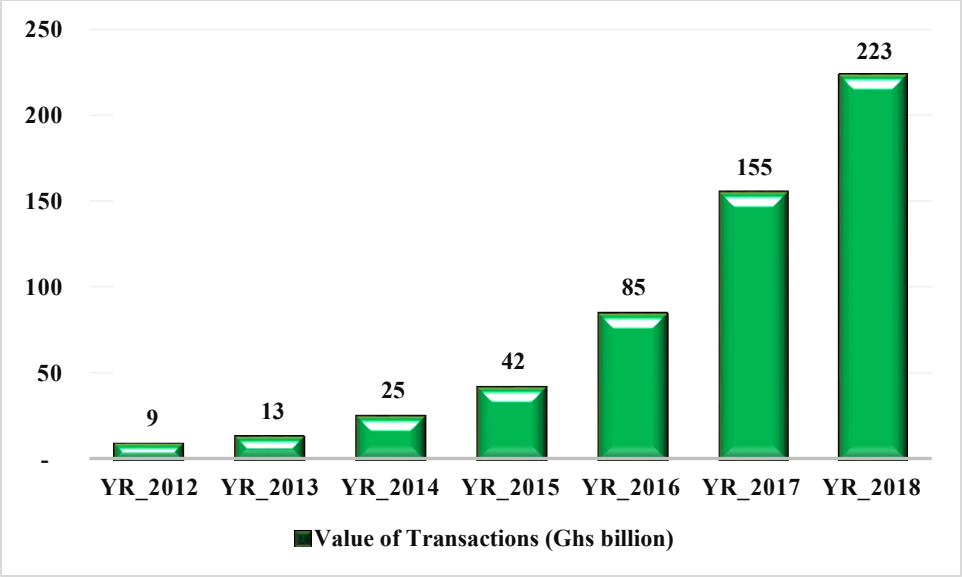


Figure 6: Value of Mobile Money Transactions (2012-2018)
Source: BoG (2019)

The number of mobile money agents has also grown over the years offering employment to agents. The number of agents have continuously increased over time. As at 2012, agent population were just 5,900. The number grew each year by an average of 74.8%, and by the end of 2019, the number of momo agents stood at 226,298 representing 25.3% growth from 2018 which closed the year with 180,664 agents. Summary of the growth is given in Figure 7 below.

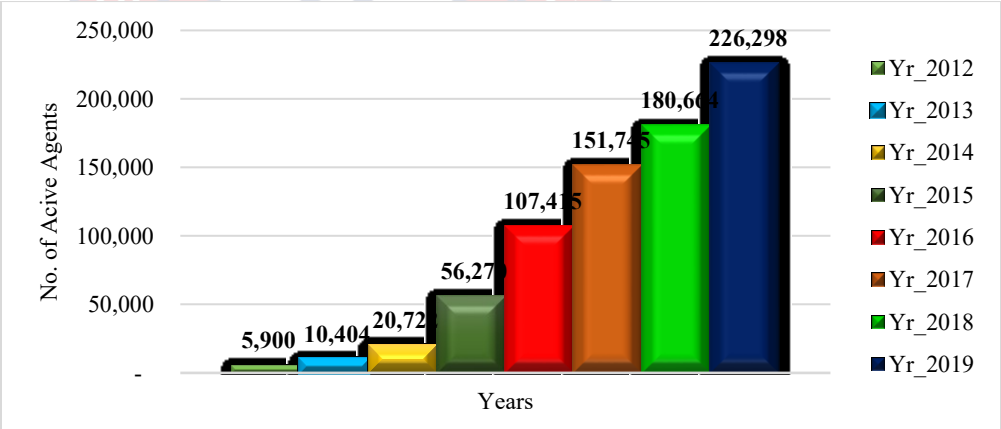


Figure 7: Growth in MoMo Agents
Source: BoG (2016 & 2018)

Mobile Money versus Traditional Banking System

The emergence of mobile money in Ghana has led to somewhat a revolution in the Ghana banking sector. Whiles some banks and policy analysis see mobile money as an opportunity for growth in the banking sector, it is still seen by others as a threat to the traditional banking sector. The study gathered that while bankers perceive mobile money as an opportunity to be explored, especially in the consumer banking segment, it is also perceived as a potential threat if nonbanks are allowed to provide the service in competition with traditional banking services (PWC, 2016). This findings resonate with the current development where mobile money providers render almost all the servings renders by traditional banks.

Ashiagbor therefore recommended strategic partnership between banks and mobile money service providers can yield mutual benefits. He observed in the PWC (2016) Ghana banking survey report that though mobile money is done in partnership with banks, it is helping to address financial inclusion which is one key concern of Government and bankers.

The number of bank accounts as at 2013 were far higher than mobile money accounts. Banks accounts exceeded mobile money accounts by nearly 4 million accounts then. The statistics changed in 2015 when mobile money accounts overtook bank accounts by over 4 million, and as at 2016, there were close to 10 million mobile money accounts than bank accounts. Whereas mobile money accounts were 19.7 million, traditional bank accounts were still 10.1 million (BoG, 2016). Trend of growth in mobile money accounts and traditional bank accounts is summarized in Figure 8 below.

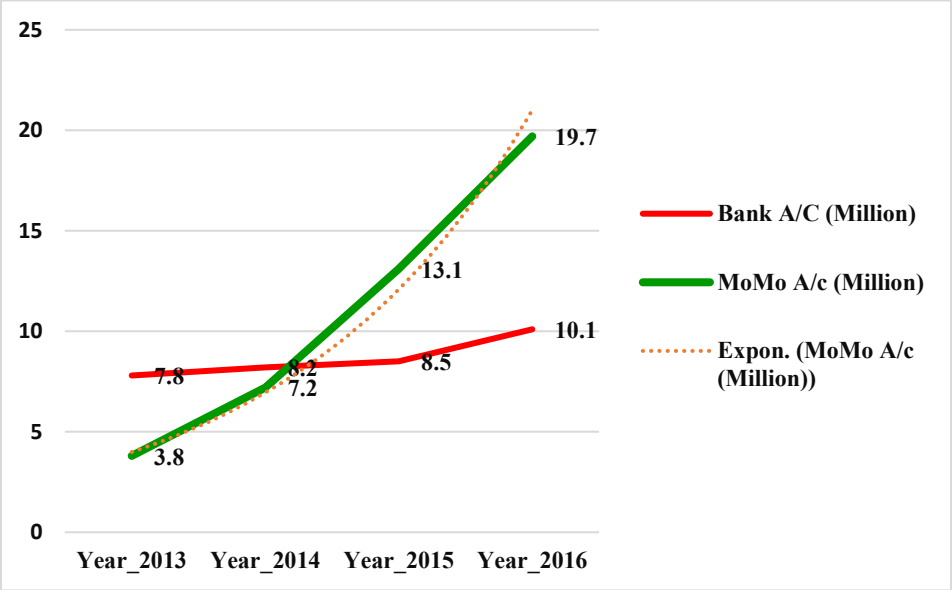


Figure 8: Number of Bank Customers vs Mobile Money Customers

Source: BoG (2016 & 2017)

Conceptual Framework

The proposed model for the study is developed from the Technology Acceptance Model (TAM) originally introduced in 1986 and has been widely used as a theoretical model in the field of information systems. Lee, Kozar and Larsen (2003) observed that among all theories, TAM is considerably the most influential and widely used theory when describing an individual's acceptance of information system. The TAM was originally proposed by Davis (1986), but is said to have been adapted from the Theory of Reasoned Action (TRA) developed by Ajzen and Fishbein (1980).

The TRA describes the relationship between attitude and behaviour within an action. Basically, it is used to predict the likely behaviour of individuals based on their pre-existing attitude and behavioural intentions. Thus, the tendency for an individual to make a decision or actually engage in a particular behaviour depends

on his/her expectations about the outcomes (including benefits and threats) he/she will derive from engaging in that behaviour. Based on this theory, Davis (1986) developed the TAM which assumed that an individual's information systems acceptance is determined by two major factors – Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) (Lee, Kozar, & Larsen, 2003).

It must be noted that whereas the TRA itself is general and opines that possibility of an individual to engage in a behaviour is dependent on his pre-existing attitude and his expectation about the expected outcome, TAM makes a similar preposition, but is limited only to information systems. It is therefore not surprising that TAM has been considered as a parsimonious and powerful theory in the field of information systems (Lucas & Spitler, 1999 and Venkatesh & Davis, 2000).

The present study hypothesised that increase in momo penetration (i.e. number of momo accounts, access and usage) increases financial inclusion. It further sought to examine factors that hinders rural communities from accessing formal financial services, examined level of awareness of momo, extent of usage, and perceived benefits of momo to rural residents. On the basis of the foregoing, the study developed MoMo – FI Model (mobile money – financial inclusion model) as found in Figure 9.

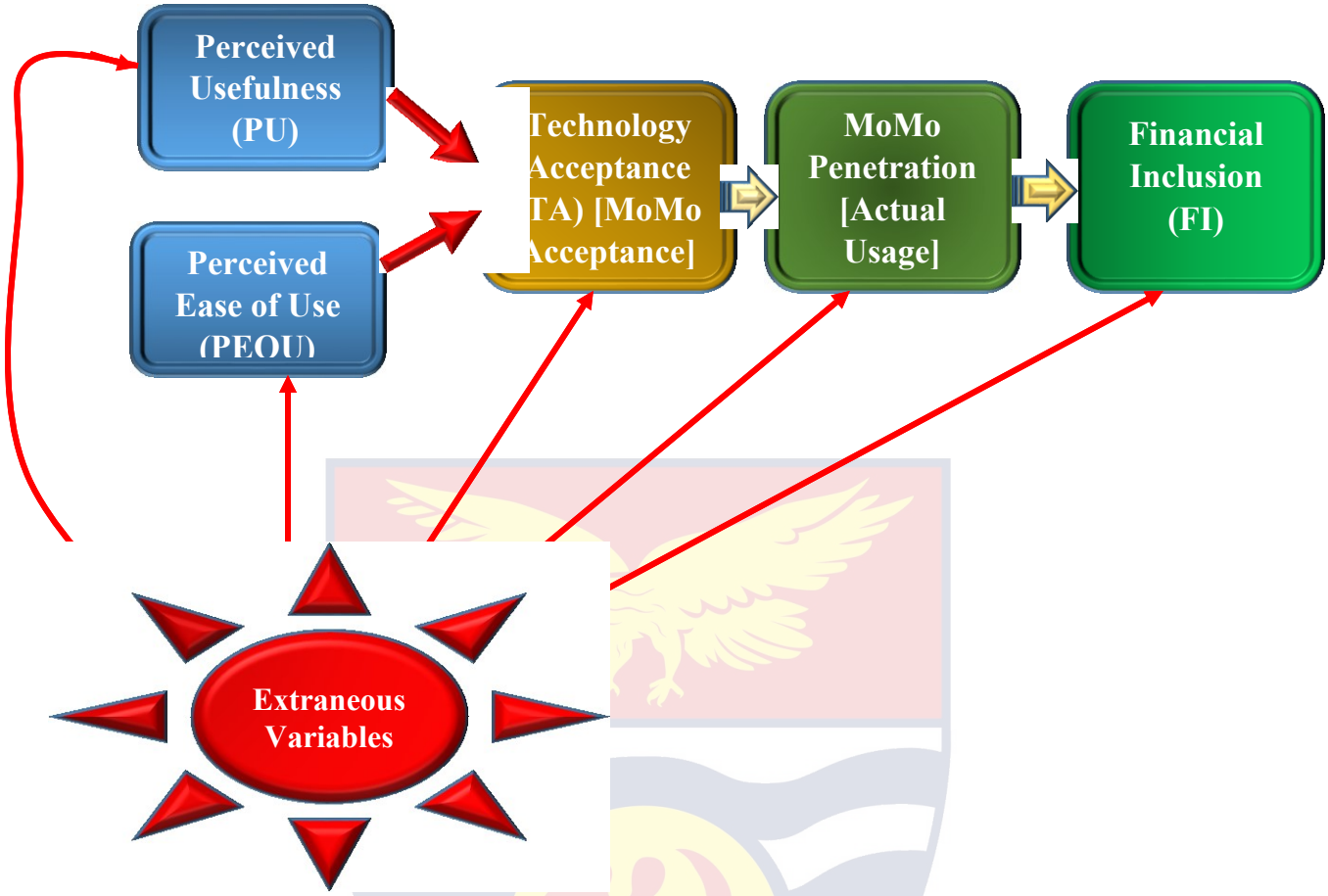


Figure 9: MoMo - FI Model

Source: Adapted from Davis (1986) TAM

Mobile money is part of information systems as it involves the use of information technology and systems. The decision to develop the present MoMo – FI model out of the TAM is informed by the fact that one of the main variables under this study (momo) is an information system variable.

From Figure 9, higher Momo Penetration (access and usage) leads to increased financial inclusion. However, Actual Usage of momo depends on Technology Acceptance (i.e. acceptance of momo). Acceptance of momo as an information systems variable depends on Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) of momo. PU and PEOU are also influenced by external or

confounding or extraneous variable. Even after Technology Acceptance (of momo), the actual usage is influenced by those external variables.

Perceived Usefulness (PU)

Davis (1989) explained PU to mean the extent to which individuals believe that using a new technology will enhance their task performance. In respect of momo, the PU will include benefits that potential users expect to derive from using momo. This may include lower transaction cost, speed and convenience and ease of transaction. Perceive Usefulness is a major factor which explains consumer behaviour in recent m-commerce adoption models (Hong, Thong, Moon, & Tam, 2008). This view has been supported by evidence in many extensive research in information systems and m-commerce. (Davis, Bogozzi, & Warshaw, 1989), (Khalifa & Shen, 2008).

Perceived Ease of Use (PEOU)

Davis (1989) explained PEOU as the individual assessment of the extent to which a specific information system is free of mental effort in its usage. Generally, information systems usage involves some enormous amount of mental effort. No matter how high PU of an information system is, if the potential user perceives its use to be very difficult or impossible for him/her, the tendency to accept or actually use it may be low. This opinion has been corroborated by Davis (1989) who explained that many prior empirical studies have found that PEOU has positive correlation with behavioural intentions, both directly and indirectly. Some potential users consider PEOU as part of the determinants of PU.

PEOU has been classified as in essential indicator in adopting mobile commerce (Tsu-Wei, Marthandan, Chong, Ooi, & Arumugam, 2009) and (Bhatti,

2007). Many empirical studies have found that PEOU has a positive impact on the adoption of m-commerce (Tsu-Wei et al, 2009). PEOU therefore shows perceived effort in using mobile commerce (Khalifa & Shen, 2008). In the context of mobile money, the PEOU may be defined as the degree to which an individual believes that using a momo will be free of effort.

The present model therefore posits that higher PU and PEOU of momo leads to higher acceptance of momo. Higher acceptance leads to higher possibility of actual usage which will then lead to higher mobile money financial inclusion.

Technology Acceptance

Technology Acceptance may be explained as the extent to which an individual buys-into or makes a definite decision to use an information system. Barring any external factors or barriers, an individual who accepts an information system will use same (Davis, 1986). Thus, higher acceptance level will lead to higher actual usage which is the number of individuals who use an information system. Actual usage may vary from depth and width of usage. Whereas the depth of usage is the different products, services and benefits of a single information system that an individual uses, the breadth of usage is the number of unique individuals using an information system. In the context of this study, the MoMo FI model shows that higher PU and PEOU of momo will lead to higher acceptance and higher (actual) usage of momo which will lead to higher financial inclusion.

External Variables or Factors

The validity of the model depend on a number of confounding variable which act as mediators and moderators to the main variables (i.e. PU, PEOU, Tech. Acceptance, Actual Usage and FI) in the model. First, PU and PEOU are influenced

by other variables such as level of education or literacy, prior experience or encounter with similar technologies.

Momo Acceptance and Actual Usage are influenced by or depends on factors such as actual availability of the service, network availability, income of individual, associated cost of usage, perceived threats and social factors (such as religion and culture).

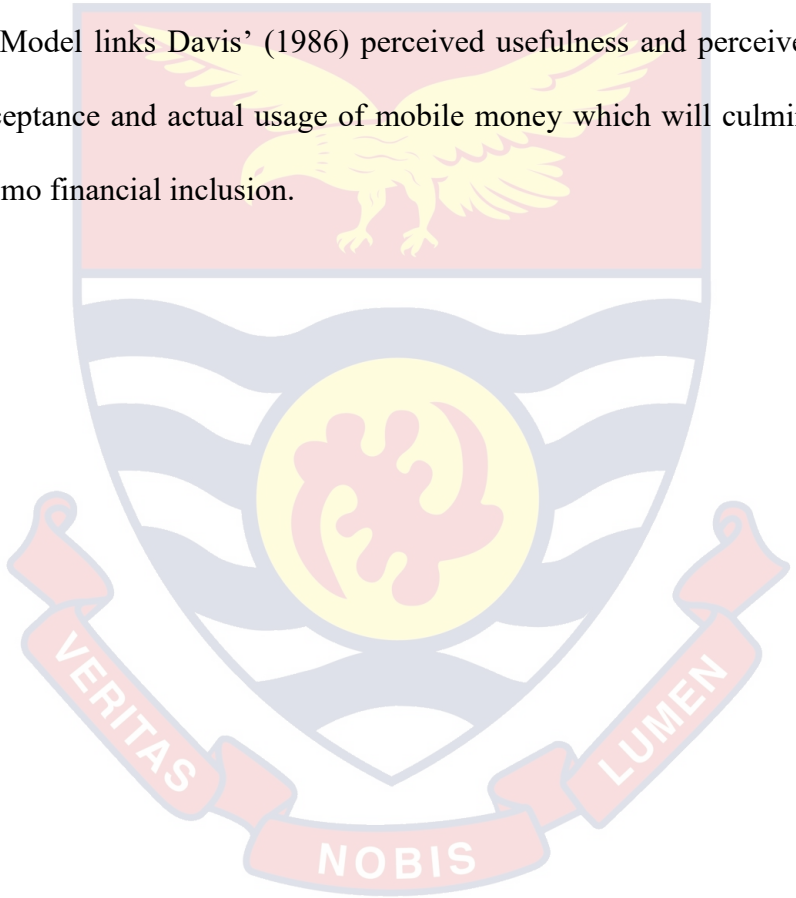
MoMo and FI

The model also shows that higher usage of momo leads to higher FI (or MMFI). The confounding variable in this instance adult population because MMFI is defined as the proportion of adult population who owns and uses a unique momo account. The limitation above notwithstanding, a number of studies have found a positive link between momo account and financial inclusion. Bold, Porteous and Rotman (2012); Porteous (2006); and Ehrbeck, Pickens and Tarazi (2012) all reported that there exist a positive relationship between momo adoption and financial inclusion. This has also been corroborated by Jenkins (2008) who noted that momo facilitates financial inclusion since it is used for money transfers, payment for utility bills, government revenue, among others.

Chapter Summary

The chapter dealt with review of literature on financial inclusion and mobile money in Ghana and beyond. It established the knowledge gap in financial inclusion and mobile money, and justified the need for the present study. It also examined literature on the theory of financial inclusion focusing on relation between social exclusion and financial exclusion, financial inclusion and poverty reduction, and access to income, inequality and growth. The empirical review dealt

with financial inclusion in African and Ghana. The empirical review also touched on evidence of mobile money growth in Ghana and the relationship between mobile money and traditional banking system in Ghana. The final part of the chapter dealt with the conceptual framework of financial inclusion and mobile money. The conceptual framework is the researcher's own construct developed from Davis (1986) Technology Acceptance Model (TAM). The model referred to as MoMo – FI Model links Davis' (1986) perceived usefulness and perceived ease of use to acceptance and actual usage of mobile money which will culminate in increased momo financial inclusion.



CHAPTER THREE

RESEARCH METHODS

Introduction

This chapter deals with the methodology employed by the researcher to achieve the objectives of the study. It explains the research design used, the study area, population of the study, sample and sampling techniques used, instrumentation, pretesting, validity and reliability, data collection, data processing and analysis.

Research Design

Research design is the plan that researchers use to answer research questions, achieve research objectives or test research hypotheses (Polit & Beck, 2004). It is the overall plan for connecting the conceptual research problems with the pertinent (and achievable) empirical research (Boru, 2018). In other words, the research design sets the procedure on the required data, the methods to be applied to collect and analyse this data, and how the research question will be answered (Grey, 2014 cited by Boru (2018).

This study adopted the descriptive survey design. Descriptive survey design provide a picture of a situation, person or event or show how things are related to each other (Robson, 2002; Blumberg, Cooper & Schindler, 2005) cited by Boru (2018). It aims at accurately and systematically describing a population, situation or phenomenon, and often employed when the researcher intends to answer 'What', 'When', 'Where', and 'How' questions (McCombes, 2019). Thus, the aim of descriptive research is to systematically and accurately describe something(s) or

somebody or determine whether there is an association between or among two or more variables.

Descriptive research design is regarded as an effective design to analyse non-quantified topics and issues, and makes it possible to observe the phenomenon in an entirely natural and unchanged natural environment. It provides an opportunity to integrate the qualitative and quantitative methods of data collection, and consumes lesser time than other designs (Dudovskiy, 2018). Despite these advantages of descriptive design, it is criticized for having a number of shortcomings. It is criticised for its inability to statistically test or verify the research problem which may subject its results to certain level of bias. One distinguishing feature a good research is repeatability of the results. Descriptive studies are criticised on the grounds that majority of them are not 'repeatable' due to their observational nature (Dudovskiy, 2018). Descriptive studies are not helpful in identifying cause behind described phenomenon. They cannot explain why an event has occurred and is much suitable for a relatively new or unexplored research area (Dudovskiy, 2018).

The purpose of this study is to examine the effects of mobile money on financial inclusion among rural communities. It measures the level of awareness, interest, and extent of usage of usage of momo. It explains perceived benefits of momo, factors that hinder rural residents from accessing financial services as well as the relationship between momo and financial inclusion. In view of the objectives of the study, the study used a descriptive design. This design is most appropriate since the study sought to measure and accurately describe phenomena such as

mobile money usage, awareness, factors hindering access to formal financial services, and the relationship between mobile money and financial inclusion.

Research Approach

Basic approaches to research include quantitative, qualitative and pragmatic (or mix method). Whereas the quantitative research is generally associated with positivity paradigm, uses deductive techniques and involves numerical analysis of variables, the qualitative research approach is more associated with the social constructivist paradigm, uses inductive techniques to measure non-numerical variables such as beliefs, perceptions and reality.

Considering the nature of the research, selection of only one of the approaches may not enable the researcher to answer all the research questions as the study involves both qualitative and quantitative variable. The study therefore adopted pragmatic approach. It thus, made use of both qualitative and quantitative approaches.

The first two objectives of the study deals with measurement of the level of awareness, interest and extent of usage of mobile money. This culminates in measurement of momo financial inclusion in the study area. Variables analysed in this respect are purely quantitative. The other objectives which deal with types of financial transactions, benefits of momo and factors that hinder rural indigents from accessing formal financial services are qualitative in nature. By this, it becomes imperative for the researcher to use the mix-approach or the pragmatic approach to the study.

Study Area

The study was conducted at the Asikuma-Odoben-Brakwa District in the Central Region of Ghana. The district covers a land area of 884.84 square kilometres with population density of 127 persons per kilometre square and is located between latitude 5^0 51" and 5^0 52" North and longitude 1^0 50" and 1^0 5" West. It shares boundaries with Birim South District in the Eastern Region on the North, Ajumako-Enyan-Essiam District on the South, Assin South District to the West, and Agona East District on the East.

The district has a population of 112,706 comprising 54,293 and 58,413 males and females respectively. It has an urban population of 54,213 (48.2%) compared with a higher rural population of 58,493 (51.9%). The economically active population of the district is 75.1% and the remaining 24.9% are economically not active. Of the economically active population, 97.4% are employed, leaving 2.6% unemployed. Like many parts of Ghana, the natives are largely engaged in agriculture and related activities such as farming, fishing and forestry (GSS, 2014).

The researcher selected this study area due to the diverse nature of its population. Central Region itself is the former capital of Ghana (then Gold Coast) and has a lot of people from different background. It is also noted that the Bremans are partly Ashantis and Fantis of the Akan ethnic group. The main economic activities of the district cut across the country. Due to the relative diversity of the district, data collected from its rural areas may be generalizable across other rural areas of the Central Region or even Ghana. It is for this reason that the researcher selected the district.

Population

Since the study deals with the impact of mobile money and financial inclusion in rural communities in the Asikuma-Odoben-Brakwa District, the population of the study is defined as all adults aged 18 and above who reside in rural communities in the district. The rationale behind this definition is that since the study deals with financial inclusion, it is automatically excluding children below 18 years because children are not expected to own bank accounts. In estimating financial inclusion, researchers use adult population instead of the general population. Therefore, the study could generate misleading outcomes if attempts are made to include children in the population.

The GSS (2014) classifies communities with a population less than 5,000 people as rural. By this definition and in accordance with Appendix 'C' attached, the population of the study is 13,739 people drawn from all the fourteen rural communities in the district. Summary of the all rural communities of the district are found in appendix 'B'.

Sample Size

It is imperative to draw a sample size that can precisely define and represent the population, and perhaps, good enough to generalize across different population of similar characteristics. Yamane (1967) provides a simple formula for calculating sample size which give a good precision in a large population when random sampling technique is used. Therefore, same has been used to estimate the sample size of the study. In the formula, 95% confidence interval is assumed and the P = 0.5. The formula is given in equation 1.

Equation 1: Formula for Estimating Sample Size

$$n = \frac{N}{1 + Ne^2}$$

Where *n* is the Sample size

N is the target population. In this study, target population is 13,739 people.

e is the alpha or probability of error. Using a confidence interval (*c.i.*) of 0.95; the *e* will be calculate as $e = 1 - c.i.$ Thus, $e = -0.95 = 0.05$

Sample size: $n = \frac{13{,}739}{1+(13{,}739\times 0.05^2)} = 388.68$

Hence, the sample size used is 388 people.

Sampling Technique

The study adopted multistage sampling technique. It used four stage sampling: selection of sample size, selection of 10 out of 14 communities, selection of sample size from each community and selection of respondents from each of the 10 selected communities. This is represented in Table 2.

Table 2: Sampling Procedure

	State I	Stage II	Stage III	Stage IV
Activity	Selection of sample size	Selection of 10 out of 14 communities	Selection of sample size for each of the 10 communities	Selection of respondents
Method/ Procedure	$n = \frac{N}{1 + Ne^2}$	Balloting technique is used.	$S_n = \frac{P_c}{\sum P_c} \times n$	Simple random sampling
Notes	The formula is given by Yamane (1967). In the formula, 95% confidence	Each community was labelled and all 14 mixed and 10 randomly selected	The sample selected is the ratio of the community's adult population to	Simple random sampling technique is used to select respondents from each of

	interval is assumed and the P = 0.5	the total adult population of all 10 communities multiplied by the sample size.	the 10 communities until all the sample allotted to the communities are exhausted.

Source: Researcher's own design (2019)

Stage I involved the estimation of sample size. The sample size is calculated using sample formula given by Yamane (1967) and quoted in Equation 1. Using the confidence interval of 0.95 and P-value of 0.05 with the Population of 13,739 the sample estimated for the study is 388 respondents. At stage II, Each of the 14 communities were labelled on a sheet of paper, folded, kept in a container and mixed together so that they could no longer be identified. Ten (10) pieces of the folded papers were randomly selected and opened. Table 3 gives particulars of the ten (10) communities selected.

Table 3: Sample of 10 Rural Communities

SN	Rural Community Name	Population	Weight	Sample (S_n)
1	Breman Nwomaso	1,498	0.15	58
2	Breman Benin	1,363	0.13	52
3	Breman Fosuansa	1,336	0.13	51
4	Breman Ayipey	1,112	0.11	43
5	Breman Amoanda	1,130	0.11	43
6	Breman Kokoso	1,134	0.11	44
7	Breman Baako	1,049	0.10	40
8	Breman Anhwiam	595	0.06	23
9	Breman Towoboase	450	0.04	17
10	Breman Amanor Mante	452	0.04	17
	TOTAL	**10,116**	**1.00**	**388**

Source: GSS (2014)

From Table 2 (i.e. stage III), sample drawn from each of the 10 communities is calculated using the formula in equation 2 below.

Equation 2: Formula for Estimating Sample of Each Rural Community

$$S_n = \frac{P_c}{\sum P_c} \times n$$

Where ***Sn*** is the sample size selected from the community, $\boldsymbol{P_c}$ is the population of the community, $\sum \boldsymbol{P_c}$ is the sum of the population of all the 10 communities, and ***n*** is the total sample size of the population.

At stage IV, The study used simple random sampling technique to select respondents from each of the selected communities. However, the total number of respondents selected from each communities is found in the fifth column of the Table 3. Respondents were selected randomly from the ten selected communities in Table 3 labelled Sample (S_n.) Thus, 58 respondents were randomly selected in Breman Nwomaso, 52 randomly selected in Breman Benin, 51 in Breman Fosuansa, up to the last community (Breman Amanor Mante) where 17 respondents were randomly selected. Simple random sampling technique was used to ensure high precision and accuracy for a study with larger population. It also guarantees each member equal chance of being selected, and the respondents selected yield a fair representation of the group being sampled as sample error is minimized (Depersio, 2018).

Data Collection Instrument

Primary data was collected with the use of structured interview schedule because most of the respondents could not read and write. The instrument was made

up of both closed and both open-ended questions. Closed-ended (structured) questions are easier to be administered, consumes less time, and often appropriate when gathering quantitative data. The open-ended questions are added to the questions to obtain qualitative data that will complement the quantitative data gathered. Structured interview schedule is similar to questionnaires and is one of the most basic instruments for data collection when the study deals with large numbers. Data collected with structured interview schedules (especially closed-ended questions) are easier to analyse.

The items on the interview guide was designed taken cognizance of the study objections. The interview guide was divided into four main parts. The first part dealt with the demographic data of respondents. The second part deals with questions aimed at understanding and measuring the level of awareness, knowledge, and level of interest in mobile money by rural communities. The third part deals with mobile money usage and other financial services and factors that impede rural communities from accessing formal financial services. The final part deals with issues of security with the usage of mobile money.

Demographic variables

Among the demographics variable, age, average monthly income, number of years spent in school, number of children and number of mobile phones used were measured as continuous variable. As such, respondents were asked to specify the number. Categorical variables in the demographics were gender, occupation, sources of income, locality, education, marital status, and type of phone used. These

variable were measured by asking respondents to tick or specify their choice among options listed in each category.

Awareness, knowledge and interest in momo

In order to measure the respondents' level of awareness, knowledge and interest in momo, they were asked to indicate whether or not they are aware of momo. Then they were asked to rate their level of awareness of momo starting from perfectly aware, highly aware, moderately aware, highly unaware and perfectly unaware with perfectly aware being the most desired and perfectly unaware being the least desired. Further, respondents were presented with the three momo services (MTN, Vodafone and AirtelTigo) and asked to indicate the momo service they are aware of. Also, all momo services were listed and respondents were asked to indicate whether or not they are aware of the service.

Knowledge in momo was measured by using a 5-point Likert scale where 1 represents strongly agree and 5 represents strongly disagree. Respondents' agreement to their knowledge of all momo menu options, all momo service and understanding of momo charges were then measured accordingly.

Interest in momo was measured by actual usage and decision of non-users to use momo. Non-users were asked to indicate their likelihood of using momo from three options – Yes, No, or Maybe. Also, respondents were asked to indicate their most preferred financial service among momo account, bank account and e-zwich account.

Usage and access to momo

Respondents' usage of momo was measured by asking them to state whether they use or do not use momo. It was also measured by using the number of momo accounts owned by respondents, duration of usage, the network used, frequently used transactions, mode of transactions, time of month most transactions occur, different momo service options utilised by respondents and transactions volumes (i.e. number of transactions in the past 90 days). Transaction volume was necessary to determine whether a respondent account was active or inactive.

Access to momo was measured by using availability of momo agents (the number of momo agents per locality) and proximity to momo agent (minimum distance between subscriber and momo agent). Number of momo agents helped to determine the ratio agents-subscribers ration, and distance helped to determine average, minimum and maximum distance it takes a subscriber to reach a momo agent. These data were mainly continuous and were analysed using central tendencies, frequencies and percentages and presented in Tables.

Types of financial transactions rural dwellers use momo to perform

Here, respondents were presented with all the momo transactions options; basic transactions (cash in/out, balance inquiry), on-net funds transfer, momo interoperability, top-up airtime and data, saving, credit (momo loans), bills payments, bulk payments, insurance, remittances, and investments. They were then asked to tick the momo services they transact. Again, for each of the options, respondents were asked to specify their most frequently used transaction. They were also asked to tick or specify what they use e-money to do apart from withdrawals.

Perceived benefits of momo

From available literature and pre-testing stage, the following benefits of momo were deduced – ease of transacting, convenience, ease of registration, ease of use and affordability. A 5-point Likert scale where 1 represents strongly agree and 5 represents strongly disagree was used to measure the extent to which respondents perceive the benefits as applicable to them.

Barriers to accessing formal financial services

Financial services were divided into traditional banking services and momo services. Respondents were asked to respond 'Yes' or 'No' to the following barriers are factors that hinder them from using banking services – fear of lost of funds, fear of lock-up of funds, distance, high transactions charges, and lack of knowledge in using banking services.

Threats to momo were measured by getting respondents to indicate whether or not ('Yes' or 'No') each of the following hamper their usage of momo services – cyber fraud/scam, high transactions cost, locked-up funds, poor service, network problem, absence of momo agent, no electricity, cash shortage by agents, inability to own and operate phone. Additionally, respondent were presented with the following likely threat to momo – cyber fraud/scams, high transaction cost, network problem, poor agents service, and poor service by telcos. Using a 5-point Likert scale, they were then asked to rate the extent of agreement or disagreement with each of the factors as a threat to momo. So the study further measured this barrier as asking respondents to specify the number of time they have had attempted fraud on their momo accounts, the number of successful frauds, and the amount of funds lost through momo fraud. Respondents were also asked to rate the security on their

phones starting from perfectly secure, to highly secure, secure, highly insecure and perfectly insecure.

In view of the crucial nature of momo agents' services, respondents' perception of their services was measured. They were asked to state either they agree with the following problems as associate with agents or not – long queues, cash shortage, e-money shortage, network problem, agents unavailability and lateness. They were also made to rate the services of agents starting from excellence, very good, good, satisfactory, poor, very poor to worst.

Pretesting of research instrument

Prior to administering the questionnaire to the respondents, the researcher pre-tested the research instrument at Apagya in Breman Asikuma to have a first-hand view of how respondents will approach the questions. Ten questionnaires were administered at the pilot stage to six women and four men who had average educational qualification of senior high school. Income of these respondents ranged between Ghs 0.00 and Ghs 2,800.00 per month. Responses received by respondents and the general results of the pilot led to reframing of some of the questions and additions of some other questions and options suggested for closed ended questions

Validity and reliability

In order to ensure content validity and reliability of the data collected and the instrument, the study reviewed related literature so as to identify variables that relate to the study and how those variable have been defined and measured. Items on the interview guide were based on previous studies and objectives of the study. Questions were crafted in a way that responses elicited will answer the research questions and achieve the study objectives. Additionally, the research instruments

were reviewed by the supervisor to ensure that all relevant variables have been captured.

Also, pre-testing of the instrument was done to determine the appropriateness of the questions and the instrument. The results of the pre-testing led to modification of the questions and introduction of new questions to the instrument in order to make it valid and reliable in light of the study objectives.

Further, reliability and validity of the data and instrument were enhanced by engagement of field data officer who have prior experience in data collections. They were also given orientation to better equip them with the skills and abilities required to accurately gather the data.

Field data collection

Data was collected using face-to-face interview by trained field staff and the researcher himself. Five field staff were given a 2-day trained and they assisted the researcher in the data collection. Field officers were taken through the instruments, given basic tips and ethical requirements in data collection. They were also taken through simulation and made to participate in the piloting. Post pilot training was given to correct minor errors detected in the performance of their work. Data was collected by visitation of the field data collection team from one community to another where each respondents was interviewed separately. Even though interview questions were written in English Language, they were translated and administered in Fanti and Twi languages where respondents could not understand English language. Data collection lasted 21 days, between November and December 2019.

Data Analysis

Data collected was first edited. The purpose of this was to detect and correct errors and omissions. This process was done at the same time as data collection in the field. Each interview guide which contained responses was coded according to categorization for entry into computers for data analyses. SPSS and Spreadsheet (MS Excel) were the two main software used to analyse data.

In order to measure the level of awareness and interest in momo, its usage and patronage, perceived benefits of momo, types of financial transactions used and factors that hinder rural communities from using formal financial services, the researcher used descriptive statistics such as means, standard deviations, frequencies and percentages. The results were presented in the form of tables and charts.

Chapter Summary

The chapter discussed the methodology employed in the study. Descriptive survey design was used for the study. The study was conducted in the Asikuma-Odoben-Brakwa District in the Central Region of Ghana; the study population involved all adults in all rural communities in the study area. Multistage sampling procedure was used to select 388 respondents for the study. Structured interviewed schedule was used elicit response for the respondents. The data was analysed using descriptive statistics and the results were presented in the forms of tables and charts.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter presents the results and discussion of the study. The results are presented based on the objectives of the study. It begins with analysis of the demographic information of the respondents and their usage of mobile phones. Then followed discussion based on the research objectives. With this results are presented based on the level of awareness and interest in momo, usage of or access to momo, types of financial transactions respondents use momo to do, respondents perceived benefits of using momo, and factors that hinder rural folks from accessing formal financial services are discussed. Other essential findings such are access to momo, access to bank services, challenges with the use of momo, respondents' rating of their satisfaction with momo, banking services, and relationship between income level and financial services are discussed.

Demographics Characteristics of the Respondents

This section presents the results on the demographic characteristics of the respondents in terms of age, sex, marital status, children, occupation, education, source of income, income level, and usage of mobile money.

Age of the respondents

Table 4 presents the results on the age of the respondents. The minimum and maximum ages of respondents are 18 and 112 respectively. The mean age of respondents is 42 years with a standard deviation of 18years. The results indicates that more than half of the respondents (62%) are within the active working age of 18-45 years. This age group are very active in the use of mobile phone and hence

are more likely to own mobile account. This in effect will have a positive contribution towards financial inclusion.

Table 4: Age of the Respondents

Age (years)	Frequency	Percent	Cumulative Percent
18 – 25	93	24	24
26 – 35	70	18	42
36 – 45	79	20	62
46 – 55	65	17	79
56 – 65	36	9	88
66+	45	12	100
Total	388	100	
mean age = 42, median = 42, mode = 46, Standard deviation =18.053, Max age = 112, Min age = 18			

Source: Field Data (2019)

Sex of the respondents

The sex of the respondents is presented in Figure 10. The results show that more than half (52.6%) of the respondents are males with the remaining 47.4% being females. The findings shows that the choice of the respondents was fairly balanced between male and females.

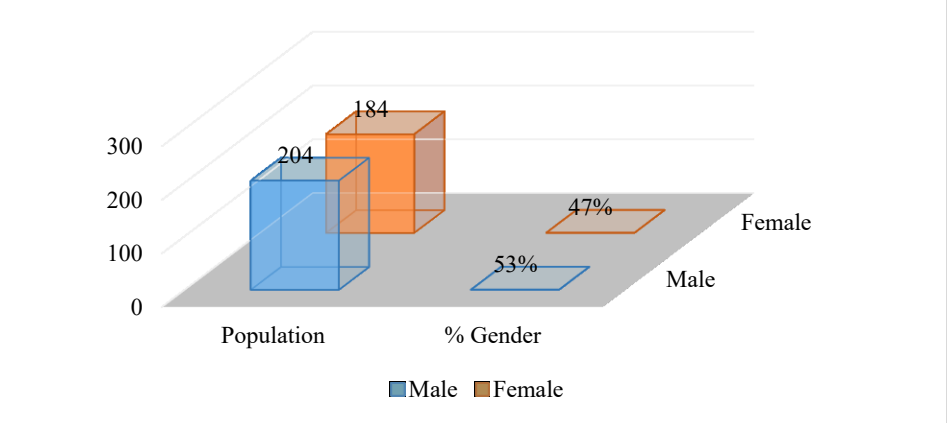


Figure 10: Gender of Respondents
Source: Field Data (2019)

Per the GSS (2014) report, the district population is made up of 48% males and 52% females. However, in the study, gender was not the main factor though attempts were made to balance the respondents randomly to include relatively fair representation of both males and females.

Occupation of Respondents

The main economic activities in the district is agriculture and related activities. It was therefore not surprising to find majority of respondent whose occupation was farming. Occupation of respondents are presented in Figure 11.

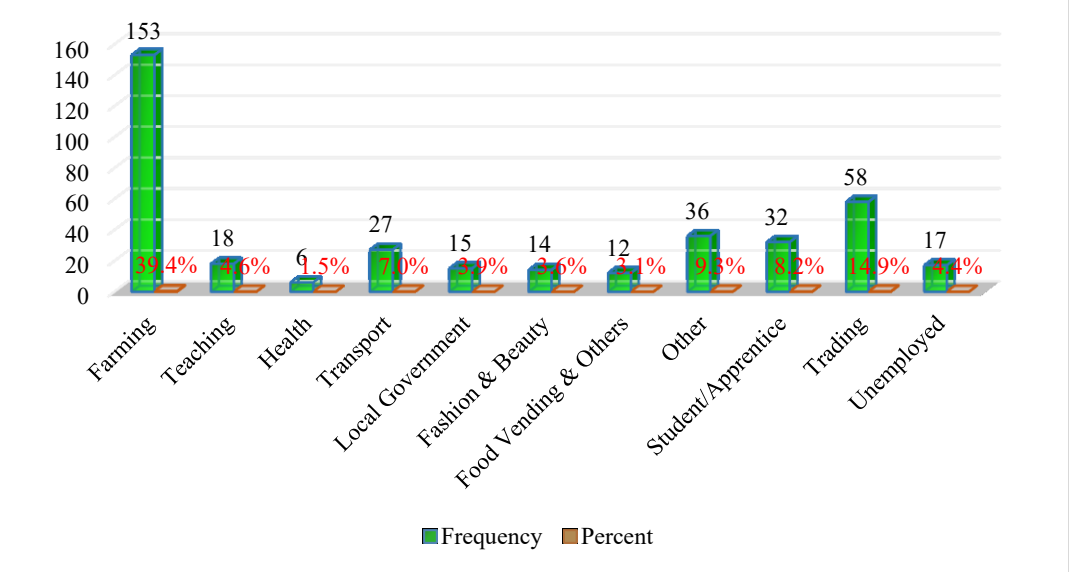


Figure 11: Occupation of Respondents

Source: Field Data (2019)

The study revealed that 153 of the respondents representing 39.4% were engaged in farming. Trading is the second major economic activity employing 58 (14.9%) of the respondents. Among the respondents, 32 (8.2%) were either students or engaged in apprenticeship and 36 (9.3%) are engaged in other activities. Other occupation of respondent were transport (7.0%), teaching (4.6%), local government

(3.9%), fashion and beauty (3.6%), food vending (3.1%), and health professionals (1.5%). The remaining 4.4% of the respondents were unemployed. The results showed that the majority of the people in the district are employed. This implies that they are able to earn some income and as such falls within the mobile money account target group.

From Figure 12, agriculture and trade mainly in agriculture products are the main economic activities of the labour force. The data largely corroborates with the GSS (2010) data that the labour force in the district are mainly into Agriculture with few people engaged in other occupations. Per the district report, over 60% are into agriculture and related activities with about 6% engaged in other occupations. This data largely agrees with the finding of the study that majority of the labour force are into agriculture and related activities. Minor deviations occur in terms of the professionals activities due differences in classification of occupational activities.

Respondents' source of income

The respondents' main source of income corroborated their employment status. Figure 12 gives summary of respondents' source of income.

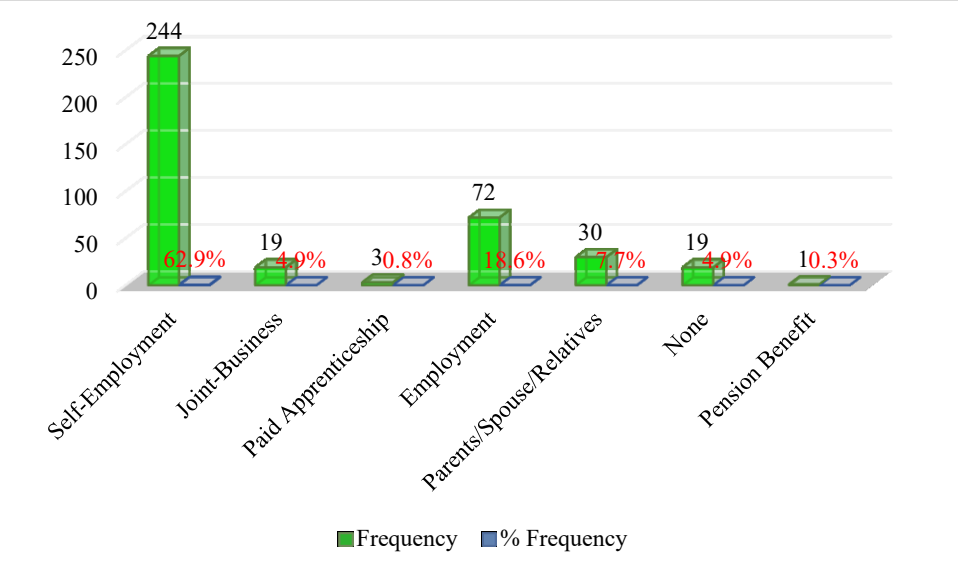


Figure 12: Respondent's source of income

Source: Field Data (2019)

It is observed from Figure 12 that 244 (62.9%) of respondents earn their income through self-employment. Similar to this are those who operate join business/farming. Of the respondents interviewed, 19 respondents representing 4.9% are engaged in joint business/farming, whist 3 (0.8%) earn their incomes through paid apprenticeship. Respondents who received employment income, but are supported by their parents or relatives or spouses were 30 respondents (7.7%); 19 respondents (4.9%) do not have any reliable source of income; 1 (0.3%) respondent earn income through pension benefit. Respondents who are engaged in paid employment other than those stated above are 72 representing 18.6%. Once majority of respondents are self-employed, the expectation is that they will use convenience and less cost forms of financial services like momo to make payments for goods and services.

Income of the Respondents

Statistics of respondents' income and levels (range) of income are presented in Table 5 and Figure 13 respectively. The results revealed that the respondents earned an average monthly income of Ghs 510 with a standard deviation of Ghs 542. The monthly income of the respondents range for Ghs 0.00 to Ghs 3,000.00.

Table 5: Statistic of Respondents Monthly Income

Statistics	Amount (Ghs)
Mean	510.1186
Std. Deviation	542.03028
Range	3000.00
Minimum	0.00
Maximum	3000.00

Source: Field Data (2019)

Ghana's daily minimum wage rate is Ghs 11.82 translating into approximately Ghs 355.00 per month (GhanaWeb, 2019). Whereas the mean and modal monthly incomes exceed the Ghana's monthly minimum wage of Ghs 355.00. It is noted that 206 (53.1% of) respondents earn monthly income below Ghana's monthly minimum wage. By implication, majority of the respondents earn income less than the minimum monthly income which signals a lower standard of living. Similarly, 262 respondents representing majority (67.5%) of respondents earn incomes below the average income of Ghs 510.00 whilst only 126 respondents representing few (23.5%) of respondent earn income above the average income. This further supports the low standard of living of majority and the wide gap between high income earners and low income earners where much of the income is earned by few leaving majority with lower income. Income is very critical economic variable that determine peoples' ability and willingness to maintain a

bank account. The World Bank (2014) report shows that high income economies have higher financial inclusion rate than low income economies.

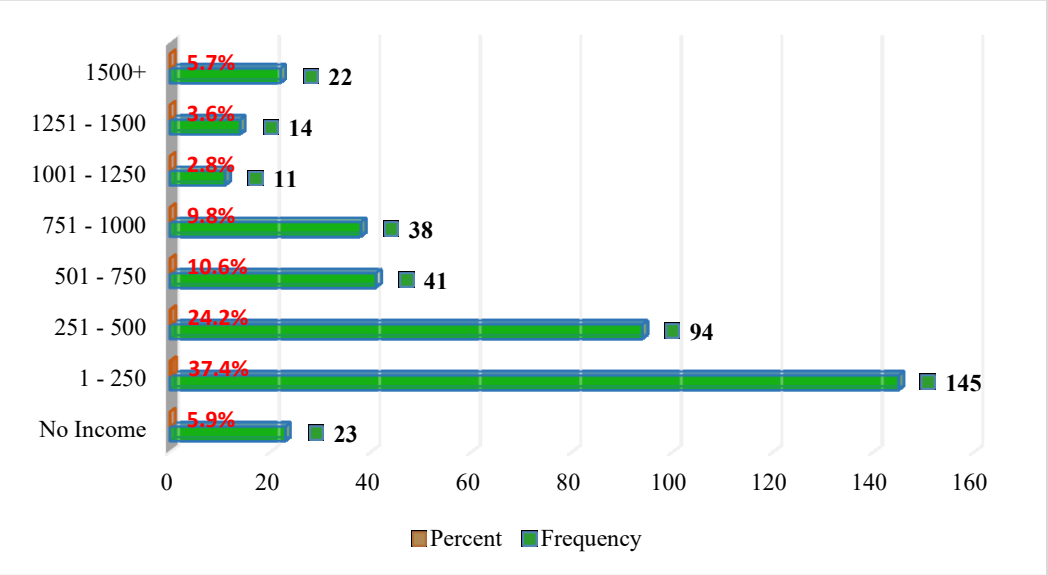


Figure 13: Income Distribution of Respondents

Source: Field Data (2019)

From Figure 13, twenty-two respondents representing 5.7% earn incomes above Ghs 1,500.00. Majority of respondents fall within an income bracket of Ghs 1.00 to Ghs 250.00 which is earned by 145 respondents, representing 37.4%. This was followed by Ghs 251.00 to Ghs 500.00 income bracket earned by 94 (24.2% of) respondents; then by Ghs 501.00 - Ghs 750.00 income bracket earned by 41 (10.6% of) respondents. The income bracket with the lowest number of respondents is Ghs 1001.00 to Ghs 1,250.00 which is earned by 11 (2.8%) of respondents. This is followed by Ghs 1,251.00 to Ghs 1,500.00 income bracket earned by 14 (3.6% of) respondents. High incomes are associated with high financial inclusion rate and vice versa. Therefore, low incomes witnessed among respondents may correspond

with relatively lower financial inclusion and lower activity rate on their momo accounts.

Education of Respondents

Table 6 present the results on level of education of the respondents. The results indicates that all the respondents except 52 have had some form of education. The data shows that 38 respondent (9.8%) have had post-secondary or tertiary education. The number of respondent who have had SHS/O/A' Level education is 131 representing 33.8%. In sum, 169 respondents (43.6%) have had at least SHS/O/A' Level education. Also, 114 respondents (29.4%) have had JHS/MSLC education. This makes a total of 283 respondents (73.0%) to have had at least JHS/MSLC education. This result corresponds with the district data of 86.6% of the population who have had at least primary school education. The results does not also deviate much from the district data on literacy rate estimated at 79.0% (GSS, 2014).

Table 6: Respondents' Level of Education

Level of Education	Frequency	Percentage	Cumulative Percentage
None	52	13.4	13.4
Primary	53	13.7	27.1
JHS/MSLC	114	29.4	56.4
SHS/O', A' Level	131	33.8	90.2
Tertiary	38	9.8	100.0
Total	388	100.0	

Source: Field Data (2019)

The number of respondents who have never been to school is 52 (13.4%). This is lower than the district rate of 18.4% because the district data uses persons aged 3 years or more, whereas the study used persons aged 18 years or above. That data does not also differ much from the district's illiteracy rate of 21.0%. The use

of mobile phone and for that matter, momo requires some level of literacy. Those who have at least JHS education or above will be able to better maximize the rich services offered by momo than those with lower than JHS education. This is relevant to analysing the social exclusion – financial inclusion hypothesis.

Marital Status of the Respondents

The results on marital status of the respondents is presented in Figure 14 and showed that 260 respondents (67.0%) are married whilst 114 respondents (29.4%) are single. Ten respondents (2.6%) are widowed, 3 respondents (0.8%) are divorced and 1 respondent (0.3%) is separated.

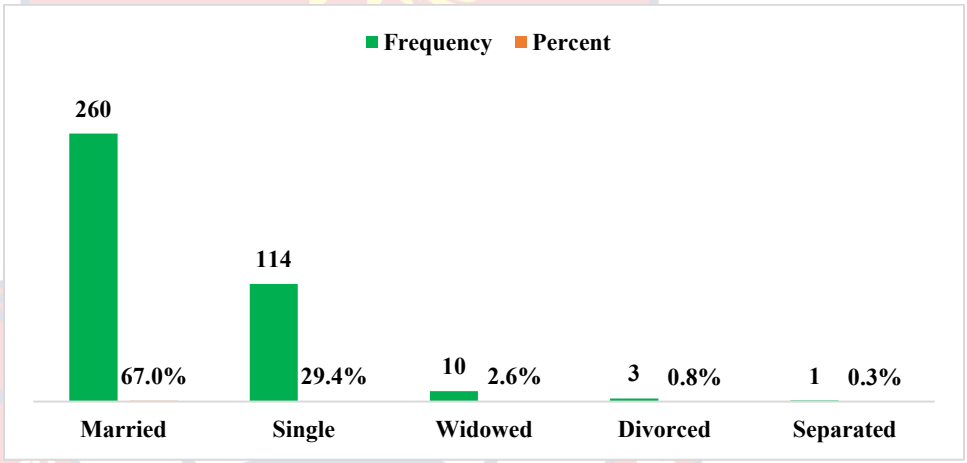


Figure 14: Marital Status of Respondents

Source: Field Data (2019)

Number of Children

Table 7 shows the statistics of number of children of respondents. Number of children of respondents is important as that gives an idea about the dependency ratio.

Table 7: Respondents' Number of Children

No. of Children	Frequency	Percentage	Cumulative Percentage
0	82	21.1	21.1
1 – 3	147	37.9	59.0
4 – 6	102	26.3	85.3
7 – 9	49	12.6	97.9
10+	8	2.1	100.0
Total	**388**	**100.0**	

Source: Field Data (2019)

Eighty-two of the respondents (21.1%) do not have children. The maximum number of children of respondents is 14 children owned by only 1 respondent. The average number of children is 3. Also, a total of 147 respondents (37.9%) have 1 to 3 children; 102 respondents (26.3%) have between 4 to 6 children; 49 respondents (12.6%) have 7-9 children; whilst only 8 respondents (2.1%) have 10 or more children. Momo has become the convenience means through which parents remit fund to their children in schools outside their localities. Therefore, depending on the number of children, their level of education and location of schools, momo activities on their parents (respondents) could be high or low.

Mobile Phone Usage

Mobile money usage is made possible by cell phones. It is therefore important to consider mobile phone usage rate and penetration among respondents. It is worthy of note that mobile phone ownership corresponds with usage. Thus, high mobile phone ownership means high usage of mobile phones and possibility of usage of mobile money. Details of mobile phone ownership is given in Table 8.

Table 8: Mobile phone usage of respondents

Number of Phones Used		Frequency	Percentage	Cumulative Percent
Valid	0	50	12.9	12.9
	1	308	79.4	92.3
	2	28	7.2	99.5
	3	2	0.5	100.0
	Total	**388**	**100.0**	

Source: Field Data (2019)

GSMA (2013) found increasing penetration of mobile phones in Ghana, especially in the rural areas. JUMIA found 119.0% mobile phone penetration in 2018. In 2019, NCA data showed an increase in the mobile phone penetration to 138.4%. From the study, it was found that 370 phones were being used by the 388 respondents. This represents 95.4% penetration. Mobile phone penetration in rural areas is lower compared with urban areas. The 95.4% penetration is the rural areas is significant improvement and a positive signal for mobile money usage. It is also found from the study that 50 respondents (12.5%) do not use mobile phone. Thus, 338 respondents (87.5%) use mobile phone. Respondents who use only one phone are 308 (79.4%); 28 (7.2%) use two phones and 2 (0.5%) use three mobile phones.

Types of Phones Used

Figure 15 present the results on the types of phones used by the respondents. It was found from the study that more than half of the respondents (64%) use non-smart phones. Those who use smartphones ae 31% whilst 5% use both Smartphone and Non-Smartphone. It is important to note that mobile money service is compatible with all types of phones.

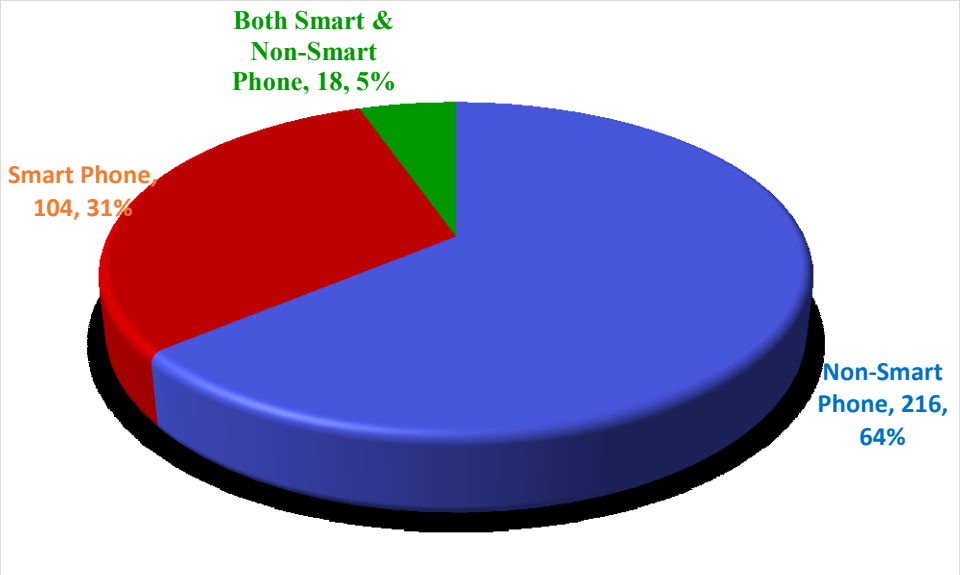


Figure 15: Types of Mobile Phones Used By Respondents

Source: Field Data (2019)

Respondents Level of Awareness and Interest in Mobile Money

Mobile money is very common in cities and the level of awareness is so high. Same may not be said about rural areas. The first objective of the study was to examine the level of awareness, knowledge and interest of rural residents about mobile money. The following discuss the respondents' state of awareness of momo, gender distribution of awareness, level of awareness, awareness by service provider, awareness of momo transactions, and respondents' knowledge of momo options, services and fees. Interest in momo is measured by respondents' preference for momo relative to other financial services.

State of Respondents' Awareness of MoMo

Respondents' state of awareness or momo or otherwise is presented in figure 16.

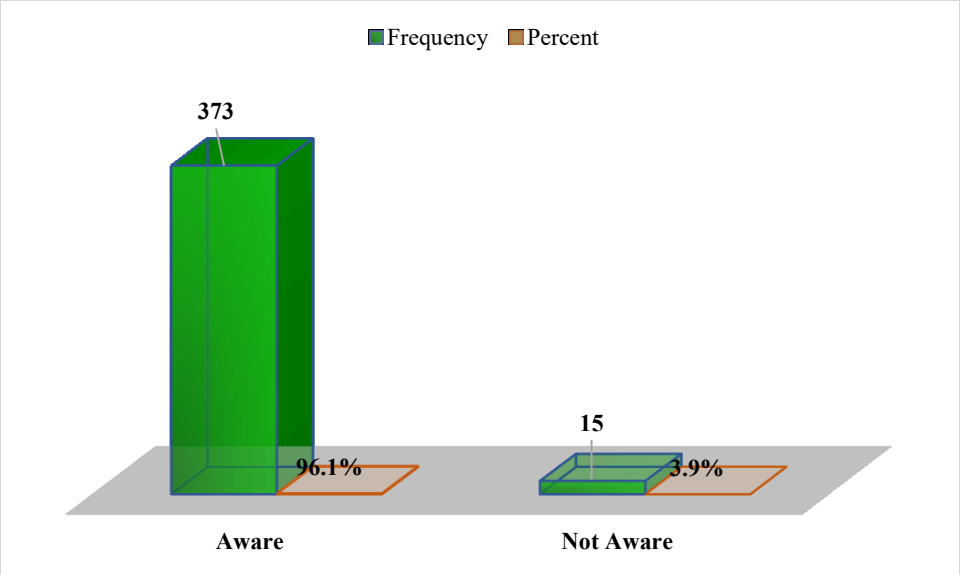


Figure 16: Awareness of Mobile Money

Source: Field Data (2019)

Results of the study showed that 373 respondents representing 96.1% are aware of mobile money. Only 15 respondents representing 3.9% are not aware of the existence of mobile money. It can therefore be concluded that there is a very high level of awareness of mobile money in rural communities.

Respondents' Awareness of MoMo Based on Gender

Gender is one of the factors considered in discussing financial inclusion. The study found in the unaware category that more female are unaware of mobile money than males. And in the awareness category, more males are aware of mobile money than females as shown in Table 9.

Table 9: MoMo Awareness by Gender

	Aware of MoMo		Not Aware of MoMo		Total	
Gender	Frequency	Percent	Frequency	Percent	Frequency	Percent
Men	200	98.0	4	2.0	204	100.0
Women	173	94.0	11	6.0	184	100.0
Total	373	96.1	15	3.9	388	

Source: Field Data (2019)

The study revealed that 200 men representing 98.0% of men are aware of mobile money as against a total of 173 women (94.0%) who are aware of mobile money. Conversely, within the unaware category, 4 men (2.0%) are unaware of mobile money, whilst 11 women (8.0%) are not aware of mobile money. It can therefore be concluded that more men are aware of mobile money than women.

Respondents Level of Awareness of MoMo

To further analyse the depth and breadth of awareness, the study gathered data on the level of awareness of mobile money as mere awareness may not be enough to enable a good conclusion. Respondents were asked to indicate their level of awareness starting from perfectly unaware to perfectly aware, and the results of it is shown in Figure 17.

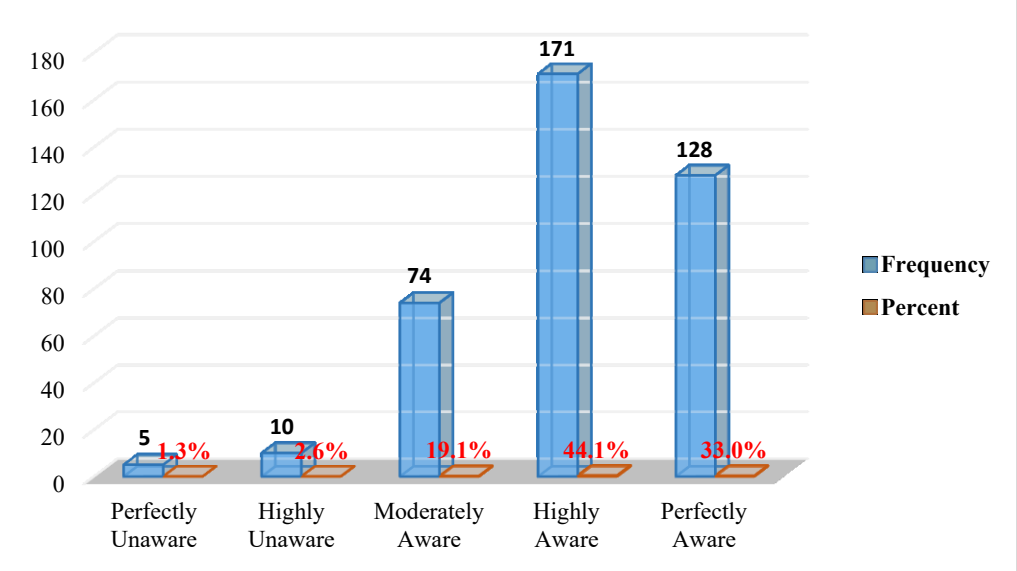


Figure 17: Level of Awareness of Mobile Money

Source: Field Data (2019)

From Figure 17, out of the 15 (3.9%) respondents who are not aware of mobile money, 5 (1.3% of) the respondents are completely unaware of mobile money, whilst 10 (2.6% of) respondents are highly unaware of mobile money. Out

of the 373 (96.1%) respondents who are aware of mobile, majority of them show high to perfect level of awareness of mobile money. Thus, 299 respondents (77.1%) show high to perfect awareness of mobile money. Only 74 respondents (19.1%) show moderate level of awareness. Also, out of the remaining 299 respondents (77.1%); 171 (44.1%) show high awareness level and 128 (33.0%) show prefect level of awareness. This further strengthens the evidenced of very high level of mobile money awareness in the study area.

Momo Awareness Based on Service Provider

Figures 18 and 19 give details of respondents' awareness of momo based on service providers. The data presented in Figure 18 shows that 370 respondents (99.2%) are aware of MTN Mobile Money than other networks. Whereas 265 (71.0% of) the respondents are aware of Vodafone cash and other networks, 253 respondents (67.8%) are aware of Airteltigo cash and other mobile money networks.

MTN MoMo continue to dominate the mobile money market with a significant share of 93.5%, followed by Airtel Tigo Cash with a share of 3.5% and then by Vodafone cash with 2.52% (Ghana Chamber of Telecommunications, 2018). It was therefore not surprising that most of the respondents show strong awareness of MTN MoMo than AirtelTigo and Vodafone Cash.

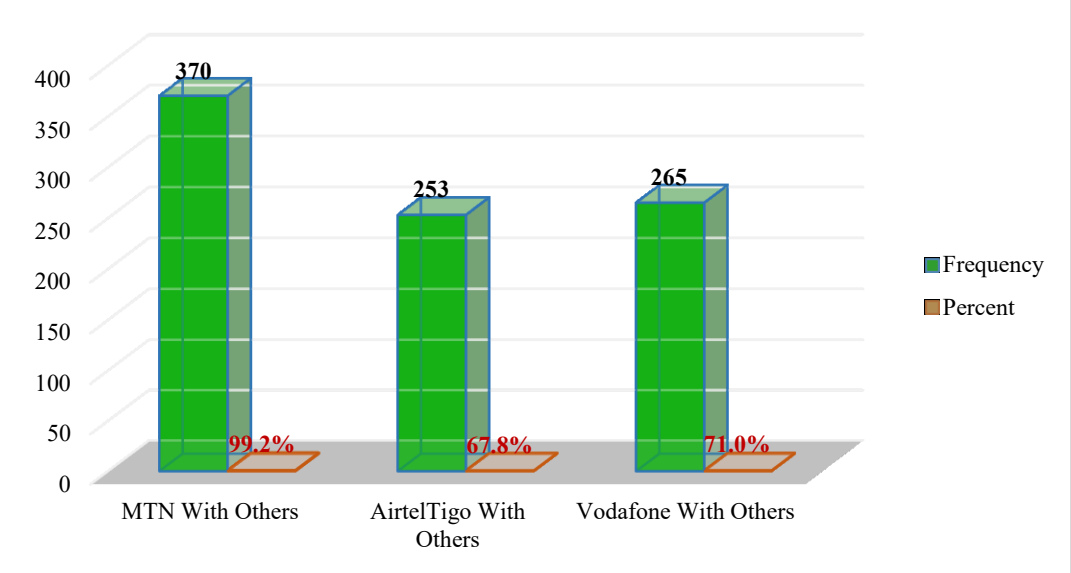


Figure 18: MoMo Awareness by Service Provider

Source: Field Data (2019)

Figure 19 gives a further breakdown of the data on awareness of momo by service provider.

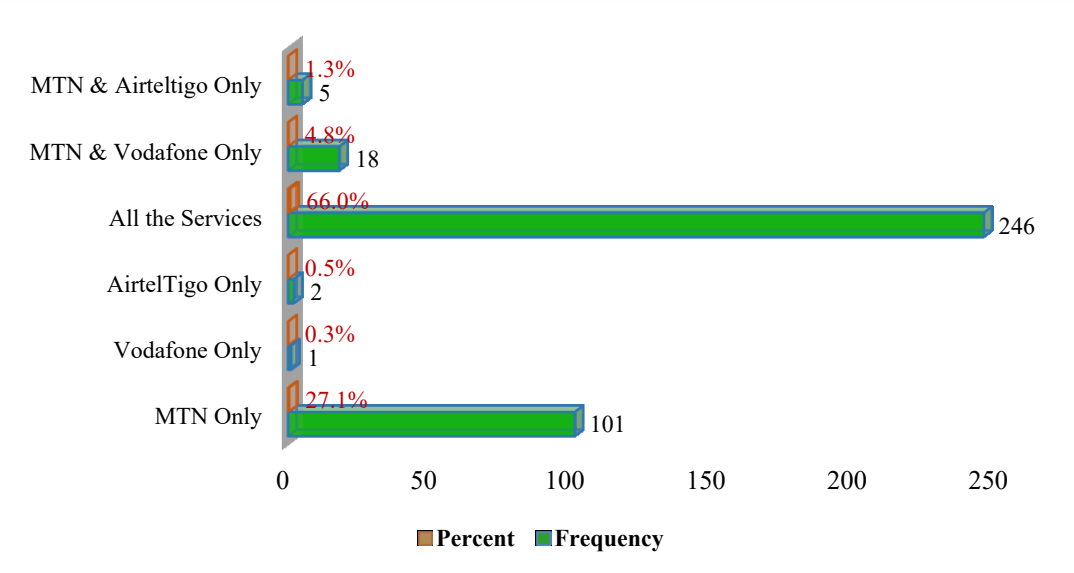


Figure 19: Further Analyses of MoMo Awareness by Service Provider

Source: Field Data (2019)

From Figure 19, 101 (27.1%) of the respondents who are aware of mobile money are aware of MTN Mobile Money only. About one-third (0.3%) of them are aware of Vodafone Cash only, and 2 (0.5%) of respondents are aware of Airteltigo Cash Only. Also, 246 respondents (66.0%) are aware of all the three mobile money service provides, whilst 18(4.8%) and 5 (1.3%) of respondents are aware of MTN and Vodafone Cash and MTN and Airteltigo Cash respectively. Thus, majority of respondents are aware of MTN MoMo than Vodafone and Airteltigo Cash.

From the forgoing analysis, it is conclusive that the rate of mobile money awareness in study area is almost 100%, and it is clear that respondents in the study communities are very much aware of mobile money. It can therefore be concluded that MTN mobile money is the most widely known mobile money service in the rural area.

MoMo Transactions Awareness

Mobile money offers variety of services including basic transactions of cash-in, cash-out, balance inquiry; funds transfer (on-net), interoperability funds transfer (i.e. transfer across all networks, e-zwich, Visa Machines, PoS and Bank Accounts), top-up airtime and data, personal savings, credit/loans, bills payments, bulk payments, insurance, domestic or international money transfers, and investments in shares and other products. Results of respondents' awareness of each of these services or transactions are displayed in Figure 20.

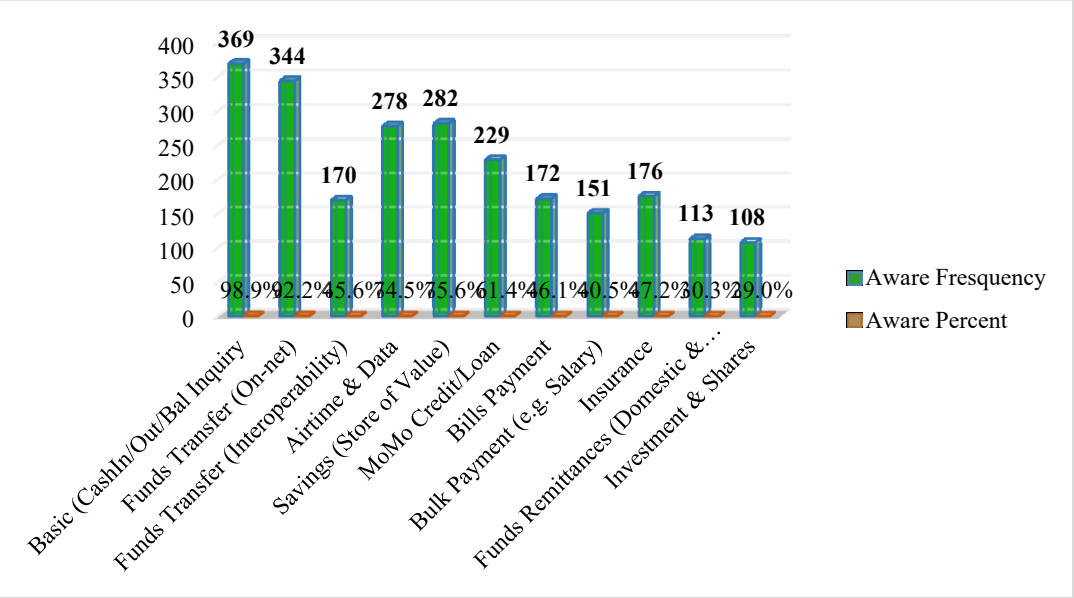


Figure 20: MoMo Transactions Awareness

Source: Field Data (2019)

The results in Figure 20 show that respondents are mostly aware of basic transactions of cash-in, cash-out and balance inquiry. Thus, 369 respondents (98.9%) are aware of this transactions. This was followed by on-net funds transfer which has awareness of 92.2%. Other mobile money services that has high awareness levels are airtime/data purchase, savings (store of value), and MoMo credit (loan) recording 74.5%, 75.6% and 61.4% respectively.

Transactions whose awareness level fall below 50% are bills payment (172 respondents, 46.1%), mobile money interoperability (172 respondents, 45.6%), mobile money insurance (172 respondents, 47.2%), and bulk payments such as salaries (151 respondents, 40.5%). Respondents demonstrated least awareness of the use of mobile money for domestic and international funds remittances, and investments such as shares.

Respondents' Knowledge of MoMo Services, Menu Options and Fees

Another areas of interest in the respondent's awareness of mobile money is their knowledge of all mobile money options in the service menu, all mobile money services, and understanding of the mobile money fees.

Respondents' knowledge of all momo services or menu options are presented in Figure 21.

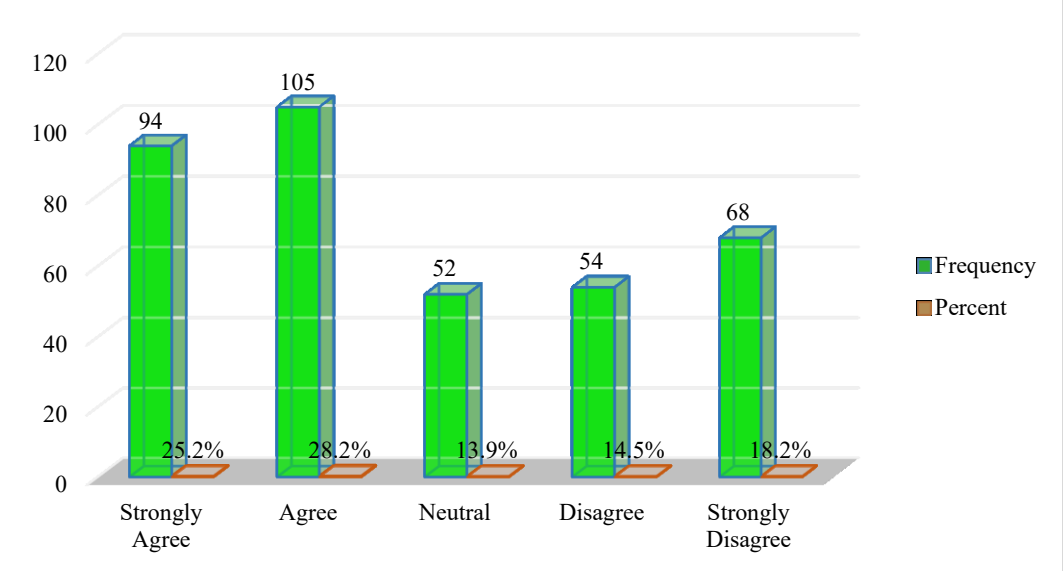


Figure 21: Respondents Knowledge All MoMo Options

Source: Field Data (2019)

From Figure 21, out of the 373 respondents who are aware of mobile money, 199 respondents representing 53.4% either agree or strongly agree that they are aware of all mobile money options in the menu. Thus, most of the respondents agree that they know all the mobile money options. Though 52 respondent (13.9%) remain neutral of this question, a total 122 respondents (32.7%) disagree or strongly disagree to the statement that they know all mobile money options.

Apart from respondents' knowledge of mobile money options, they were also were interviewed about their agreement or otherwise to the statement that they

know all the mobile money services (i.e. MTN MoMo, AirtelTigo Money and Vodafone Cash. Their responses are displayed Figure 22.

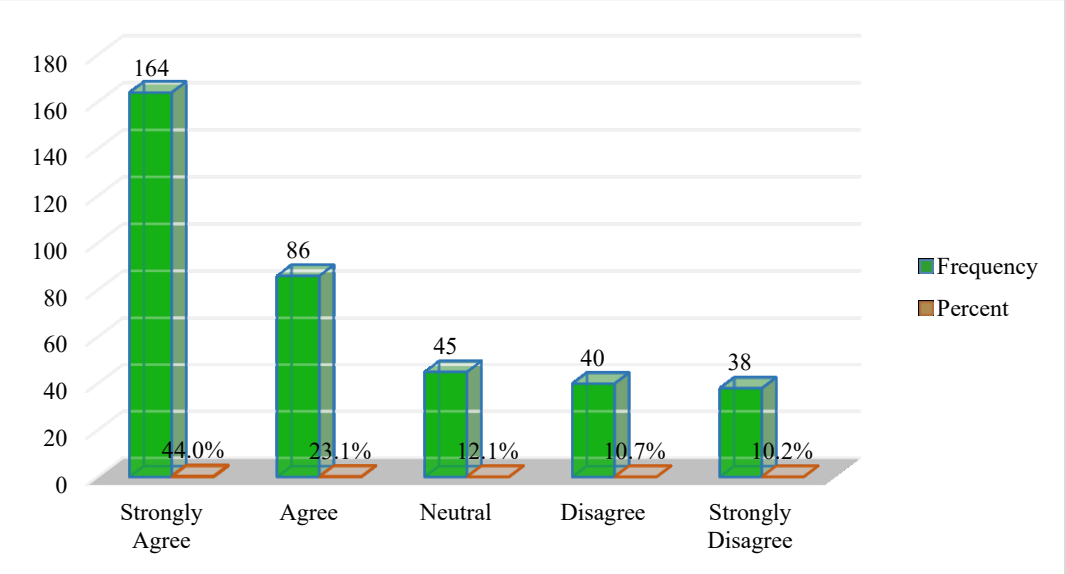


Figure 22: Respondents Knowledge of all MoMo Services

Source: Field Data (2019)

Majority of the respondents strongly agree that they know all the mobile money services. Respondents who strongly agree that they know all mobile money services were 164 representing 44.0% and 86 respondents (23.1%) also agree to this question. In all, 250 respondents representing 67.1% agree or strongly agree that they know all mobile money service providers. Only 78 respondents (20.7%) disagree or strongly disagree, whilst 45 respondents (12.1%) remained neutral.

Calculation of mobile money fees could be a challenge to mobile money users. So respondents were asked as to whether they know the fees charged for various services. Results are displayed in Figure 23.

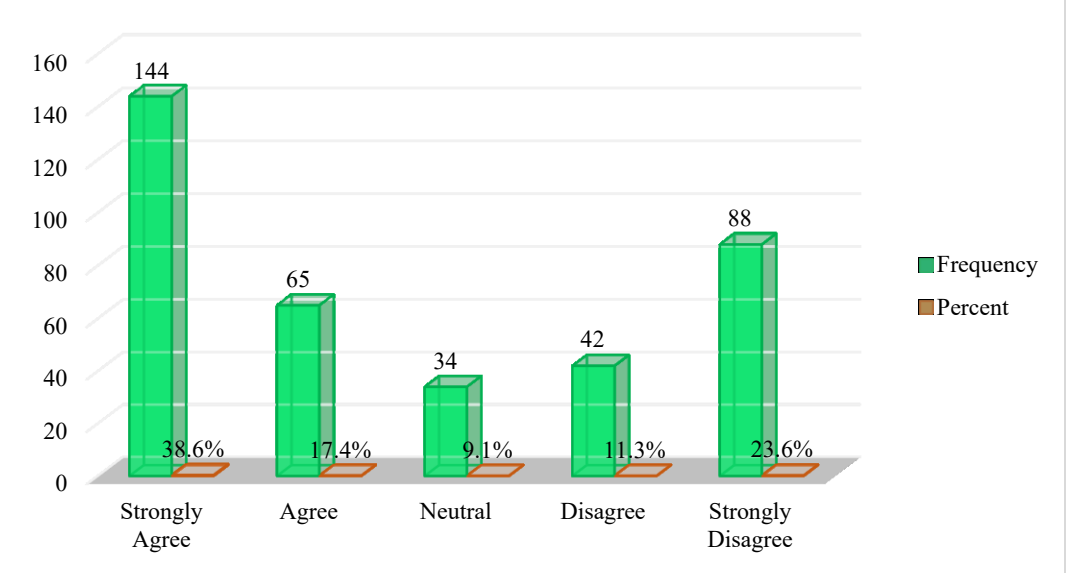


Figure 23: Respondents Knowledge of MoMo Charges or fees

Source: Field Data (2019)

Figure 23 revealed that over 50% of respondents understand the fees they are charged for mobile money services. Respondents who agree or strongly agree that they have good knowledge of momo charges are 144 representing 56%. Even though 34 (9.1%) remain neutral, 130 respondents representing 34.9% said they do not understand how mobile money fees are charged. More than 50% showed that they have more knowledge on mobile money fee charging procedure.

Respondents' Interest in Momo

Respondents' interest in momo was discuss relative to their preference for momo over other financial services. Respondents were presented with momo, bank, e-zwich services to make a choice. The results of their responses are shown in Table 10 below.

Table 10: Rural Indigents Preferred Financial Services

Preferred Financial Service	Male		Female		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Mobile Money	146	71.6	143	77.7	289	74.5
Bank	54	26.5	31	16.8	85	21.9
E-zwich	3	1.5	2	1.1	5	1.3
None	1	0.5	8	4.3	9	2.3
Total	204	100.0	184	100.0	388	100.0

Source: Field Data (2019)

From Table 10 above, it emerged that 289 respondents (74.5%) prefer momo as their financial service, 85 respondents (21.9%) prefer bank account, 5 respondents (1.3%) prefer e-zwich, and 9 (2.3%) prefer none of the financial services. The results thus, show that rural indigents' preference for momo is more than 3 times higher than their preference for traditional banking services. It can also be concluded that responses interest in momo is much higher than other financial services.

Also, 71.6 percent of men prefer momo whilst 77.7 percent of women prefer momo. On the contrary, 16.8 percent of women prefer bank services as against 26.5 percent of women. It therefore means that more women prefer momo than men, and more men prefer bank than women.

Extent of Usage or Patronage of MoMo by Rural Dwellers

The second objective of the study was to measure the extent of usage or patronage of mobile money by rural dwellers. In this study rate of momo usage is defined to mean momo financial inclusion. Therefore this section of the thesis covers respondents' usage of Momo, the length of time of usage, gender and momo usage, non-users' decision to use momo. Also discussed here are momo service

preferences, number of momo accounts, momo transactions volumes, and respondents' mode of transaction.

Respondents' Usage of MoMo

The results on usage of momo are presented in Figure 24.

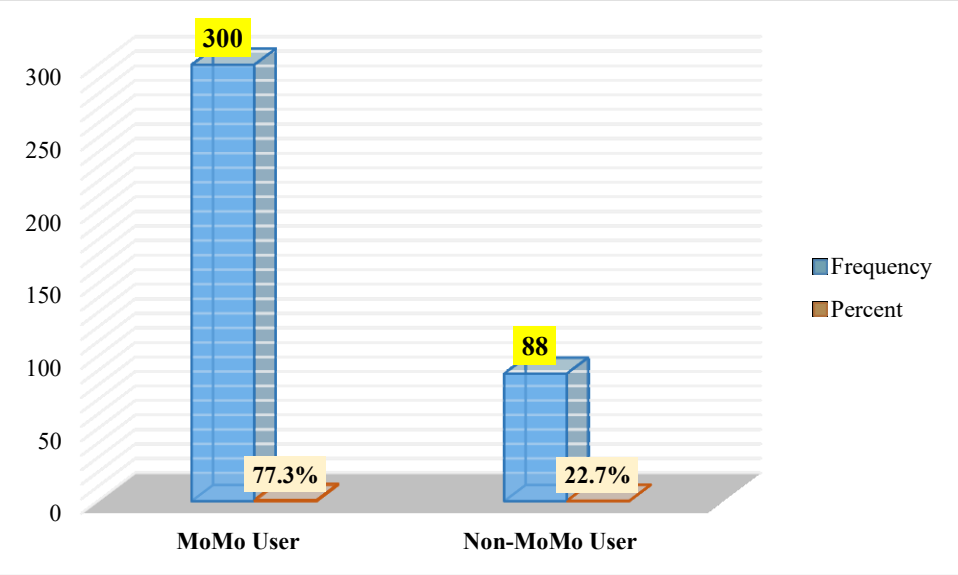


Figure 24: MoMo Usage

Source: Field Data (2019)

It was found that 300 respondents (77.3%) use mobile money, whereas 88 respondents (22.7%) do not use mobile money. It can therefore be concluded that mobile money financial inclusion rate in the study area is 77.3%. Global financial inclusion is 69.0% as shown in Table 1. Even though Boateng (2019) estimated mobile money financial inclusion rate of 83.1%, an analysis of data from Bank of Ghana showed that mobile money financial inclusion in Ghana has risen from 30.4% in 2015 to 50.8% in 2016, 66.5% in 2017, 76.3% in 2018 and 82.7% in 2019. The 2019 momo financial inclusion rate of 82.7% compared with the 77.3% recorded in the study area is enough conclusive evidence of high momo presence in rural communities. It must however be noted that the estimates of Boateng (2019)

and the BoG (2019) data uses the number of active mobile money accounts and not the number of people using mobile money as given above. Albeit, it can be concluded that there is a very high mobile money financial inclusion rate in the rural area.

Duration of Usage of Mobile Money

The study sort to find out the length of time respondents have been using mobile money. This was relevant as it shows the experience of respondents in the use of the services. Results from the field as presented in Figure 25 showed that an average momo user has been using the service for 3.75 years. The least duration of usage of momo is 3 months whilst the maximum duration is 10 years, implying that mobile money was already in usage at the rural areas in the year of introduction.

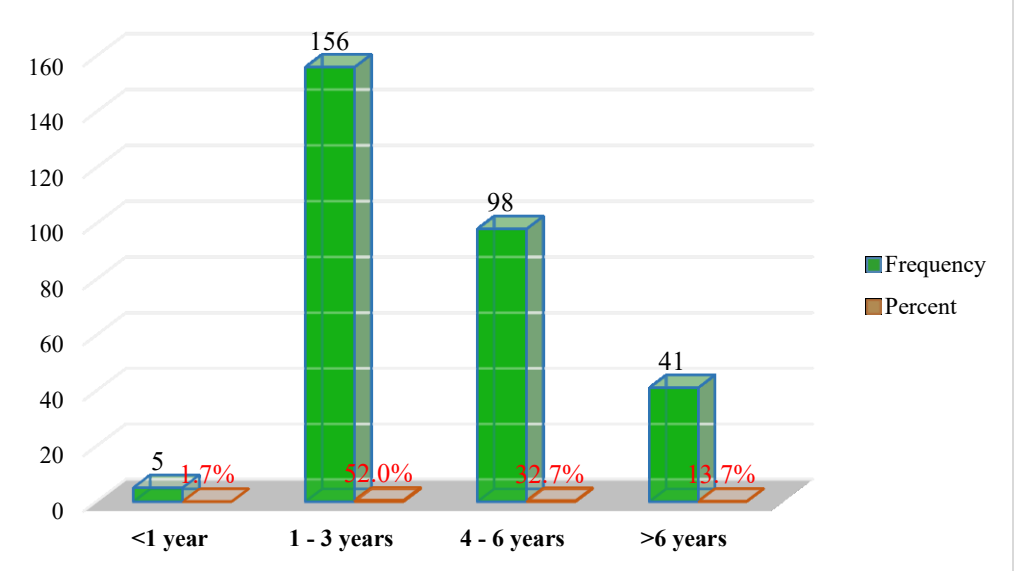


Figure 25: Length of Time of MoMo Usage

Source: Field Data (2019)

From Figure 25, only 5 respondents (1.7%) have less than one year experience in the use of mobile money. Respondents who have been using momo

for the past 4 to 6 years amounted to 98 (32.7%), whilst 41 respondents (13.7%) have more than 6 years of experience in mobile money usage. Respondents who have used momo for more than 1 years are 98.3%. It can therefore be concluded rural communities have rich experience in momo usage.

Gender and Mobile Money Financial Inclusion

It is important to analyse the gender composition of the mobile money users. Figure 26 gives details of the gender composition of the mobile money financial inclusion.

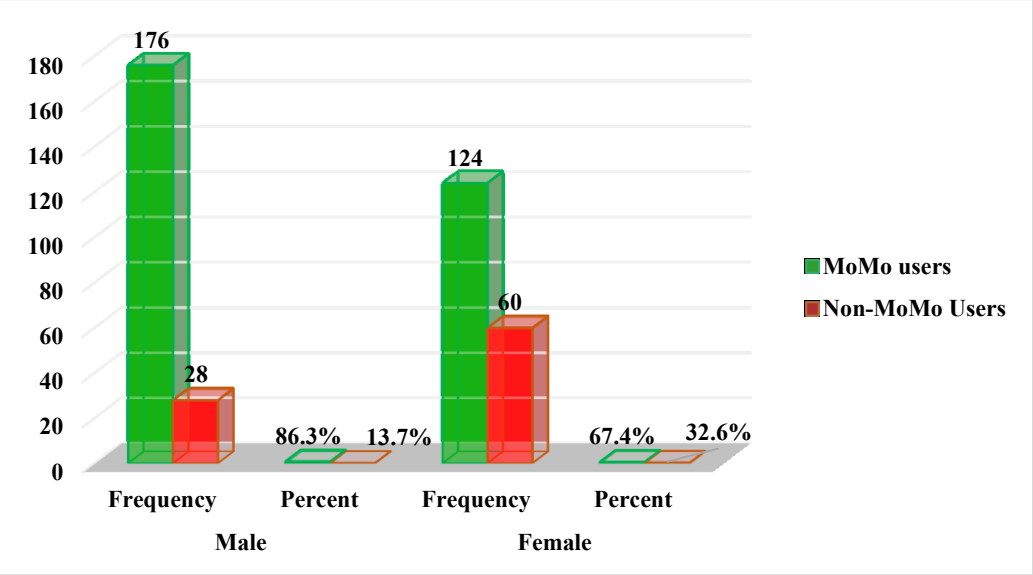


Figure 26: Gender and MoMo Financial Inclusion

Source: Field Data (2019)

Out of the 184 women interviewed, 124 (67.4%) are momo users. Conversely, 176 (86.3%) of the 204 of the men interviewed are momo users. Therefore, mobile money financial inclusion in rural areas shows more men included than women. More women continue to be excluded financially than men. This is in line the general trend higher inclusion of men than women. This findings

correlates with the World Bank (2019) data as it also found more men financially included than women.

Non-users Likelihood of Using MoMo

Respondents who do not use mobile money were interviewed on their decision to use or not to use mobile money in the future. This measures the interest of rural folks in momo. The results from Table 11, indicates that 53.6% of men non-users of mobile money will surely use mobile money if they are offered the opportunity, compared with 50.0% of women non-users.

Table 11: Non-Users of MoMo Decision to Use MoMo

Decision to Use MoMo	Male		Female		Total	
	Freq	%	Freq.	%	Freq.	%
Will Surely Use MoMo	15	53.6	30	50.0	45	51.1
Will Surely Not Use MoMo	2	7.1	5	8.3	7	8.0
May Use MoMo	11	39.3	25	41.7	36	40.9
Total	28	100	60	100	88	100

Source: Field Data (2019)

The results further showed that, 7.1% of men non-users are not willing to use the service in future. However, 8.3% of women non-users of mobile money will surely not use mobile when they are offered the opportunity. Thus, majority of non-user will surely use momo when offered the opportunity. Also, more men non-users are likely to use than women non-users. It can therefore be concluded that there is higher interest in momo by rural communities, but men have more interest than women.

MoMo Service Preference

Respondents were also asked to indicate their preferred mobile money service. Results is displayed in the Table 12.

Table 12: MoMo Service Preference

Respondents' Preference of MoMo Service		
MoMo Service	Frequency	Percent
MTN MoMo	365	96.3
Any Network	1	0.3
Vodafone Cash	7	1.8
Airteltigo Cash	6	1.6
Total	351	100.0

Source: Field Data (2019)

Not quite surprising, the data reveal high preference for MTN mobile money, followed by Vodafone Cash and then by Airteltigo Cash. In the 351 responses, 365 (96.3%) prefer to use MTN mobile money, 7 (1.8%) prefer Vodafone Cash, 6 (1.5%) prefer Airteltigo Cash, but 1 (0.3%) prefer to use any of the networks. This is mainly because MTN network has wider connectivity to most rural communities in Ghana than the other networks

Number of Mobile Money Accounts

In the narrow sense of mobile money financial inclusion, all owner of active mobile money accounts are said to be financially included. The study found that in 2019, there existed 14.46 million active mobile money accounts used by adult population of 17.48 million adults. This represents 82.7% inclusion rate nationwide (BoG, 2019). Given low inclusion rate in rural and poor communities, it would have been expected that the inclusion rate in the rural areas of Asikuma-Odoben-Brakwa

would be lower than national average. Conversely, the study found an improved performance in the rural communities. . The results as presented in Figure 27 show that out of the 388 respondents, 327 account, representing 84.3% have mobile money accounts. However, 4 of the account are inactive whilst 323 accounts are active. Hence, active momo financial inclusion in rural areas is 83.2 which is above the national momo financial inclusion rate of 82.7 in 2019.

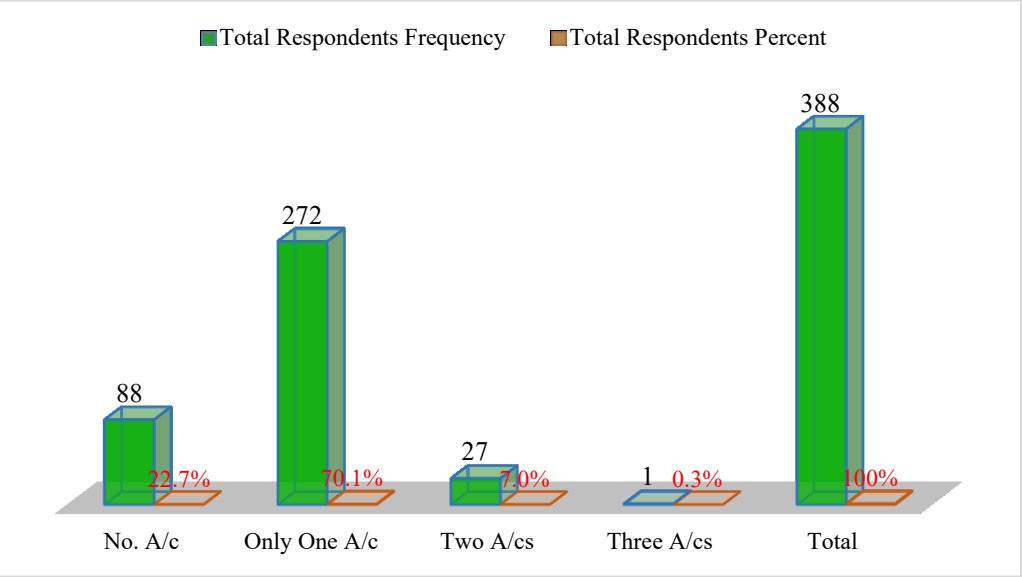


Figure 27: Number of MoMo Accounts Used by Respondents

Source: Field Data (2019)

The study further revealed in Figure 27 that 272 (70.1%) of respondents own at least one account and 7% has two accounts. Only 1 person had three momo accounts. In effect, users of momo has approximately one momo account which are mainly MTN momo.

Mobile money transaction volumes

Volumes of transactions is what determines whether an account can be described as active or inactive. The BoG (2018) defined an active account as one in which at least one transaction takes place or is initiated in the last 90 days prior

to assessment. Volumes of transaction on respondents' momo accounts in the past 90 days prior to assessment are presented in Figure 28.

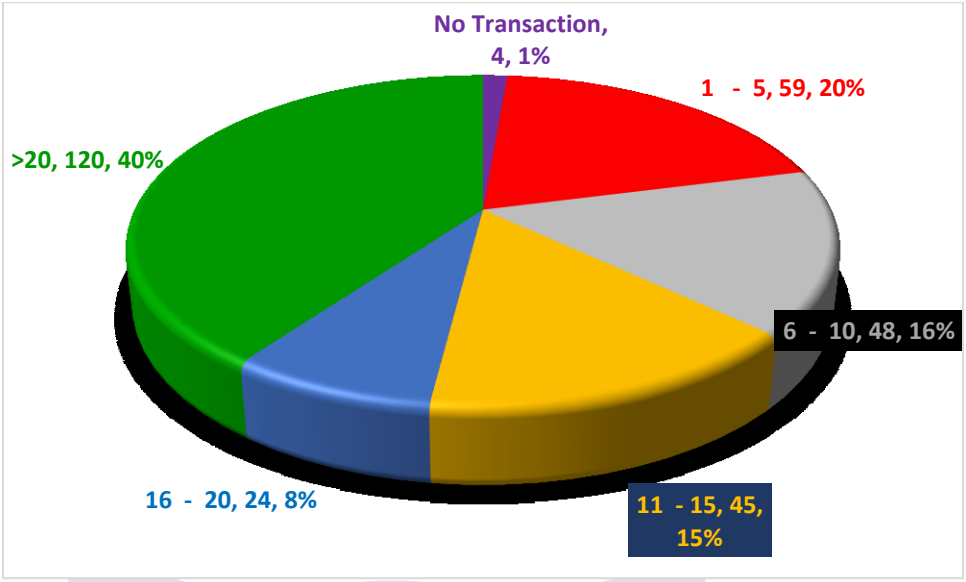


Figure 28: Volumes of MoMo Transactions

Source: Field Data (2019)

From Figure 28, only 4 (1.0%) of the 327 accounts are inactive accounts. Thus, 99.0% of the momo accounts used by rural residents are active. Momo users who have performed 1 to 5 transaction in the last 90 days prior to interview were 59 (20%). Those who performed 6 to 10 transactions were 48 (16%); 15% and 7% have performed between 10 to 15 transactions and between 16 to 20 transactions respectively. Those who performed more than 20 transactions constitute 45%. The minimum transactions is 0, maximum is 150 with mean, median and mode as 26, 15 and 10 respectively. Standard deviation is 26.543. In sum, 99% of momo users have performed at least 1 transactions in the past 90 days prior to the assessment.

Mode of Transaction

It also important to know how respondents transact momo given the level of literacy required in momo usage. The results are shown in Figure 29.

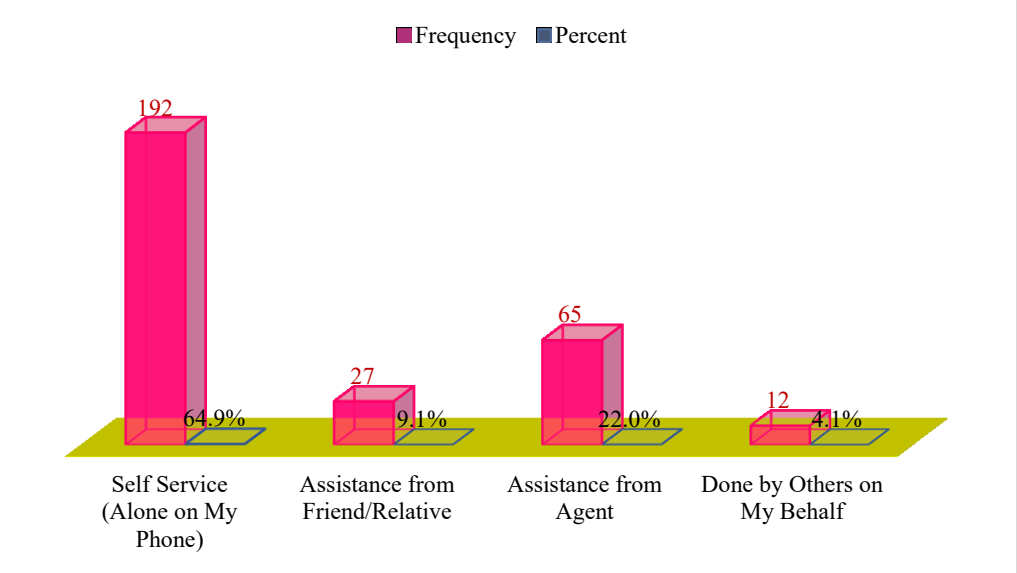


Figure 29: Respondents' Mode of Transacting

Source: Field Data (2019)

The study discovered that 192 users (64.9%) perform momo services themselves with their phones. However, 65 users (22.0%) receive assistance from momo agents; 27 users (9.1%) need assistances from friends or relatives to transact momo; and 12 users (4.1%) are unable to perform momo transaction on their own, so they allow others to perform transactions on their behalf. It is worth noting that 73.0% of the respondents have JHS education or above and that corresponds fairly with the percentage of users who are able to transact by themselves.

Types of Financial Transactions Respondents Use Momo to Perform

The third objective of the study is to determine the type of transactions rural dwellers use momo to perform. To the following discuss most frequently used transactions and respondents' use of e-cash.

Most frequently used transactions

Mobile money offers variety of services including basic transactions (i.e. cash-in, cash-out, and balance inquiry), funds transfer, interoperability, data and airtime purchase, savings and loans, bills payments, insurances, investments and funds remittances. Results on most frequently used transactions by respondents are given in Figure 30.

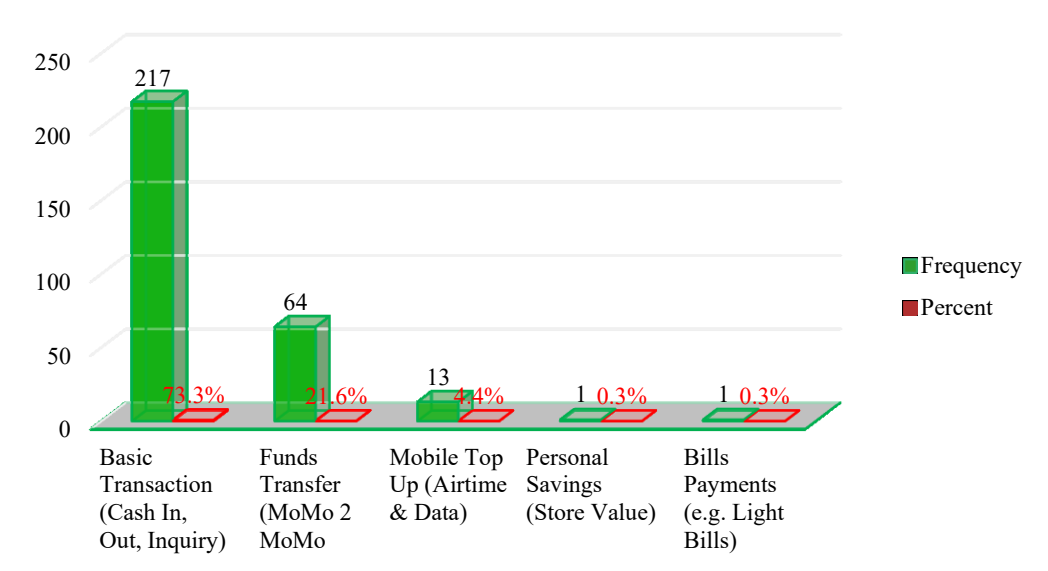


Figure 30: Most Frequently Used MoMo Transaction

Source: Field Data (2019)

The results showed that the most frequent transaction done by momo users is basic transactions of cash-in/loading a wallet with e-cash, cash-out/withdrawal, and balance inquiry. Respondents who perform basic momo transactions constitute 73.3%. This is followed by on-net funds transfer of 21.6%. Top-up of airtime and data recorded 4.4%. Momo savings and bills payments recorded 0.3% apiece.

The study thus, found that respondents use momo mostly for cash-in (deposit), cash-out (withdrawals), balance inquiry, on-net funds transfer, and purchase of data and airtime. There is very low usage of momo for personal savings

and bills payment. Also, the much touted momo interoperability is not readily used by respondents.

Respondents use of electronic cash

The study further tried to find out how respondents use their e-cash. The results on the usage of electronic cash are ranked in Table 13.

Table 13: Respondents Use of Electronic Cash

	Transactions	Use		Do Not Use	
Rank		Frequency	Percent	Frequency	Percent
1st	Purchase of Goods & Services	153	51.7	143	48.3
2nd	Others (Airtime, Data, Betting,)	78	-	-	-
3rd	Loan Repayments	36	12.2	260	87.8
4th	Purchase of Groceries	25	8.4	271	91.6
5th	Payment of School Fees	24	8.1	272	91.9
6th	Dues & Subscriptions	24	8.1	272	91.9
7th	Investments	23	7.8	273	92.2
8th	Emergencies	16	5.4	280	94.6

Source: Field Data (2019)

The results showed that majority (51.7%) of momo users use their e-money to pay for or receive payments of goods and service. E-cash for online betting is done by 78 users. Other uses of e-money included loan repayment (12.2%, purchase of groceries (8.4%), school fees (8.1%), dues and subscriptions (8.1%), investment (7.8%) and emergencies (5.4%). It thus, becomes apparent that momo has aided payments and trade among rural residents.

Respondents perceived benefits of mobile money

The fourth objective of the study is find out respondents' perceived benefits derived from mobile money. This section therefore discussed respondents'

perceived benefits of the use of momo. According to the respondents, mobile money is easy to use, it is very convenient, it is easy to register and also very affordable. Respondent's views are summarised in Table 14.

Table 14: Benefits of using momo

Benefits of momo		SA	A	N	D	SD
Easy to transact with	Freq	285	45	45	7	6
	%	73.5%	11.6%	11.6%	1.8%	1.5%
Convenient	Freq	260	69	51	4	4
	%	67.0%	17.8%	13.1%	1.0%	1.0%
Ease of registration	Freq	201	102	69	12	4
	%	51.8%	26.3%	17.8%	3.1%	1.0%
Affordable	Freq	173	68	79	27	41
	%	44.6%	17.5%	20.4%	7.0%	10.6%

Source: Field Data (2019)

Momo is easy to transact with

One of the benefits of momo is that it is easy to transact with. It does not involve the filing of withdrawal or savings forms as done is conventional banking. Respondents were interviewed as to whether they agree that momo is really easy to transact with.

From Table 14, a total of 230 respondents (85.1%) agree that momo is easy to transact with. Of this number, 73.5 percent strongly agree and 11.6 percent remained neutral. A total of 13 respondents (3.3%) disagree with the assertion that momo is easy to transact with. That is quite insignificant. It can therefore be concluded respondents consider momo as easy to transact with.

Convenience Provided by MoMo

Convenience is an established determinant of access to product or service and usage of same. Convenience connotes readily availability of a product or

service. It is determined by availability of the product or service and its proximity to the user. In terms of distance and availability, the study showed that rural communities are 25 times closer to a momo agent than to ta bank or NBFI agency or branch. Whereas it takes a minimum of 3metres to reach a momo agent, it takes a minimum of 120 metres to reach a bank branch in rural communities. Similarly, it takes a maximum of 2.5km to reach a momo agent, whilst it takes maximum 28km to reach a bank branch in rural community.

In view of above, respondents find momo are more convenient than conventional banking and has made maximum use of momo in personal and business use. It emerged from Table 14 that an insignificant number of respondents disagree with momo being convenient means of transacting. Only 8 respondents representing 2 percent disagree, with 1 percent for disagree and strongly disagree apiece. Respondents who chose to remain neutral to this question were 51 representing 13.1 percent. There is a general agreement that momo is the most convenient means of transacting. The study found that 329 (84.8%) of respondents either agree or strongly agree that momo is convenient. Out of this number, 67.0 percent strongly agree and 17.8 percent agree. This represents the second highest agreement percentage after ease of transaction.

MoMo is easy to register

Rigorous scrutinising of documents and other bureaucratic processes characterising the opening of a fresh bank account is minimal when it comes to opening a momo account. With momo, a one page form is filled with a photo identity card to enable the signing up for momo account at an agent location. Respondents generally feel that momo is relatively easier to register.

Like with other benefits of momo in rural communities, ease of registration has been ranked high. From Table 14, respondents who agree that momo is easy to register are 303 respondents (78.1%). Of this, 51.8 percent strongly agree. Also, 69 (17.8%) of respondents remained neutral whilst 4.1 percent disagree. Among respondents who disagree, 1.0 percent strongly disagree.

MoMo is affordable (lower transaction charges or fees)

The perception about traditional banking is that it is expensive. The fees and charges associated with banking especially transfer charges, fixed charges on current accounts among others can be detrimental to the use of bank accounts. This notion has, however, been diffused in this study as 88.9 percent of respondents disagree with charges as reasons for their inability to own a bank account.

Table 14 revealed that a total of 241 (62.1%) of respondents agree that momo is affordable; out of this, 44.6 percent strongly agree to the assertion that momo is affordable. Respondents who chose to remain neutral about the statement were 79 (20.4%); 27 (7.0%) and 41 (10.6%) of respondents disagree and strongly disagree respectively. Low charges received the lower number of disagreement as a benefit of momo among the five benefits listed. This is a signal that customers may want a downward review of momo tariffs.

Factors that hinder rural communities from accessing traditional financial services

The fifth objective of the study was to determine factors that hinder rural communities from accessing formal financial services like banks. This section discussed factors that hinder rural communities from accessing formal financial services. Factors that threaten momo are discussed. Given that cyber fraud is one

of the major threats to momo and has a potential to act as a factor that can cause disinterest in momo, it has also been discussed under this section.

Major factors that hinder respondents from accessing financial services

It is noted that level of income, distance, ignorance of banking contributed to respondents disinterest in banking. Following the Bank of Ghana clean-up of the banking sector, it is expected that confidence will dwindle and that may contribute to people's disinterest in the banking sector. Responses respondents are presented in Figures 31 and 32.

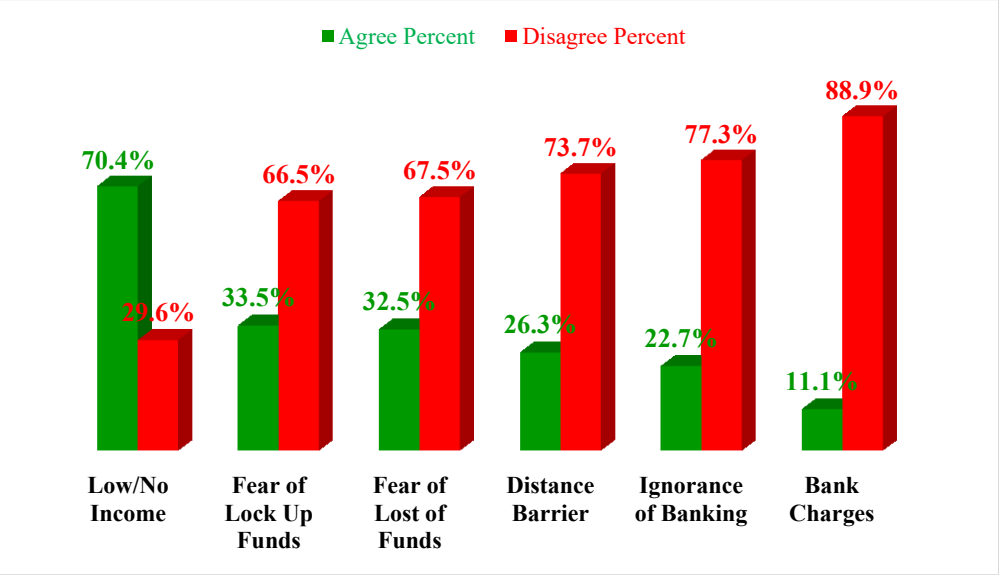


Figure 31: Factors that Hinder Rural Communities from Accessing Banking Services (Percentages)

Source: Field Data (2019)

From Figures 31 and 32, it became eminent that low or no income is the main factor that hinder people's access to financial services, and that may inform the reasons why banks or NBFIs may not establish a branch in rural communities.

From the results, 273 respondents (70.4%) agree that low or no income is the reason why they may not want to own a bank income. This is in tandem with

data that suggest that high income earners are more financially included than low income earners. Long distance to bank branch which was thought to be a factor that may hinder rural communities from accessing formal banking services tend to be among the least contributors to the barriers of access to banking services. Distance barrier, ignorance about banking and bank charges had high disagreement under the reasons for respondents not accessing banking services. Disagreement with distance barrier, ignorance and bank charges as factors hindering rural communities access to finance were accounted for by 286 respondents (73.7%), 300 respondents (77.3%) and 345 respondents (88.9%) respectively.

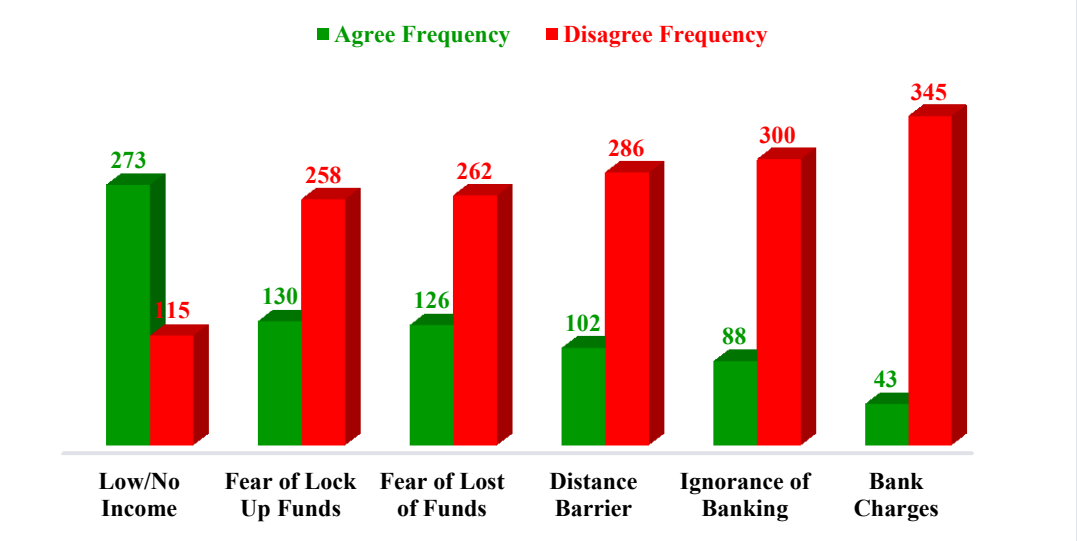


Figure 32: Factors that hinder rural communities from accessing banking services (frequencies) Source: Field Data (2019)

Fear of lock up of funds and fear of lost of funds are factors that are associated with the banking sector clean-up and confidence of rural folks to engage in banking. It came as no surprise that these factors became the second and third leading causes of rural communities' inability or unwillingness to save with banks.

Respondents who agree that fear of locked-up fund and fear of lost of funds were 130 respondent (33.5%) and 126 (32.5%) respectively.

Threats to Mobile Money Business

The mobile money ecosystem is not without threats. Even though it has high potential and present enormous opportunities. Some of the threats include high transaction charges, network problem, poor agents' services, and cyber fraud. Respondents were asked to rate each of the threats as severe threat (ST), high threat (HT), moderate threat (MT), low threat (LT) and no threat (NT). Results is displayed in Table 15.

Table 15: Threats to mobile money

Threats to momo		ST	HT	MT	LT	NT
High transaction cost	Freq	66	42	66	49	165
	%	17.0	10.8	17.0	12.6	42.5
Network problem	Freq	195	32	42	26	93
	%	50.3	8.2	10.8	6.7	24.0
Poor agents' services	Freq	29	41	131	29	158
	%	7.5	10.6	33.8	7.5	40.7
Cyber fraud	Freq	305	29	31	12	11
	%	78.6	7.5	8.0	3.1	2.8

Source Field Data (2019)

High Transactions Charges

From Table 15, a total of 280 (72.2%) considers transaction charges as posing moderate to no threat to the momo business. Contrasting this with 108 (27.8%) of respondents who considers high momo charges as a threat, it can be deduced that high momo charges is does not really pose threat to the momo business. This is supported by the fact that 17.0% and 10.8% agree that momo charges pose severe and high threats respectively compared with 42.5% who see momo charges as posing no threat to the momo business.

Network problem

Data in Table 15 revealed that a total of 161 respondents (41.5%) believe that network problem poses a moderate to no threat to momo, but 227 respondents (58.5%) disagree and considers network challenge as posing severe to high threat to momo. Those who consider poor network as posing severe and high threats are 50.3% and 8.2% respectively. However, 10.8% see moderate threat in network problem. Whilst 6.7% considers network as low threat, 24.0% believe that network problem does not pose any threat to momo. This is an indication that network is still a major challenge for momo users in rural communities. The telecos need to deepen network penetration in the rural areas who rely mostly on momo as their main financial service.

Poor agents' services

Momo agents are the vehicles through which momo subscribers transact. From Table 15, a total of 318 respondents (82.0%) believes that poor agents' services pose moderate to no threat momo against 70 respondents (18.0%) who considers poor agents' services as posing severe to high threats. In all, 7.5 rate the unsatisfactory agents services are severe threat, 10.6% as high threat, 33.8% as moderate threat, 7.5% as low threat, and 40.7% considers it as no threat at all. This is a confirmation of high satisfaction and confidence in the services delivered by momo agents.

Cyber fraud

Cyber fraud appears to pose the greatest threat to the momo business. As such, the thesis discussed respondents' rating of cyber fraud as a threat to momo and statistics of cyber fraud among respondents. Data in Table 15 revealed that 334

respondents (86.1%) rate cyber fraud as posing severe and high threat to momo, with only 54 (13.9%) considering it as posing moderate to no threat. Respondents who consider cyber fraud as posing severe threat are 78.6%, and those who consider it as posing high threat are 7.5%. Also, 8.0% and 3.1% regard cyber fraud as posing moderate and low threat, but 2.8% believe cyber fraud poses no threat. In all, 97.2% believe that cyber fraud poses some threat to the growth of the momo business. The study therefore proceeded to look at the statistics of momo fraud among respondents.

Statistics of momo fraud in rural communities

The study investigated the statistics of momo fraud among rural residents who use momo. It investigated the number of attempted fraud, successful momo fraud and the value of monies lost through momo fraud. Analysis of the results are shown in Tables 16 and 17.

Table 16: Statistics of Cyber Fraud in Rural Communities

Statistics		No. of Attempted MoMo Fraud	No. of Successful MoMo Fraud	Funds Lost Though MoMo Fraud (Ghs)
N	Valid	343	343	342
	Missing	45	45	46
Mean		2.18	.15	62.52
Std. Error of Mean		.154	.026	15.087
Median		1.00	0.00	0.00
Mode		0	0	0
Std. Deviation		2.845	.480	279.005
Variance		8.096	.230	77843.881
Skewness		2.074	3.914	7.369
Std. Error of Skewness		.132	.132	.132
Range		20	4	3000
Minimum		0	0	0
Maximum		20	4	3000
Sum		748	53	21381

Source: Field Data (2019)

Data from Table 16 shows that 748 attempted fraud occur among 300 users of momo. Thus, on average, a momo user experience more than two attempted fraud. A total of Ghs 21,381.00 has been lost though momo fraud among 300 momo users with 748 attempts and 53 successful scams. Thus, each user loses an average of Ghs 71.27. The data also shows that 7 out of 100 attempted momo fraud succeeds, and 1 out of every 10 users have been successfully scammed. Minimum attempt is 0 time, whilst maximum attempts on a momo account is 20times.

Table 17: Attempted and Successful MoMo Fraud

	Attempted MoMo Fraud			Successful MoMo Fraud		
No. of Incidents	Freq.	% (1)	%(2)	Freq.	% (1)	%(2)
0	141	-	41.1	303	-	88.3
1	33	16.3	9.6	30	75.0	8.7
2	57	28.2	16.6	8	20.0	2.3
3	35	17.3	10.2	1	2.5	0.3
4	15	7.4	4.4	1	2.5	0.3
5	29	14.4	8.5	0	0.0	0.0
>5	33	16.3	9.6	0	0.0	0.0
Total 1	202	100.0	58.9	40	100.0	11.7
Total 2	343	-	100.0	343	-	100.0

Source: Field Data (2019)

Similarly, from Table 17, 141 (41.1%) of momo users have never been attempted. The remaining 202 (58.9%) of users have ever receive attempted cyber fraud on their momo accounts. Among the victims of attempted momo fraud, only 33 (16.3%) have received only one attempt. The remaining 196 (83.7%) have experienced more than one attempted momo fraud. Also, 28.2 percent experienced exactly two attempted fraud, 17.3 percent had three attempted fraud, 7.4 percent had four attempted fraud, 14.5%.

Other essential findings in relation to impact of momo on financial inclusion

In the nutshell, the discussions have exhausted the study objectives. Nonetheless, essential to the central topic under study are variable that relate to momo, banking and financial inclusion. The study therefore discussed access to momo and traditional banking services as a key determinants of momo financial inclusion. It also analysed data on challenges respondents face in using momo, respondents' rating of momo agents and the extent of their satisfaction with momo services. Usage of bank services are discussed along with income levels and financial inclusion among respondents.

Access to mobile money

Extent of usage of momo and for that matter momo financial inclusion is determined by access of the service to users. Access to momo is the availability of the service at the least possible price for users. It can measured by the number of number of agents in a community or locality, the adult population per agent (i.e. average number of adults one momo agent serves), and the distance from user to momo agent.

The data obtained revealed that mode, mean and median number of agents are 4, 4.68 and 4 agents respectively per rural community. It therefore means that momo is readily available to rural communities.

Adult Population to MoMo Agent Ratio

The number of adults that one agent serves also determines the extent of access to momo services. Table 18 gives details of adult population-momo agent ratio.

Table 18: Population/MoMo Agents Ratio

Rank	Community	Adult Population	No. of Agents	Popn/Agents
1st	Anhwiam	595	4	149
2nd	Breman Amoanda	1,130	6	188
3rd	Towoboase	450	2	225
4th	B/Amano Mante	452	2	226
5th	Breman Benin	1,363	6	227
6th	Breman Nwomaso	1,498	6	250
7th	Breman Baako	1,049	4	262
8th	Breman Kokoso	1,134	4	284
9th	Breman Fosuansa	1,336	4	334
10th	Breman Ayipey	1,112	3	371
	Total	**10,119**	**41**	**247**

Source: Field Data (2019)

The study revealed that on average, there exist 247 adults per momo agent. Thus, one agent serves 247 agents in rural communities. This however differs from community to community. As from Table 18, Anhwiam has the least and best agent-adult population ratio of 149 adults per agent. This was followed by Breman Amoanda and Towoboase with 188 and 225 adults per momo agent respectively. Breman Ayipey and Breman Fosuansa has the highest (worst) agent-adult population ratios of 371 and 334 adults respectively per momo agent.

Considering the minimum of 149, maximum of 371, and average of 247 adults per agent, it is evident that mobile money is the most accessible and convenient financial system to rural indigents. It must be noted that the improved momo agent/adult population ratio varies widely from the national average which stood at 77 adults per momo agent as at the end of 2019. This is an improvement from the 95 adults per momo agent in 2018.

Distance from users to mobile money vendors or agents

Distance can also be a barrier to accessing financial services such mono. So the study interviewed respondents about the distance from home or work to the nearest mobile money agent. Table 19 is the summary of distance of momo subscribers to the nearest momo agent.

Table 19: Distance from MoMo Users to the Nearest MoMo Agent

Distance	Frequency	Cumm. Freq	Percent	Cumm. Percent
1.00 - 100m	139	139	35.8	35.8
101 - 200m	100	239	25.8	61.6
201 - 300m	57	296	14.7	76.3
301 - 400m	31	327	8.0	84.3
401 - 500m	36	363	9.3	93.6
501 - 600m	11	374	2.8	96.4
601 - 700m	2	376	0.5	96.9
701 - 800m	5	381	1.3	98.2
801 - 900m	0	381	0.0	98.2
901 - 1000m	3	384	0.8	99.0
>1000m	4	388	1.0	100.0
Total	**388**		**100.0**	

Min = 3.00; Max = 2,500; Mode = 100; Median= 170; Mean=237; SD = 266.46
Source: Field Data (2019)

The results in Table 19 showed that 139 (35.8%) respondents are able to access a momo agent within a radius of 1 - 100 metres. More than 60 percent of respondents access agents from a distance of 200 metres of less. Thus, 239 respondents (61.6%) stay in 200 metres or less from an agent. Also, 363 respondents representing 93.6 percent of respondents are able to access momo agent within a radius of 500 metres (0.5km) or less. Only 25 respondents (6.4%) access momo agent within a radius of more than 500 metres (0.5km).

Similarly, responses obtained showed that the average distance from a momo subscriber to an agent is 237 metres, modal distance is 100 metres and the

median distance is 170 metres. Minimum distance is 3 metres and maximum distance is 2,500 metres (2.5km) with standard deviation of 266.46m.

The combine effects of the data on the agent-adult population ratio and the distance to agents is that momo is the most convenient and accessible financial service in rural communities. It can also be concluded that rural communities have greater, proper, cheaper and better access to momo services than any other financial service.

Access to bank services

As noted earlier, access is measured by the number of bank branches available and their proximity to respondents.

Adult Population to Bank/NBFI branch

The number of bank or NBFI branch available to respondents is an indication of access to financial services. Number of banks available to the selected rural communities are presented in Table 20.

Table 20: Number of bank and NBFI branches in rural communities

Rank	Community	Adult Population	No. of Branches	Popn/Agents
1st	Towoboase	450	-	450
2nd	Breman Amano Mante	452	-	452
3rd	Anhwiam	595	1	595
4th	Breman Baako	1,049	-	1,049
5th	Breman Ayipey	1,112	-	1,112
6th	Breman Amoanda	1,130	-	1,130
7th	Breman Kokoso	1,134	-	1,134
8th	Breman Fosuansa	1,336	-	1,336
9th	Breman Benin	1,363	-	1,363
10th	Breman Nwomaso	1,498	-	1,498
	Total	**10,119**	**1**	**10,119**

Source: Field Data (2019)

In terms of the number of bank branches, only 1 out of the 10 selected rural communities has a rural bank branch as shown in Table 20. All the remaining do not have a single bank or NBFI branch or agency in their localities. In effect, only one bank branch serves 10,119 rural adults. In contrast to mobile money agents where 41 agents serve the same number resulting in 247 adults per momo agent, it can be concluded that momo agent/adult ratio is over 40 times higher than bank branch/adult ratio in rural communities. Thus, momo service is over 40 times accessible than bank or NBFIs.

Distance to the Nearest Bank/NBFI Branch

The study examined the distance of respondents to the nearest bank or NBFI branch to determine access to banking services. Details of the results are provided in the Table 21.

Table 21: Distance to the Nearest Bank or NBFI Branch or Agency

Distance (metres)	Frequency	Percent	Cumm. Percent
1 - 2,500	138	35.6	35.6
2,501 - 5,000	75	19.3	54.9
5,001 - 7,500	1	0.3	55.2
7,501 - 10,000	40	10.3	65.5
10,001 - 12,500	67	17.3	82.7
12,501 - 15,000	10	2.6	85.3
15,001 - 17,500	39	10.1	95.4
17,501 - 20,000	0	0.0	95.4
20,001 - 22,500	0	0.0	95.4
22,501 - 25,000	0	0.0	95.4
>25,000	18	4.6	100.0
Total	**388**	**100.0**	

Source: Field Data (2019)

It is realised from Table 21, that 138 respondents (35.6%) travel a distance between 1 to 2,500 metres to the nearest bank or NBFI branch, 75 respondent (19.3%) need to travel between 2,501 to 5,000 metres, 1 respondent (0.3%) travel

between 5,001 to 7,500 metres, 40 respondents (10.3%) travel between 7,501 to 10,000 metres, 67 respondents (17.3%) travel between 10,001 to 12,500meteres, 10 respondents (2.6%) need to travel between 12,501 to 15,000 metres, 39 respondents (10.1%) need to travel between 15,001 to 17,500 metres, and 18 respondent (4.6%) need to travel more than 25,000 metres to access services of a bank or NBFI branch or agency.

Distance to Nearest MoMo Agent vs Distance to Nearest Bank/NFI Branch

Nearness or proximity to the nearest momo or bank branch is equally critical in assessing access to finance. The study examined and compared access to momo to access to bank to determine which of the two services has provided the best solution to financial exclusion. Results are presented in Table 22.

Table 22: Distance to Nearest Bank Vs Distance to Nearest MoMo Agent

	Distance To The Nearest Branch/Agent (metres)		
Indicator	MoMo Agent	Bank/NBFI Branch	Ratio
Mean	237	7,300	30.9
Median	170	4,100	24.1
Modal	100	2,100	21.0
Minimum	3	120	40.0
Maximum	2,500	28,000	11.2

Source: Field Data (2019)

The study found that the nearest minimum distance of respondents to a bank branch or agency is 120 metres. The maximum distance is 26,800 metres. Average nearest distance to a bank or NBFI branch or agency is 7,300 metres with 2,100 metres and 4,100 metres as modal and median distance respectively.

It is noted that average distance of rural resident to the nearest bank or NBFI branch or agency is over 30 times farer than the distance of the same resident to the nearest momo agent. The median, modal, minimum and maximum distance of a

respondent to the nearest bank or NBFI branch or agency are over 24 times, 21 time, 40 times and 11times respectfully farer than to the nearest momo agent. For instance, whereas it takes a maximum of 2,500 metres to reach the nearest momo agent, it takes a maximum of 28,000 metres to reach the nearest bank branch or agency. In sum, momo agent is more than 25 times accessible by distance compared with a bank or NBFI branch or agency.

Challenges with the use of momo

Apart from the barriers of using traditional banking services and benefits of using momo, momo has its own challenges. Some of the challenges bothers on the experience users with the service itself and challenges that bothers on agents who deliver the service directly to subscribers.

Challenges bothering on user experience

Challenges of momo are classified as those that border on the momo service itself, challenges that emanate from agents and other challenges.

Challenges of momo are summarised in Table 23.

Table 23: challenges with mobile money

Challenge	Challenge		Not A Challenge		Totals	
	Freq.	%	Freq.	%	Freq.	%
Incomplete Transactions	24	6.6	341	93.4	365	100
Poor Call Centre Attendance	58	15.9	307	84.1	365	100
Network Challenge	160	43.4	209	56.6	369	100
Account/Sim Block	5	100.0		0.0	5	100

Source: Field Data (2019)

The responses obtained from the study revealed that rural communities have minimal or no challenge with momo usage. Their main challenge had to do with network problems. From Table 23, 160 (43.4%) of users identify network as a challenge with the usage of momo, whereas 56.6 percent had no challenge with network. Incomplete transactions or transaction failure and poor call centre attendance is not so much a challenge. Thus, 93.4 percent and 84.1 percent of respondents agree that incomplete transactions or transaction failure and poor call centre respectively are not challenges they face with momo. Other challenge identified by 5 respondents is sim or account blockage which usually occurs when there are suspicions about transactions. Among these are reported wrong transfer and incorrect pin.

Challenges bothering on agents' services

Challenges of momo that has to do with agents included low liquidity (physical cash), shortage of e-cash, lateness or absenteeism, delays or long queues and charging of unapproved fees. Details are presented in Table 24.

Table 24: MoMo Challenges that Relates to Agents

	Challenge		Not A Challenge		Totals	
Challenge	Freq.	%	Freq.	%	Freq.	%
Liquidity (Cash Shortage)	163	44.2	206	55.8	369	100.0
E-Cash Shortage	118	32.0	251	68.0	369	100.0
Lateness & Absenteeism	59	16.0	310	84.0	369	100.0
Delays/Long queues	33	8.9	336	91.1	369	100.0

Source: Field Data (2019)

The results revealed that shortage of physical cash and e-cash are the major challenge users face with agents, even though less than half of respondents perceive this as a challenge. It also found that 163 (44.2%) of respondents perceive shortage of cash (liquidity) as a challenge of momo associated with agents, 118 (32.0%)

perceive shortage of e-cash as a challenge, 16.0 percent and 8.9 percent perceive lateness/absenteeism and delays/long queues respectively as challenge with momo agents. Some respondents also complained of agents charging unapproved fees for transfer of money to other subscribers at the agent point. Despite above, it can therefore be said that agents are more dedicated in terms of attendance, speed of service is also high as delays has been identified as uncharacteristic of the momo.

Respondents Rating of MoMo Agents

Momo is mainly facilitated by agents. It is expected that users may have challenge that relates to agents. Respondents were quizzed about their rating of momo agents. Responses ranged from Excellent, Very Good, Good, Satisfactory, Poor, Very Poor and Worst, and are shown in Table 25 below.

Table 25: Rating of MoMo Agents' Services

Rating	Frequency	Cumm. Percent	Percent	Cumm. Percent
Excellent	49	49	13.0	13.0
Very Good	186	235	49.2	62.2
Good	93	328	24.6	86.8
Satisfactory	44	372	11.6	98.4
Poor	6	378	1.6	100.0
Very Poor	0	378	0.0	100.0
Worst	0	378	0.0	100.0
Total	**378**		**100.0**	

Source: Field Data (2019)

From Table 25, a total of 372 respondents representing 98.4 percent rated agents from satisfactory to excellence. In this, 13.0 rated agents as excellence, 49.2 rated agents as very good, 24.6 percent rated agents as good and 11.6 percent rated agents as satisfactory. Over 60 percent of respondents rated agents from very good to excellence. That is an impressive rating. Only 6 respondents (1.6%) rated agents as poor. No one rated agents as very poor or worst. It can therefore be concluded

that agents are deemed to be performing their work very well and to the satisfaction of users.

Factors that account for lack of interest in momo

Respondents' interest in momo was measured and the results displayed in Table 26 Apart from the barriers of using traditional banking services and benefits of using momo, momo has its own challenges.

Table 26: Reasons for Lack of Interest in MoMo

	Agree		Disagree		Totals	
Reason	Freq.	%	Freq.	%	Freq.	%
Transaction Limits	85	22.0	301	78.0	386	100.0
Lack of Trust In Agents	61	15.8	325	84.2	386	100.0
Lack of Trust in MoMo System	52	13.5	334	86.5	386	100.0
Content with Other Financial Services	47	12.2	339	87.8	386	100.0
Complex Nature of MoMo	21	5.5	362	94.5	383	100.0
Inconvenience	14	3.6	372	96.4	386	100.0
Others - Cyber Fraud	85	100.0		0.0	85	100.0
- SIM or A/c Blockage	5	100.0		0.0	5	100.0
- Network	40	100.0		0.0	40	100.0

Source: Field Data (2019)

The results in Table 26 show generally high level of contentedness with momo, though few respondents agree to some of the factors that may account for lack of interest in momo. Transaction limits placed on the value and volume of transactions appeared to be the most prevalence reasons for lack of interest in momo usage. The Bank of Ghana places a limit of Ghs 2,000.00 as daily transaction limit with the option to increase the limit to Ghs 5,000.00 upon meeting certain conditions. Traders who engage in high value transactions do not feel comfortable with this restriction, and that might have accounted for the 85 respondents (22.0%)

agreement that transactions limit account for lack of interest in momo. Even though the study found high confidence in momo agents, 15.8 percent of respondents find lack of trust in agents as their reason for disinterest in momo usage. Other factors included lack of trust in the momo system, contentedness with other financial services, complexities and inconvenience which form part of the least possible reasons for disinterest in momo. Other reasons are dominated by cyber fraud, followed by network problem and sim/account blockage which were agreed to by 85, 40 and 5 respondents respectively.

Subscribers' Rate of Satisfaction with MoMo

Though challenges and threats exist in the use of momo, subscribers are generally satisfied with momo. Respondents' rating of their satisfaction are presented in Figure 33.

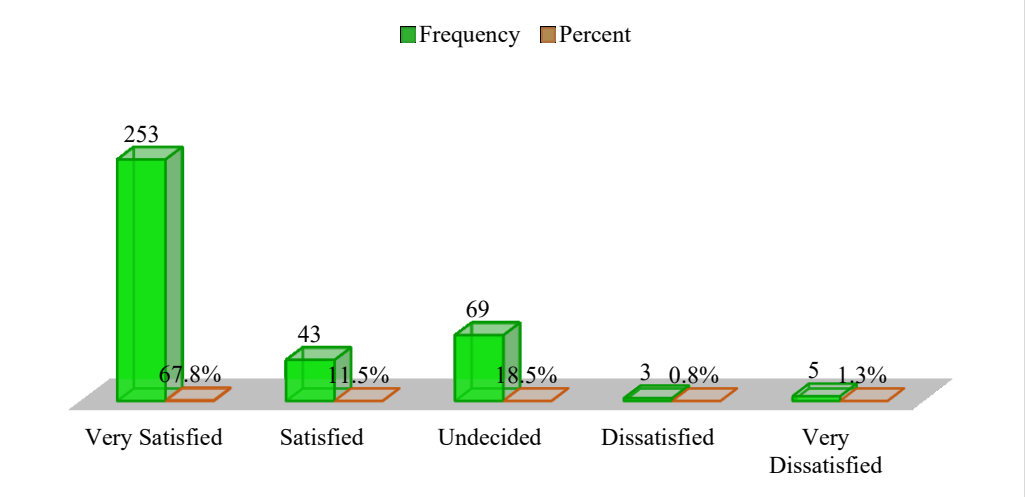


Figure 33: Respondents' Rating of Satisfaction with MoMo Services
Source: Field Data (2019)

A total of 296 respondents (79.4%) are satisfied with momo. Among the satisfied subscribers, 253 (67.8%) are very satisfied and 43 (11.5%) are generally satisfied with momo. However, 69 (18.5%) of respondents are undecided, whilst 8

subscribers (1.1%) are dissatisfied with momo. It can therefore be concluded that there is high rate of satisfaction with momo.

Banking Services

Usage of traditional banking services

Traditional banking services include the commercial banks, saving and loans companies, microfinance institutions, community and rural banks, among others. The study revealed that the number of people without bank accounts exceed that number of people with bank accounts. Details are found in Figure 34.

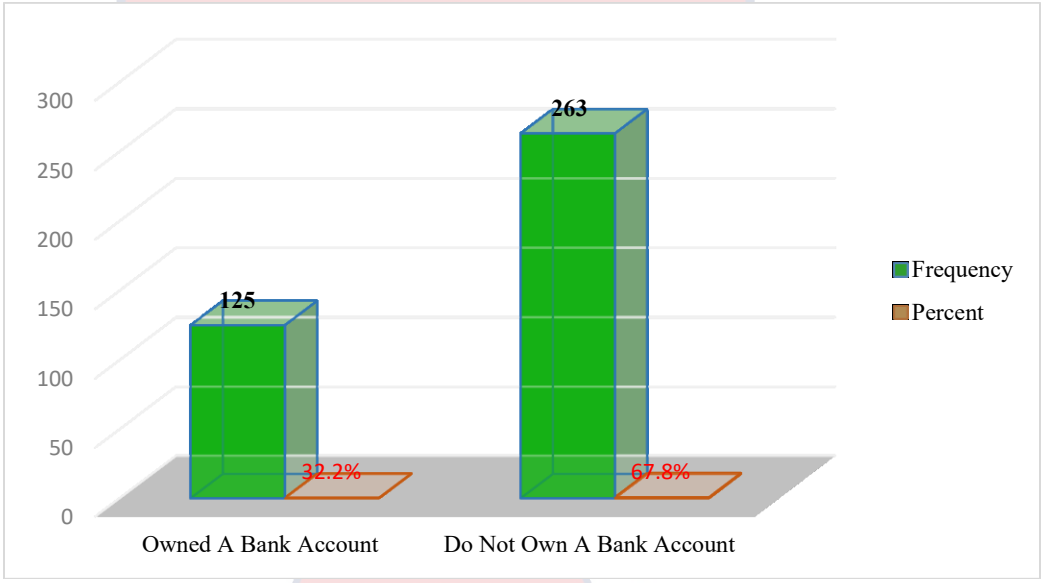


Figure 34: Bank Account Ownership

Source: Field Data (2019)

Figure 34 revealed that 125 respondent (32.2%) own a bank account and 263 respondents (67.8%) do not own a bank account. Thus, the number of people without bank accounts is more than double the number of people with bank accounts.

It is noted that rural communities use more mobile money services than traditional banking services. Whereas 300 respondents (77.3%) use mobile money, 125 (32.2%) use traditional services. Thus, the number of users of momo is more than twice the users of banking services. Momo has therefore proven to be the most accessible and used financial service in the rural communities.

Type of bank accounts use

The main types of accounts examined are fixed deposit account, savings account and current account. Due to the rural nature of the study areas, Susu account was also added. The results are revealed in the Figure 35.

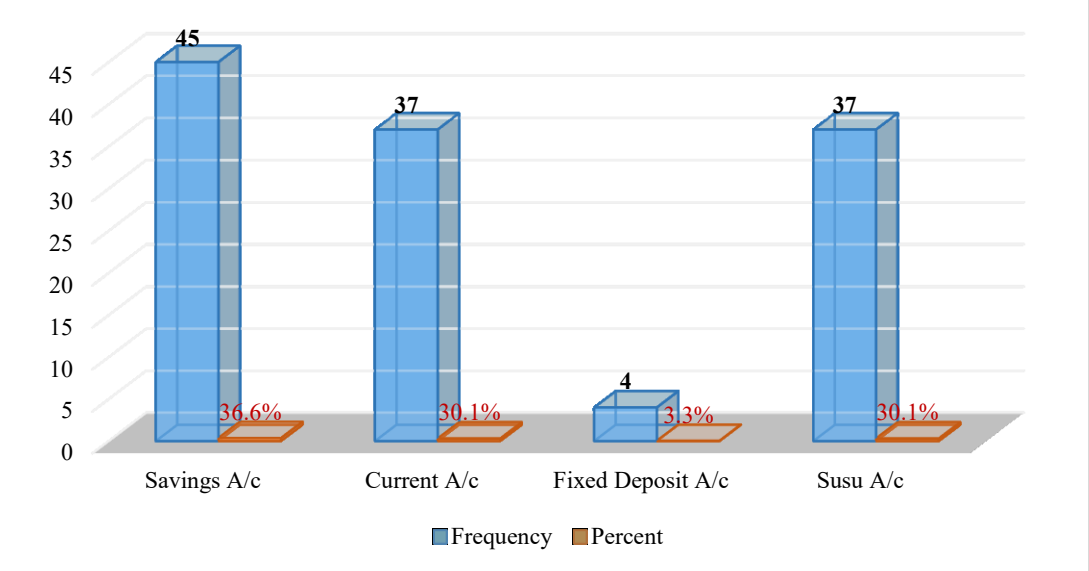


Figure 35: Type of bank account used by respondents

Source: Field Data (2019)

Majority of account owners operate savings accounts. This accounted for 45 users (36.6%). This is followed by saving and susu account which had 37 users (30.1%) apiece. Only 4 users (3.3%) operate fixed deposit accounts.

Volumes of bank transactions

Bank transactions also determines whether an account is active or dormant. Most of the bank accounts are inactive (i.e. accounts holder has not initiated account

in the last 90 days). The study showed 23 transactions occurring in 123 bank accounts in the last 90 days. Thus 18.7 percent of the bank accounts are active, compare with 99.0 percent active mobile money accounts. Put differently, momo accounts holder in rural communities are 5 times active than bank account holders in the rural communities.

Also, the modal and median transactions are 0, with a very insignificant mean of 0.06 transactions. Thus, 0.06 transactions occurs on each bank account on average. In contrast to momo account, there exist an average of 25 transactions per transaction among respondents. In the other words, momo transactions per account is 442 time higher compared with bank transactions per bank accounts in rural communities. Figure 36 gives details of volumes of bank transactions.

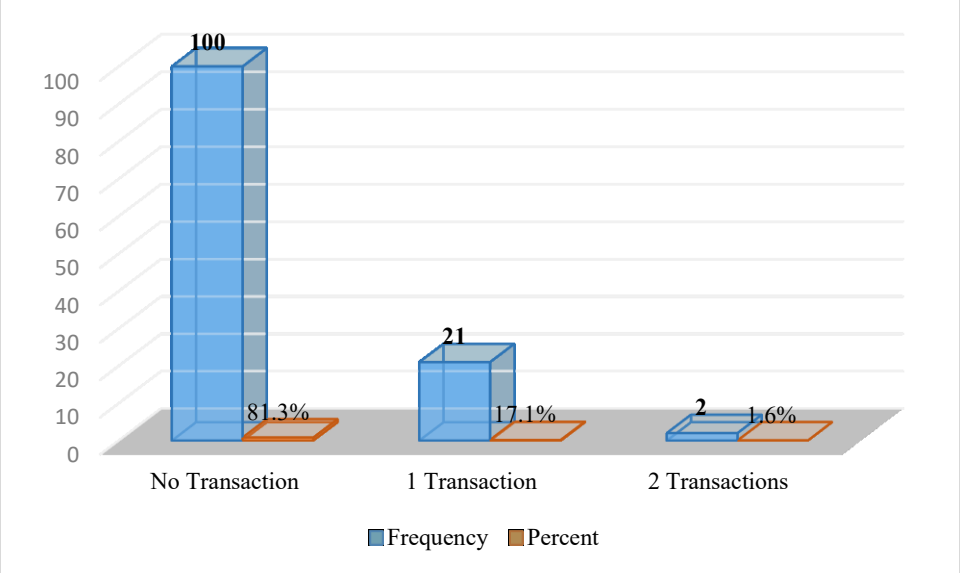


Figure 36: Bank Transactions

Source: Field Data (2019)

Banking services performed by respondents

Uses of bank accounts were interviewed the kind of bank services they use. These services were classified as deposit/withdrawals, accessing credit (loan),

funds transfer, e-zwich, momo services, salaries, insurance, funds remittances, and share (and other investments). Results are displayed in Table 27.

Table 27: Banking services performed by respondents

		Use		Not Use		Total	
Rank	Transaction	Freq.	%	Freq.	%	Freq.	%
1st	Savings & Withdrawals	118	95.9	5	4.1	123	100.0
2nd	Bank Loan/Credit	48	39.0	75	61.0	123	100.0
3rd	Salary Related Transactions	40	32.5	83	67.5	123	100.0
4th	MoMo with Bank	26	21.1	97	78.9	123	100.0
5th	Fees & Bill Payments	23	18.7	100	81.3	123	100.0
6th	Intra/Interbank Funds Trans	21	17.1	102	82.9	123	100.0
7th	Insurance Products	12	9.8	111	90.2	123	100.0
8th	E-zwich Services	9	7.3	114	92.7	123	100.0
9th	Fund Remittances	7	5.7	116	94.3	123	100.0
10th	Share & Other Investments	5	4.1	118	95.9	123	100.0

Source: Field Data (2019)

From the results gathered, 95.9 percent of rural bank account operators, perform savings and withdrawals with their bank accounts. Saving and deposits are the major transactions performed by bank account users in rural areas. Apart from this, less than 50.0 percent perform other banking services. Bank loan, salary related transactions, momo with banks, fees and bill payments, and interbank payments are the 2nd, 3rd, 4th, 5th and 6th highest transactions with 39.0 percent, 32.5 percent, 21.1 percent, 18.7 percent and 17.1 percent respectively of rural bank account owners. Less than 10.0 percent of bank rural bank account users perform the insurance, e-zwich, fund remittances, shares and investments with their bank accounts.

Gender and bank account ownership

In terms of gender, the pattern remain the same. More men own bank accounts than women. Table 28 shows details of bank account ownership distribution by gender.

Table 28: Gender and Bank Accounts Ownership

Gender	Own Bank Account		Do Not Own Bank Account	
	Frequency	Percent	Frequency	Percent
Male	74	60.2	128	48.1
Female	49	39.8	138	51.9
Total	123	100.0	266	100.0

Source: Field Data (2019)

Among the owners of bank accounts, 60.2 percent are men, whilst 39.8 are women. In the other words, 51.9 percent of women do not own bank account as against 48.1 percent of men who do not own a bank account. The pattern is not different from mobile money usage where more percentage of men use momo than the percentage of women. This data does not differ from the World Bank (2019) findings that more men continue to own bank accounts than women.

Income level and momo financial inclusion

The financial inclusion – social exclusion hypothesis is premised on the assumption that aggravated level of social exclusions (such as poverty) can affect financial inclusion. The study therefore gathered data and compared income levels and momo financial inclusion. Relationship between momo financial inclusion and income levels is presented in Table 29.

Table 29: Level of income and momo financial inclusion

Income (Ghs)	Use MoMo		Do Not Use MoMo		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
0.00	16	69.6	7	30.4	23.0	100.0
1 – 250	97	68.3	45	31.7	142.0	100.0
251-500	76	80.0	19	20.0	96.0	100.0
501-750	32	76.2	10	23.8	42.0	100.0
751-1000	33	86.8	5	13.2	38.0	100.0
1001-1250	11	91.7	1	8.3	11.0	100.0
1251-1500	13	92.9	1	7.1	14.0	100.0
1500+	22	100.0	0	0.0	22.0	100.0
Total	300		88.0		388.0	0.0

Source: Field Data (2019)

Financial inclusion is said to have its root in social exclusion (Kalunda & Aduda, 201). For this reason, high incomes are said to be associated high financial inclusion and vice versa (World Bank, 2019). The data from the study presented in table 28 confirms this global trend. From table 29 above, 69.6 percent of respondents who earn no income owns a momo account. The momo financial inclusion rate is 68.3 percent among respondents earning income between Ghs 1.00 and Ghs 250.00; 80.0 percent of respondents with respondents earning income between Ghs 250.00 to Ghs 500.00; 76.2 percent among respondents earning income between Ghs 501.00 to Ghs 750.00; 86.8 percent among income earners between Ghs 751.00 to Ghs 1,000.00. respondents' earning income ranges of Ghs 1,001.00 to Ghs 1,250.00, Ghs 1,251.00 to Ghs 1,500.00, and more than Ghs 1,500.00 have momo financial inclusion rates of 91.7 percent, 92.9 percent and 100.0 percent respectively. Thus, the higher the level of income levels are associated with higher momo financial inclusion and vice versa. This confirms the

findings of the World Bank (2018 & 2019) and evidenced by (Demirgue-Kunt, Klapper & Singer, 2017).

Chapter Summary

The chapter dealt with presentation and discussions of the results of the study. First, it dealt with demographic data such as locality, age, sex, occupation, marital status, number of children, locality, income levels of respondents, mobile phone usage and types of phones used by respondents. The second part of the chapter discussed data gathered in relation to the study objectives. This included awareness of and interest in momo, extent of usage of momo, types of financial services respondents use momo to perform, benefits they derived from momo, and factors that hinder rural dwellers from using formal financial services. The final part of the chapter discussed other essential findings which included access to momo, access to bank services, challenges of using momo, respondents rating of their satisfaction with momo, banking services and relationship between income levels of financial inclusion.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter of the thesis presents the summary of the key findings of the study. Based on the key findings it also presents the conclusions. The final part of the chapter deals with recommendations which are based on the conclusions.

Summary

The main objective of the study was to examine the effects of mobile money on financial inclusion on rural communities in the Asikuma-Odoben-Brakwa District. specifically, the study sought to measure the level of awareness and interest in mobile money among rural communities, their extent of usage or patronage of mobile money, types of financial transactions mostly performed with the use mobile phones, find out respondent's perceived benefits of mobile money, and factors that hinder the rural communities from accessing formal financial services.

Theoretical, empirical literature and theoretical reviews were done in respect of mobile money and financial inclusion. The theoretical reviewed looked at financial inclusion as a theoretical concept and also highlighted relationship between financial inclusion and social exclusion. The empirical review looked at financial inclusion in Africa and Ghana, financial technologies and mobile money, evidence of the importance of financial inclusion and how mobile money has aided financial inclusion in Africa. The conceptual framework is the researcher's own construct on mobile money – financial inclusion model. The model was developed from Davis (1986) Technology Acceptance Model (TAM). It illustrated how

perceived usefulness and perceived ease of use of mobile money leads to acceptance of momo as an information system variable, how that translates into actual usage of momo and the effect of actual usage of momo on financial inclusion.

The study employed descriptive survey design and multistage sampling procedure to select 388 respondents from 10 out of the 14 rural communities in the study area. Structured interviewed scheduled was used as the main instrument for data collection. Data was analysed using descriptive statistics and results were presented in the form of tables and charts. The main findings of the study are presented below based on the objectives of the study.

Summary of Findings

The study found that rural communities have a very high level of awareness of mobile money and banking services. At least, 96.1% of residents of rural communities are aware of mobile money, though more men are aware of momo than women. Over 90% of rural dwellers have moderate-to-high-to-perfect awareness of momo. Awareness of momo was very much higher for MTN mobile money than AirtelTigo money and Vodafone cash. Interest in the mobile money is very high as demonstrated by the higher level of usage of momo. High level interest in momo is also demonstrated by the 92.0% of non-users who express their readiness to use momo. However, more men have interest in momo than women.

In terms of transactions, the study revealed that rural dwellers have exceptionally high level awareness of basic momo transactions such as cash in/out (deposit and withdrawals), balance inquiry and funds transfer. There is also a high awareness of savings, purchase of airtime and data, and momo loan. However, rural

communities were found to have low level awareness of the much touted mobile money interoperability as well as bills and bulk payments, momo insurance, funds remittances and investments with momo. Similarly, the study showed that rural communities have high awareness of banking services such savings/withdrawals, loans, salaries, mobile money and funds transfer. Similarly, the study found that rural communities have very good knowledge of all momo services, all momo transaction option and computation of momo charges. However, knowledge of all momo service is higher with 67.1% knowledge followed by knowledge of computation of momo fees with 56.0% and then by knowledge of all momo transaction options with 53.4%.

In addition to awareness of momo, the study revealed that rural residents high awareness of banking services with majority being mainly aware of saving/withdrawals, salaries, loans, funds transfer and momo-bank services. Unlike momo usage, the study found low rate of bank account ownership with women being worse than men. Savings, Susu and current accounts are the main types of accounts used. Fixed deposit account ownership is almost non-existent. Unlike momo, only 20% of bank accounts in rural communities are active.

The study revealed that there is a higher usage of momo in rural communities. The study found that 77.3% of residents use momo with average of 3.75 years of usage experience, with some having up to 10 years' experience of using momo. This findings therefore means that momo financial inclusion in rural communities is 77.3% very much closer to the national rate of 82.7%. Usage of momo is higher for men than women as the former has momo fi of 86.3% compared

with the later with 67.4%. Almost all users of momo use either MTN momo alone or with other networks momo services. Also, momo transactions volumes in rural communities are very high as the study found 99.0% of momo accounts being active with average of 25 transactions occurring on an account in the past 90 days. Their momo transactions mostly occur either throughout the month or at the end of the month, with majority being able to perform transactions by themselves, whilst few other rely on friends, family or momo agents to perform momo transactions.

Regarding the types of momo transactions performed by respondents, the study further found that rural dwellers use momo mainly to perform basic transactions such as cash-in/out (deposit/withdrawal), balance inquiry, funds transfer, savings, airtime and data top-up as well as payments for goods and services. Usage is however, low for the momo interoperability, insurance, and remittances.

The study established that respondents' perceived benefits of using momo includes the convenience, ease of registration or signup, ease of use, and affordability of the momo service.

The study revealed that the main factor that account for low patronage of bank services in rural communities is low or no income levels. Other factors such as fear of lost/lock-up funds, distance barriers, and illiteracy do not contribute much to respondents' inability to utilise banking services.

In terms of access to finance, the study revealed that there exist an average ratio of 247 adults to one momo agents, and takes an average of 236.6 metres for a momo subscriber to reach the nearest momo agent. Majority of residents travel less

than 200 metres to reach the nearest agent, and each rural community has an average of 4 momo agents. Conversely, access to bank services are very low in rural communities as the study found the existence of only 1 bank or NBFI branch in all the 10 selected rural communities of 10,119 adults. In contrast with momo agents, it takes an average of 7,300 metres to reach the nearest bank or NBFI branch or agency, and majority of rural communities travel over 7,500 metres to reach the nearest bank branch. Momo agent-adult ration is 40times higher than banks.

The study found that rural residents have very high preference for momo than traditional bank or NBFI services. Their preference for momo is more than 3 times higher than for bank and NBFI services. Whereas bank account financial inclusion is 32.2%, momo financial inclusion is 77.3%. Thus, mmfi is more than 2 time banks fi. Preference for momo is 74.5% compared with 21.9% preference for banks. The study further revealed that 77.7% of women prefer momo to bank account as against 71.6% of men's preference for momo. Also, 26.5% of men prefer bank account compared with 16.8% of women preference for bank account.

Cyber fraud or scam was found to pose the greatest threat to the business of momo. The study revealed that funds worth Ghs 21,281.00 owned by 53 rural indigents have been lost through momo cyber fraud, and 1 out 10 rural momo user has been successfully defrauded through momo. On average, each rural momo user has been a victim of attempted momo fraud with average of 3 attempts. These threats notwithstanding, the study found that most users of momo feel that their funds and momo accounts are relatively secured. Other threats of momo uncovered

in rural communities includes poor network, lock of funds, poor attitude of agents and high transaction charges.

Conclusions.

Following from the findings above, the study drew the following conclusions. First, there is very a higher awareness level of momo among rural residents in the Asikuma Odoben Brakwa District. However, men have higher awareness than women. Except for momo interoperability, insurance and remittances, there is very high awareness of all momo transactions.

Second, there is higher usage and patronage of momo by respondents, but men have higher usage than women. Usage of momo is mainly limited to basic services. Usage of momo interoperability, insurance and remittances is low.

Third, the benefits of momo derived by respondents include convenience, ease of registration, ease of use, and affordability.

Main factors that hinder respondents from using formal financial services are low incomes and distance. Illiteracy, fear of lost or lock-up funds, and bank charges do not really hinder respondents from using formal financial services such as bank or NBFI service.

The study concludes that with regards to access, momo is the most convenient, accessible, cheapest and cost-effective financial service in the study area.

The study further conclude that momo has impacted financial inclusion far more than banks in the study area. Conversely, momo has a greater potential to not only impact financial inclusion in rural areas, but break the financial inclusion gap between men and women, and the rich and poor.

Respondents are generally satisfied with the momo services. However, two main threats that could hamper the growth momo are cyber fraud and network problem.

The mobile money interoperability has not been much utilised in rural areas despite its introduction since 2018.

Recommendations

On the basis of the findings and conclusions drawn by the study the following recommendations are made in respect of policy, strategy and financial inclusion

Mobile telecoms should embark on vigorous campaign to sensitize people about the momo interoperability service. The charges on the interoperability can be reduced to make it attractive.

Addressing financial inclusion in rural areas will require addressing social exclusions such as poverty. The government therefore has to broaden financial inclusion programmes to include policies that increase disposable incomes of vulnerable.

The telecom and momo service providers must invest in additional network infrastructure to ensure that mobile network services are available in remote rural areas. This will further make momo more accessible to rural and deprived indigents, thereby increasing financial inclusion among them.

The National Cyber Security Centre need to collaborate with the Criminal Investigation Department of the Ghana Police Service, National Communication Authority, Bank of Ghana, the Ghana Telecom Chamber, the Ghana Interbank Payment and Settlement Systems and momo service providers to vigorously fight

mobile money and related cyber frauds and crime through prevention, early detection, control, effective and timely investigation and prosecution of offenders. This collaboration should also target extensive campaign to educate the public on the safety tips to avoid momo and other financial frauds.

The National Financial Inclusion Development Strategy (NFIDS) should focus its attention on digital financial inclusion through fintech especially mobile money in order to achieve its objective of attaining the 85% financial inclusion target by 2023. The focus of financial inclusion should shift from the traditional notion of ownership and utilisation of bank or NBFI account to include digital financial inclusion (especially momo financial inclusion) Special attention should be given to momo financial inclusion and the concept of financial inclusion redefined to include utilization of mobile money account.

Considering the relatively higher awareness and usage of MTN momo relative to other networks, it was not surprising that the NCA (2020) declared MTN as a significant market power. It is therefore recommended that, in addition to the steps taken by the NCA to correct this, Vodafone and AirtelTigo must themselves develop and implement strategies to increase their influence, competitiveness, improve fair competition, increase their profitability and neutralise the significant market power of MTN.

Suggestions for further studies

There is still knowledge gap in the social exclusion-financial inclusion (exclusion) hypotheses that was not the focus of the present study, and no or very

little have been done in this area. It is therefore recommended that further studies be done in that area to explore the possibility of establishing the theory of social exclusion-financial inclusion (exclusion).

The trend of data on the relationship between the growth and development of banks and mobile money appear to be a mixed one. Whilst momo and banks appear complementary, they also appear to be in competition. Therefore, further studies should focus on the extent of complementarity and competition between momo and the traditional banking system.

Further studies may also be done on the effectiveness of various anti-momo cyber fraud measures so as to re-inform policy direction that gears towards effective clampdown of cyber fraud. Gender and financial inclusion should be explored further. Given the findings of this study that more women prefer momo to bank accounts than men, momo financial inclusion could be a turning point for reversing the trend of financial inclusion gap between men and women. Hence, further studies should focus on gender and momo financial inclusion.

Further studies may consider exploring possibility of establishing the theory of social exclusion-financial inclusion (exclusion), gender and financial inclusion, and coopetition or competition between momo and the traditional banking system.

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APPENDICES

Appendix 'A' – Interview Guide

UNIVERSITY OF CAPE COAST

COLLEGE OF DISTANCE EDUCATION

SCHOOL OF BUSINESS

Dear Sir/Madam,

The purpose of this interview guide is to gather information regarding an academic research topic "The Effect of Mobile Money on Financial Inclusion in Rural Communities; *A Study of Selected Rural Communities in the Asikuma-Odoben-Brakwa district.*

Responses or information obtained from you will be used solely for the purpose of this academic research and shall not be disclosed to third parties whatsoever. You are therefore assured of full confidentiality of your information. Kindly be objective as much as possible in your responses to enhance accuracy of the research results. Thank you!

Part I – Demographic Information

1. Age: (specify)…….years
2. Gender: (tick one) Male [ ] Female [ ]
3. Occupation: (Tick one): (a) Farming [ ] (b) Teaching [ ] (c) Nursing [ ] (d) Transport [ ] (e) Local government [ ] (f) other: (Specify)……
4. What is your main source of income? (a) Employment [ ] (b) Self-Employment [ ] (c) Other (Specify)……
5. Number years in formal education…….
6. Level of Education: None [ ] Primary [ ] JHS [ ] SHS [ ] Tertiary [ ]
7. Locality/Community of Residence (Specify)…….
8. Number of Children…….
9. Marital status: Married [ ] Single [ ] Other (Specify)…….
10. On the average how much do you earn in a month……
11. Number of Mobile Phones used:…….
12. Type of Mobile Phone used: Smartphone [ ] Non-Smartphone [ ]

Part II – Awareness/Interest in Mobile Money

13. Are you aware of mobile money service? Yes [ ] No [ ]
14. What is your level of knowledge of the existence of mobile money? (Tick only one)
    (a) Perfectly Unaware [ ] (b)Highly Unaware [ ] (c) Moderately aware [ ] Highly aware [ ] (e) Perfectly aware [ ]
15. Which of these mobile money services are you aware of? (tick as many as you know) (a) MTN MoMo [ ] (b) AirtelTigo Cash [] (c) Vodafone Cash []
16. Do you use mobile money? Yes [ ] No [ ]
17. If No will you like to use mobile money service when given the opportunity? Yes [ ] (b) No [ ] (c) Maybe [ ]
18. Which mobile money service will you prefer to use? (choose only one)
    (a) MTN MoMo [ ] (b) AirtelTigo Cash [ ] (c) Vodafone Cash [ ]
19. Give reason for your choice in 16 above……
20. Which of the following bank/financial service accounts will you prefer to own? (choose only one)
    (a) Mobile Money Account [] (b) Bank Account [] (c) E-Zwich Account [] (d) Other (Specify)……
21. Indicate whether you are aware or not aware of each of the following MoMo Services.

MoMo Services	**Aware**	**Not Aware**
Basic Transactions (Cash In/Out & Balance Enquiry)		
Funds transfer (MoMo to MoMo)		
Interoperability Funds Transfer (MoMo2MoMo all networks, e-zwich, Bank A/c)		
Mobile top up (Airtime & internet data)		
Personal savings (To Store Value)		
Accessing credit (loan)		

Bills payment (Fees, Electricity, Water, DSTv)		
Bulk payments (i.e. salaries)		
Insurance		
Domestic or International funds remittances (e.g. RIA, Western Union)		
Purchase of shares and/or other investment products.		

22. **Rating of the Understanding of Mobile Money** (Please circle the appropriate level, 1 = Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree, 5 = Strongly disagree)
    (a) I know all the options on the Mobile Money menu 1 2 3 4 5
    (b) I know all the MoMo services 1 2 3 4 5
    (c) I understand the fees 1 2 3 4 5

Part III – Usage/Access to Financial Services

23. Do you use mobile phone? Yes [ ]
24. How long have you been using mobile money?.....
25. Which of the following Mobile Money services do you currently use? (tick as many as applicable)
    (a) MTN MoMo [ ] (b) AirtelTigo Cash [ ] (c) Vodafone Cash [ ]
26. How many different mobile money accounts do you have?.....
27. How many mobile money transactions have you performed in the last 90days? …….
28. How many mobile money agents do you have in your community?.....
29. What is the distance from your place of work or home to the nearest mobile money agent? ……..
30. What mobile money service do you frequently use?

Mobile money services	**Use**	**Not use**
Basic Transactions (Cash In/Out & Balance Enquiry)		
Funds transfer (MoMo to MoMo)		

Interoperability Funds Transfer (MoMo to MoMo all networks, e-zwich, Bank A/c)		
Mobile top up (Airtime & internet data)		
Personal savings (To Store Value)		
Accessing credit (loan)		
Bills payment (Fees, Electricity, Water, DSTv, etc.)		
Bulk payments (i.e. salaries)		
Insurance		
Domestic or International funds remittances (e.g. RIA, Western Union)		
Purchase of shares and/or other investment products		
Other (Specify)		

31. During what time of the month do you usually use mobile money? (a) Month start [ ] (b) Middle of Month [ ] (c) Month End [ ] (d) Throughout Month [ ]
32. How do you prefer to transact? (a) alone on my phone [ ] (b) I prefer assistance from a friend or a relative [ ] (c) I prefer assistance from an agent [ ] (d) I prefer giving someone money to transact on my behalf [ ]
33. Indicate whether you have ever used any of the following MoMo Services before.

MoMo Services	**Yes**	**No**
Basic Transactions (Cash In/Out & Balance Enquiry)		
Funds transfer (MoMo to MoMo)		
Interoperability Funds Transfer (MoMo2MoMo all networks, e-zwich, Bank A/c)		
Mobile top up (Airtime & internet data)		
Personal savings (To Store Value)		
Accessing credit (loan)		
Bills payment (Fees, Electricity, Water, DSTv, etc.)		

Bulk payments (i.e. salaries)		
Insurance		
Domestic or International funds remittances (e.g. RIA, Western Union)		
Purchase of shares and/or other investment products.		

34. What do you use funds/money on mobile money to do? Tick all that applies

Transaction	**Response**
Buy groceries	
Pay children school fees	
Pay association (church/mosque, club, etc.) dues	
Trade (receiving and paying for business goods and services)	
Emergency funds (hospital, etc.)	
Loan Repayment	
Investment	
Others (specify	

35. How many bank branches or agencies or NBFI branches do you have in your community?...
36. What is the distance from your house or place of work to the nearest bank?
37. What type of bank account do you have?

Savings account [] Current account [] Fixed deposit account [] Susu account [ ]

Other (specify)…….. None [ ]

38. How many times have you performed bank transaction in the past 90 days?.....
39. Which of the following bank services are you aware of?

Bank Service	**Aware**	**Not Aware**
Deposit/savings		
Withdrawal		

Accessing credit (loan)		
Funds transfer		
E-zwich		
Mobile money services		
Salaries		
Payment of insurance premium		
Domestic or International funds remittances (e.g. RIA, Western Union)		
Payment of fees and bills		
Purchase of shares and/or other investment products		
Other (Specify)……		

40. Which of the following bank services do you perform?

Bank Service	**Yes**	**No**
Deposit/savings		
Withdrawal		
Accessing credit (loan)		
Funds transfer		
E-zwich		
Mobile money services		
Salaries		
Payment of insurance premium		
Domestic or International funds remittances (e.g. RIA, Western Union)		
Payment of fees and bills		
Purchase of shares and/or other investment products		
Other (Specify)……		

41. What factors hinders you from opening a bank account?

Factor	Yes	No
Fear of lost of funds		
Long distance from bank branch		
Lack of basic knowledge of using bank account		
Difficulty in accessing funds (locked up funds)		
High charges and transaction cost		

42. What of the following financial services do you perform?

Financial Service	Yes	No
Deposit withdrawal of funds		
Insurance/insurance policy		
Investment in fixed deposit or investment fund		
Shares		
High charges and transaction cost		
Other (List them)		

43. **Rating of the Benefits of Using Mobile Money** (Please circle the appropriate level, 1 = Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree, 5 = Strongly disagree)
    (a) It is easy to transact 1 2 3 4 5
    (b) It is convenient (can transact anywhere/anytime) 1 2 3 4 5
    (c) Easy to register 1 2 3 4 5
    (d) It is easy to use 1 2 3 4 5
    (e) It is affordable (fees are moderate) 1 2 3 4 5

Part IV – Threats to Mobile Money Services

44. Which of the following is/are the reason(s) why you may not want to use mobile money?

Reason	Yes	No
Fear of lost of funds through scam/fraud		
High transaction cost		

Locked up funds/inability to access funds		
Poor customer delivery by mobile money agents		
Poor service delivery by service provider		
Unavailability or poor mobile network		
Unavailability of agent in my locality		
Cash shortage by agents		
No electricity to charge my phone		
I do not own a phone		
I cannot operate a phone		
Other (specify)……..		

45. What challenge do you encounter when using mobile money?

Challenge	Yes	No
Bad quality service from Agents (communication)		
Bad service offered by call centre attendants (unresolved issues)		
Inexperience agents		
Incomplete transactions		
Other (State it/them)		

46. What challenge do you face with mobile money that relates to agents?

Challenge	Yes	No
Too little cash (liquidity)		
Lack of network signals		
Agents' unavailable (due to sickness, lateness, undisclosed reasons)		
Long queues at agent		
Agents has too little or no electronic cash		
Other (list it/them)		

47. What reasons do other people give you for not using mobile money?

Challenge	Yes	No
Lack of trust on the Agents		
Lack of trust of the mobile money system		

They are content with the other financial services such as bank		
Low funds involved (transactions value limits)		
Too complex		
Not convenient		
Other (list it/them)		

48. How will you describe the services rendered by MoMo Agents?

Excellent [ ] Very good [ ] Good [ ] Satisfactory [ ] Poor [ ] Very poor [ ] Worst [ ]

49. **Rating of the Threats to Mobile Money:** Indicate the extent to which each of the following threatens mobile money growth and development. (Please circle the appropriate level, 1 = Severe Threat, 2 = High Threat, 3 = Moderate Threat, 4 = Low Threat, 5 = No Threat)
    (a) Cyber fraud/scam 1 2 3 4 5
    (b) High transaction cost/fees 1 2 3 4 5
    (c) Unavailability of mobile network 1 2 3 4 5
    (d) Poor attitude of mobile money agent 1 2 3 4 5
    (e) Poor services of service providers 1 2 3 4 5
50. How will you describe the security of your mobile money account/funds?

Perfectly secure [ ] Highly secure [ ] Secure [ ] Highly insecure [ ] Perfectly insecure [ ]

51. How many times has someone tried or attempted to defraud or scam you through mobile money?.....
52. How many times have you ever been defrauded or scammed and you lost funds through mobile money?.....
53. How much money have you lost though mobile money scam/fraud? Ghs……
54. What methods do you think can help make mobile money services more popular? (Please circle the appropriate level, 1 = Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree, 5 = Strongly disagree)

(a) Better customer service 1 2 3 4 5

(b) Greater visibility and advertising 1 2 3 4 5

(c) Lover transaction cost 1 2 3 4 5

(d) More services added on the platform 1 2 3 4 5

(e) Reduce the number of steps to transact 1 2 3 4 5

Thank you for your time and cooperation!!!

Appendix 'B': Rural Adult Population and Communities in the A.O.B.D.A

SN	Rural Community Name	18_19	20_24	25_29	30_35	36_39	40_44	45_49	50_54	55_59	60_64	65_69	70_74	75+	TOTAL
1	Breman Nwomaso	124	206	197	147	128	143	119	106	75	80	30	62	81	**1,498**
2	Breman Benin	92	202	162	131	116	112	107	121	79	74	50	47	70	**1,363**
3	Breman Fosuansa	107	151	142	112	116	136	114	119	79	70	43	62	85	**1,336**
4	Breman Ayipey	84	183	150	149	94	80	97	64	40	46	22	45	58	**1,112**
5	Breman Amoanda	96	171	133	107	123	92	80	94	67	55	28	38	46	**1,130**
6	Breman Kokoso	102	144	107	79	73	98	110	109	69	64	47	63	69	**1,134**
7	Breman Baako	84	157	129	120	123	96	80	72	50	37	28	20	53	**1,049**
8	Breman Amanfopong	90	126	122	100	100	933	90	92	47	50	15	39	44	**1,848**
9	Breman Nyamebekere	72	109	103	86	80	65	61	59	39	34	32	34	24	**798**
10	Breman Anhwiam	50	78	89	58	77	44	59	45	25	17	19	15	19	**595**
11	Supunso	48	73	69	65	65	68	50	49	27	16	9	16	23	**578**
12	Breman Towoboase	35	58	61	52	53	47	36	33	22	26	6	11	10	**450**
13	Breman Amanor Mante	36	64	46	50	58	54	35	36	18	16	14	8	17	**452**
14	Agyarko Akura	42	44	40	34	51	35	46	37	14	14	13	11	17	**398**
	TOTAL	1,060	1,766	1,550	1,290	1,257	2,003	1,084	1,036	651	599	356	471	616	**13,739**

Source (GSS, 2014) as extracted from Appendix 'C'

Appendix 'C': Population by Age Group in the 20 Largest Communities

Table A4: Population by age group in the 20 largest communities

SN	Community Name	All Ages	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-59	70-74	75+
1	Breman Asikuma	16,159	2,033	1,931	2,023	1,826	1,448	1,232	983	910	759	650	673	488	356	237	251	359
2	Breman Odoben	10,708	1,617	1,450	1,495	1,100	706	587	598	529	520	459	432	277	236	177	216	309
3	Breman Brakwa	10,219	1,659	1,346	1,395	998	704	579	515	503	480	435	410	267	275	163	202	288
4	Kuntanase	6,889	1,076	1,042	995	699	422	387	391	389	319	263	249	165	133	97	113	149
5	Breman Bedum	5,126	756	694	691	566	343	274	248	242	224	233	247	137	102	92	137	140
6	Breman Jamra	5,112	796	800	670	586	332	313	296	255	243	184	182	119	97	66	86	87
7	Breman Nwomaso	2,924	428	411	402	309	206	197	147	128	143	119	106	75	80	30	62	81
8	Breman Benin	2,547	363	362	322	229	202	162	131	116	112	107	121	79	74	50	47	70
9	Breman Fosuansa	2,526	373	323	334	267	151	142	112	116	136	114	119	79	70	43	62	85
10	Breman Ayipey	2,253	324	348	344	209	183	150	149	94	80	97	64	40	46	22	45	58
11	Breman Amoanda	2,228	334	332	289	239	171	133	107	123	92	80	94	67	55	28	38	46
12	Breman Kokoso	2,224	289	298	348	254	144	107	79	76	98	110	109	69	64	47	63	69
13	Breman Baako	2,145	360	318	292	210	157	129	120	123	96	80	72	50	37	28	20	53
14	B/ Amanfopong	2,100	354	311	292	225	126	122	100	100	93	90	92	47	50	15	39	44
15	B/Nyamebekyere	1,659	233	270	250	180	109	103	86	80	65	61	59	39	34	32	34	24
16	Breman Anhwiam	1,229	187	192	179	126	78	89	58	77	44	59	45	25	17	19	15	19
17	Supunso	1,223	194	187	191	121	73	69	65	65	68	50	49	27	16	9	16	23
18	B/Towoboase	957	169	152	134	87	58	61	52	53	47	36	33	22	26	6	11	10
19	B/ Amanor Mante	900	129	128	138	89	64	46	50	58	54	35	36	18	16	14	8	17
20	Agyarko Akura	882	155	145	122	104	44	40	34	51	35	46	37	14	14	13	11	17

Source: Ghana Statistical Service, 2010 Population and Housing Census

Appendix 'D': Statistics of Age of Respondents

Statistics

Age of Respondents

N	Valid	388
	Missing	0
Mean		41.68
Std. Error of Mean		.917
Median		39.00
Mode		42
Std. Deviation		18.053
Variance		325.912
Skewness		.761
Std. Error of Skewness		.124
Kurtosis		.262
Std. Error of Kurtosis		.247
Minimum		18
Maximum		112

Appendix 'E': Age of Respondents

Age of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18	16	4.1	4.1	4.1
	19	11	2.8	2.8	7.0
	20	15	3.9	3.9	10.8
	21	12	3.1	3.1	13.9
	22	13	3.4	3.4	17.3
	23	7	1.8	1.8	19.1
	24	7	1.8	1.8	20.9
	25	12	3.1	3.1	24.0
	26	3	.8	.8	24.7
	27	12	3.1	3.1	27.8
	28	7	1.8	1.8	29.6
	29	7	1.8	1.8	31.4
	30	6	1.5	1.5	33.0
	31	10	2.6	2.6	35.6
	32	7	1.8	1.8	37.4
	33	6	1.5	1.5	38.9
	34	6	1.5	1.5	40.5
	35	6	1.5	1.5	42.0
	36	4	1.0	1.0	43.0
	37	8	2.1	2.1	45.1
	38	15	3.9	3.9	49.0
	39	7	1.8	1.8	50.8
	40	4	1.0	1.0	51.8
	41	7	1.8	1.8	53.6
	42	17	4.4	4.4	58.0
	43	3	.8	.8	58.8
	44	3	.8	.8	59.5
	45	11	2.8	2.8	62.4
	46	4	1.0	1.0	63.4
	47	2	.5	.5	63.9
	48	10	2.6	2.6	66.5
	49	6	1.5	1.5	68.0
	50	12	3.1	3.1	71.1
	51	5	1.3	1.3	72.4
	52	8	2.1	2.1	74.5
	53	3	.8	.8	75.3
	54	12	3.1	3.1	78.4
	55	3	.8	.8	79.1
	56	7	1.8	1.8	80.9
	57	1	.3	.3	81.2

	58	4	1.0	1.0	82.2
	59	1	.3	.3	82.5
	60	7	1.8	1.8	84.3
	61	4	1.0	1.0	85.3
	62	5	1.3	1.3	86.6
	63	1	.3	.3	86.9
	64	3	.8	.8	87.6
	65	3	.8	.8	88.4
	66	6	1.5	1.5	89.9
	67	3	.8	.8	90.7
	68	2	.5	.5	91.2
	69	1	.3	.3	91.5
	70	3	.8	.8	92.3
	71	5	1.3	1.3	93.6
	72	5	1.3	1.3	94.8
	73	1	.3	.3	95.1
	74	2	.5	.5	95.6
	75	1	.3	.3	95.9
	78	1	.3	.3	96.1
	80	2	.5	.5	96.6
	81	2	.5	.5	97.2
	82	3	.8	.8	97.9
	83	1	.3	.3	98.2
	90	1	.3	.3	98.5
	91	1	.3	.3	98.7
	92	2	.5	.5	99.2
	96	1	.3	.3	99.5
	98	1	.3	.3	99.7
	112	1	.3	.3	100.0
	Total	388	100.0	100.0	