

**EFFECT OF FINANCIAL INNOVATION ON FINANCIAL INCLUSION AMONG
SMALL MEDIUM ENTERPRISES IN KAKAMEGA COUNTY, KENYA**

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**A Research Thesis Submitted in Partial Fulfillment of the Requirements for the
Degree of Master of Business Administration (Finance) of Masinde Muliro
University of Science and Technology**

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DECLARATION

This Thesis is my original work prepared with no other than the indicated sources and support and has not been presented elsewhere for a degree or any other award.

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CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance of Masinde Muliro University of Science and Technology of a Proposal entitled, “**Effect of Financial Innovation on Financial Inclusion among Small-Medium Enterprises in Kakamega County, Kenya**”.

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DEDICATION

I dedicate this research to my dear family. To my parents, Mr. Thadeus and Mrs. Joyce, who have overwhelmingly supported me, my siblings, Alfred, Catherine and Denis who motivated me in different ways in my academics.

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I give my appreciation to God for his enduring mercy throughout this journey, and for being a pillar through which I leaned on. I acknowledge with my deepest thanks my research supervisors Prof. Benedict Alala Ondiek and Dr. Dennis Morara Bulla who accorded me much support through guidance and constructive criticisms that made this work successful.

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ABSTRACT

Despite the noble duty of SMEs of promoting economic development in the economy, financial inclusion is yet to be achieved. As at the end the year 2023, financial inclusivity was still not yet fully achieved. The general objective was to establish the effect of financial innovation on financial Inclusion among SMEs in Kakamega County, Kenya. Specifically, the study determined the effect of mobile banking, agency banking and internet banking on financial inclusion among SMEs in Kakamega County. The study established the moderating effect of firm size on the association between financial innovation and financial inclusion among SMEs in Kakamega County, Kenya. This study was guided by diffusion innovation theory, financial intermediation theory, agency theory and markets imperfection theory. Descriptive and causal design were adopted for a target of 9116 SMEs, of which 369 SMEs owners were sampled and used questionnaires for data collection. Reliability was tested using Cronbach alpha whereas validity through content analysis of the expert opinion. Analysis of the data was based on inferential as well as descriptive statistics. The study established that financial innovation parameters; mobile banking ($p=0.003$ at $P<.005$), Agency banking ($p=0.002$ at $P<.005$), and Internet banking ($p=0.000$ at $P<.005$) had a positive correlation coefficient. Lastly, the size of business had a moderating positive correlation coefficient ($p=0.000$ at $P<.005$). The results also showed that the financial innovation variables had a significant relationship to financial inclusion, hence SMEs should increase the uptake of mobile banking, internet banking, and agency banking services available and accessible to enable convenient operations and transacting hence financial inclusion. Finally, the study findings showed that the size of business was of significance on financial innovation and financial inclusion, hence business owners should make an effort to grow their businesses. Research results may be of help to SMEs in assessing the significance of financial innovation towards accessing timely and affordable financial facilities. As a result, this may enable SMEs to access financial products and services such as loans more conveniently and cheaply, thereby increasing their financial muscle and improving their operations, hence yielding more profits.

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LIST OF ABBREVIATIONS AND ACRONYMS

ARLD	Autoregressive Distributed Lag
CBD	Central Business Unit
CBK	Central Bank of Kenya
COVID-19	Corona Virus Disease 2019
DIT	Diffusion innovation theory
ECB	European Commercial Bank
MFI	Microfinance Institutions
PWC	Price water house Coopers Kenya
SACCO	Savings and Credit Cooperative
SDG	Sustainable Development Goals
WB	World Bank

OPERATIONAL DEFINITION OF KEY TERMS

Agency Banking:	It explains creation of outlets to provide deposits and withdrawal services.
Financial inclusion	Refers to timely and affordable provision of financial services to small medium businesses from formal and regulated service providers.
Financial innovation:	This refers to mobile banking, agency banking, internet banking constructs that spur financial inclusion.
Firm size	This refers to the volume of a company's growth level measured based on assets available.
Mobile Banking	It explains the monetary transactions that take place through mobile phones with the aim of accessing financial services from a bank.
Internet Banking:	This refers to monetary transactions that take place through the internet banking sites with the aid of a network in accessing the banking financial services.
Small Medium enterprises:	Refers to lowest and average businesses at the market engaging in both the service and/or product sector.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Small and medium enterprises (SMEs) are the backbone in the transformation of the economic fabric of any economy around the world. It is critical to find innovative solutions to their financing challenges. Financial inclusion for the disadvantaged groups including small-medium sized businesses has become a key priority for a number of countries around the globe (Asian Development Bank, 2014). According to PricewaterhouseCoopers Kenya (2022), the Kenyan government in its 2022/23 financial budget was keen on facilitating access to credit by the SMEs.

Digital technologies provide a robust solution for promoting financial inclusion among the approximately two billion adults worldwide by facilitating the implementation of innovative business models. Access to bank accounts is limited to the entire globe with few people owning bank accounts. An increasing number of countries have introduced comprehensive measures to improve fund attainability. In many countries, this has involved focusing on the adoption of technology to innovate financial products (World Bank, 2020).

Scholars Goldfarb and Tucker (2019) have compounded financial innovation into mobile, agency and internet banking. Economists have conducted an evaluation of the many costs that exhibit a decline on adoption and utilization of digital technology (Goldfarb and Tucker 2019). Lack of financial accessibility has negatively affected the economy (Biju & Joseph, 2016). The affordability and accessibility of funds has become

a global issue prompting inclusion criteria in the financial sector arena (Agarwal, 2016). Banks have therefore devised new measures to reach out to clients (Idowu, Ngumi, & Muturi, 2020).

Pierrakis and Collins (2013) examined technological advances on financial growth where online cash transactions, online credit financing and other digital funding highly improved inclusion criteria among small medium enterprises. Nigeria has therefore improved its SMEs sector through advanced technology.

Globally, according to the World Bank (2020), financial innovation has been practiced to some extent with East Asia and the Pacific taking the largest portion at 46%, Latin America 23%, and Europe at 15%. The difference indicates the need for financial innovation among small medium enterprises. This further alludes those small medium enterprises financial accessibility becomes a challenge. It is explained that businesses in Africa suffers on an extensive scale including affordability and access to financial goods and services (Quintavalla & Piattelli, 2014).

There is dominance in usage of mobile banking. According to World Bank (2022) the number of account owners using mobile banking have highly grown. This is seen through the number of transactions conducted through the phone. Currently one can deposit and withdraw funds using mobile phones. Loan application and disbursement have also been enabled. Therefore, financial inclusion has clearly been seen through mobile banking.

Accessibility of financial institutions such as banks is currently through the use of agency banking. Globally banks have devised agents to help reach citizens with ease.

Customers who feared wasting time queuing at banking facilities have found it easy to use agency services for time saving purposes. This has brought service delivery at the doorstep (Domeher, Frimpong, & Appiah, 2020).

The use of internet banking has been of importance though has been at a lesser rate compared to mobile and agency banking. The internet requirement and devices with ability to access internet has been the major challenge for this financial innovation practice (Wachira, 2013). This alludes that the banking sector has greatly changed the business environment, and small medium enterprises are likely to thrive due to such financial inclusion dimensions. The traditional financial approach is diminishing upon the rise of financial innovation (Domeher, Frimpong, & Appiah, 2020).

The rise of financial innovations has made operations to thrive among small medium enterprises as customers, creditors and debtors can transact easily by use of technological financial impetus. Small medium enterprises do not need much effort to access banks or any other financial services providers before approving their transactions (Kamau & Oluoch, 2016). The calls for the financial inclusion processes have been the pride for financial institutions (KNBS, 2019).

The CBK (2022) reported that financial innovation has accelerated the rate at which financial transactions take place, bank deposits have gone high, equally the withdrawals have gone high. There was a massive shift from traditional banking to mobile banking as evidenced by 34.77 million users in 2020 from 19.19 million users in 2019 (Central Bank of Kenya, 2022). The cash flow is therefore controlled by forces of demand and supply unlike previously where other factors such as accessibility and affordability were key hindrance (Kambua, 2015). Banking agencies rose from 9,748 to 41,746 in 2019 to

2020 respectively as bank deposits rose from 3,575,502 to 36,395,378, similarly withdrawals rising from 2,960,692 to 26,821,097. Finally, as a result, the net transactions went up (Central Bank of Kenya, 2015).

There are various mobile phones lending platforms that have made inclusion of small medium enterprises a reality for instance the Mshwari facility, bank mobile credit facility such Mcoop cash for cooperative bank. However, the financial mobile innovation led to a financial crisis with the mushrooming of lenders who turned out as frustrating the disadvantaged SMEs and individuals. Central bank of Kenya (2022) was forced to give stringent measures to curb the unnecessary growing of mobile lenders who charged individuals as they wish without following set out rules and procedures.

Since its inception, the CBK has been actively pursuing the Maya Declaration Commitments on financial inclusion. As part of these commitments, the CBK has set specific targets known as the Maya Declaration Targets. The progress towards achieving one of these targets is being assessed through the 2021 FinAccess Survey (2022). Financial inclusion involve the presence of easily accessible credit facilities, the affordability of credit, and the timeliness of loan delivery. As at 2021, the survey asserts that there was a considerable gain in financial access which stood at 83.7 percent. This gain can be primarily attributed to the widespread adoption and utilization of technology. The primary findings of the study revealed that the COVID-19 pandemic had a significant effect on the financial inclusion environment.

1.1.2 Financial Inclusion of SMEs

According to Demirguç-Kunt and Klapper (2013), financial inclusion refers to accessing quality and quantity financial services with ease and affordability. Financial inclusion

facilitates the timely delivery of financial services from a formal financial institution at an affordable cost to large vulnerable sections of the society such as SMEs. Nair (2017) provides as to inclusivity to marginalized groups or groups with less access to financial services such as small medium enterprises. According to KBS (2019) out of 65% of Kenyan residents in rural set ups, only 5% access banking facilities, hence giving grounds for more financial inclusion measures.

Access to soft loans to small medium enterprises has been the key norm towards financial inclusion quest. Mobile lenders provide timely loans which are preferred by many lenders. The affordability of loans becomes another factor with diverse attention on affordability (Grandolini, 2015). SMEs are at the crossroad on financial inclusion based on financial accessibility, financial affordability and financial usage.

1.1.3 Small Medium Enterprises in Kenya

SMEs refer to lowest and average businesses at the market engaging in both the service and/or product sector. A micro enterprise is defined as an organization that employs less than 10 individuals, while a medium enterprise is characterized by a workforce ranging from 50 to 99 employees. On the other hand, a large enterprise is classified as an establishment that surpasses the threshold of 100 employees. Capital investments can vary in value, spanning from amounts below Kshs 100,000 to over 1,000,000. Kakamega SMEs have faced a number of financial access challenges from lending institutions. This calls upon studies to exploit the need for necessary banking initiatives an innovative approach to inclusion (Economic Survey, 2023).

1.2 Statement of the Research Problem

Small and medium scale firms have significantly contributed to economic advancement. A substantial proportion of SMEs in Kenya, namely 25%, have encountered complete failure in obtaining financial assistance (KNBS, 2019). According to Demircuc (2015), approximately 20% SMEs remain without a bank account, furthermore World Bank (2020) found that though 80% of SMEs have bank account but cannot access financial services. Solutions on financial inclusion is still needed since SMEs are financially excluded across the globe (Grandolini, 2015). According to the SMEs report (2021), a significant number of SMEs fail to progress to the growth stage of their life cycle primarily in Kenya because they have challenges in obtaining financial services that are both accessible and cheap. This is a major issue that has been dragging down the SMEs productivity (SMEs sector Report, 2020). Out of 9,116 small medium businesses in Kakamega, 3,555 thus 39% were fully in financial inclusion mechanisms, implying that more than half the population, 61%, the majority, are in need of financial inclusion (Kakamega County Ministry of Trade SMEs Report, 2022). Mwanja (2018) examined technology adoption but failed to incorporate agency banking and a moderator. Njagi & Njoka (2021) conducted research on financial inclusion though on microfinance institutions. Based on the above gaps, the current study ascertained the effect of financial innovation on financial Inclusion among SMEs in Kakamega County, Kenya.

1.3 Objectives of the Study

1.3.1 General objective

The general objective for the study was to establish the effect of financial innovation on financial inclusion among SMEs in Kakamega County, Kenya.

1.3.2 Specific objectives

- i) To determine the effect of mobile banking on financial inclusion among SMEs in Kakamega County.
- ii) To establish the effect of agency banking on financial inclusion among SMEs in Kakamega County.
- iii) To examine the effect of internet banking on financial inclusion among SMEs in Kakamega County.
- iv) To determine the moderating effect of firm size on the relationship between financial innovation on financial inclusion among SMEs in Kakamega County.

1.4 Research Hypothesis

H₀₁: Mobile banking has no significant effect on financial inclusion among SMEs in Kakamega County.

H₀₂: Agency banking has no significant effect on financial inclusion among SMEs in Kakamega County.

H₀₃: Internet banking has no significant effect on financial inclusion among SMEs in Kakamega County.

H₀₄: Firm size has no significant moderating effect on the relationship between financial innovation on financial inclusion among SMEs in Kakamega County.

1.5 Significance of the Study

This study may be of help to the policy makers and regulators in Kenya, as it sought to improve the financial inclusion aspect towards affordable and timely provision of financial services. Policies on SMEs may be set and regulations be availed. This may

lead to the growth of financial access by vulnerable groups including SMEs, hence the rise of the country GDP. One of the key drivers of national economic development in Kenya is inclusive finance for SMEs. This is because they occupy a large space of the economy fabric.

Research results may be of help to SMEs in assessing the significance of innovation towards accessing timely and affordable financial facilities. As a result, this may enable SMEs to access financial services such as loans more conveniently. SMEs may increase their financial muscle, hence they may operate easily and therefore yield more profits in their businesses while reducing operational costs of accessing financial services.

Knowledge addition will impact scholars and non-scholars, as it may provide recommendations on the ways of improving financial inclusion attributes for SMEs and related groups. The findings may guide areas for further research among scholars.

1.6 Scope of the study

The scope was limited to SMEs in Kakamega County. This is in the western part of Kenya, bordering Bungoma, Vihiga, Trans-Nzoia and Busia Counties. The study examined the effect of financial innovation on financial inclusion among SMEs in Kakamega County, Kenya. Conceptually, the study covered mobile, agency and internet banking. Methodologically, used descriptive survey design.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Literature review covered components of financial innovation and financial inclusion of SMEs in Kenya. It starts by discussing the key theories underlying the study. It provides a review of variables, provides an empirical review, gaps and conceptual framework.

2.2 Theoretical Review

This study discussed diffusion innovation theory (DIT), financial intermediation theory, agency as well as market imperfection theory.

2.2.1 Diffusion innovation theory

The theory was proposed by Rogers (2003). It explains the new ideas, how new they arise and how to incorporate them in business context. Technology is taken to be on a growth trajectory and clearly explains the need for business persons to apply technology for purposes of maximum performance. The small medium enterprises need technology to help yield financial empowerment, through the use of mobile technology ideas on accessing funding and even gaining financial literacy, hence making mobile banking of essence. Furthermore, the innovation of agency banking makes operations faster and efficient. The use on internet banking is a clear show of growth in the business sector.

Rogers (2003) attributes of triability, advantage, observability and complexity that make sense in the inclusion criteria. Mobile and internet bank practices are of relative advantage to a business, they are compatible to business dynamics, complex to business

environment and easily observable skills to apply. SMEs find financial inclusion through mobile, agency and internet banking hence it is the main theory guiding the study.

2.2.2 Financial Intermediation theory

Originated by Gurley and Shaw (1961) and it asserts that the financial sector ensures that individuals have the ability to access financial products and services, hence intermediary roles are executed by lending institutions that need to ensure all is provided to firms for amicable growth. Small medium enterprises depend on intermediaries to avail funding means by which their operations are achieved, the government often comes in to ensure sustainability of businesses by regulating lenders through acts of parliament. The central bank of Kenya ensures that intermediary roles are done within set regulations (Philippon, 2015). Intermediation theory is therefore of value on agency banking intermediation. Failure to which financial innovation approaches such as mobile, internet and agency financial provisions emanate.

2.2.3 Agency theory

This theory was designed by Jensen's and Meckling (1970). It explains the association between agents and principals for the purpose of facilitating easy, timely and affordable access to financial services by the SMEs. This theory is concerned with a two-party relationship, that is, between the bank agency firm and the bank itself. Banks create or recruit agency firms to help customers who might not access financial services from the bank but can easily and cheaply access financial services from the agents. Further, banks usually experience high customers' traffic, and most customers prefer accessing financial services with ease hence preferring agency banking, (Eisenhardt, 2009). Under this study, agency banking indicates that banks have employed agents that help them in

running of their business and are entitled to some benefits (Xingxing, 2012). It is upon this premise that agency theory has a role on agency banking where persons are given the mandate to execute banking services of banks.

2.2.4 Market Imperfection Theory

Designed by Augustin Cournot in 1938. A perfect market is unrealistic to achieve in practice. We have flawed markets even in the United States, keeping in mind that in a perfect market, both buyers and sellers are willing to accept any price offered. Multiple firms possess a relatively tiny portion of the market, entry and exit are easy, and firms provide essentially identical items.

Market structures including monopolies, monopolistic competition, and oligopolies are frequent examples of conditions that deviate from perfect competition. Due to their limited presence in foreign markets, companies engaging in international trade are sometimes viewed as price takers. Because of government meddling in commerce and the fact that they have incomplete information, they are powerless to affect the price. The fact that market imperfections theory is a framework for understanding international trade is intriguing. It informs us that safeguards are required to defend our interests in international marketplaces. The idea of imperfection is shattered by financial inclusion. The technology helps small and medium-sized businesses conduct business with ease.

2.3 Conceptual Review

The financial innovations under study are mobile, agency and internet banking while financial inclusion is the independent variable.

2.3.1 Mobile Banking

This attributes to financial services executed through the use of the mobile phone such as savings by use of the mobile phone (Njenga, 2017). Pierrakis and Collins (2013) examined technological advances on financial growth where online cash transactions, online credit financing and other digital funding highly improved inclusion criteria among small medium enterprises. Mobile banking was measured by the number financial transactions done by use of the mobile phone.

2.3.2 Agency Banking

Agency banking involves creation of outlets to provide deposits and withdrawal services (Grandolini, 2015). This acts as branches to respective banks to save on time and speed for service execution. It further shortens period for access of banking services hence easy accessibility purposes (Kobayashi, 2017). Agency Banking was measured by the use of annual volume, frequency and value of transactions done by agents.

2.3.3 Internet Banking

According to Waiganjo (2018), he explains that it relates to the systems that enable clients access financial transactions by utilizing the bank internet website. It has some shortcomings where the client must be attached to internet services so as to transact (Thuku, 2017). Internet banking was measured by the number of Internet banking subscribers, the frequency of Internet banking usage and the value of Internet banking transactions.

2.3.4 Moderating influence of Firm size

Firm size refers to how narrow or wide an enterprise is basically based on the stock of sales and cash owned for the small medium enterprises hence a firm's characteristic component (Kigen, 2016). Firm size was applied as a moderator between financial innovation and financial inclusion among SMEs.

2.3.5 Financial Inclusion

Financial inclusion refers ease of loan accessibility, savings ability, safety of business through insurance, affordability nature of loaning services, the quality and quantity of financial services given (Roa, 2015). Financial inclusion was measured by accessibility to loans, affordability of loans (Quality) and timely loans (Quality). According to the FinAccess Survey (2021), financial inclusion is based on Access, Usage, Quality and Impact/ Welfare.

2.4 Empirical Review

Financial innovation is discussed based on parameters of mobile, agency and internet banking. Innovation is simply coming up with ideas that lead to improved performance (Kobayashi, 2017).

2.4.1 Mobile Banking and Financial Inclusion

Explains provision of bank services through mobile phone operations such as deposits and withdrawals (Njenga, 2017). Mwanja (2018) studied on mobile technology usage and financial inclusion on Machakos County SMEs using experimental research design among SMEs. Technological advancements were noted on financial growth where online cash transactions, online credit financing and other digital funding highly

improved inclusion criteria among small medium enterprises. Machakos County therefore improved its SMEs sector through advanced technology. The study found that usage of technology positively affected financial inclusion. The study recommended further studies on innovation strategies.

Njagi and Njoka (2021) analyzed mobile banking of microfinance organizations. Both public interest theory and financial theory of intermediation were used in the research. Stratified sampling was used to choose microfinance institutions for this descriptive survey study. Microfinance institutions' bottom lines benefited significantly from the introduction of new financial innovations.

Samuel and Mbugua (2019) did research on financial inclusion programs for women-owned small businesses in Nairobi City County. Key issues that needed to be addressed in order to achieve financial inclusion included licensing, capital generation, and access to finances. Purposive sampling was utilized to choose female-owned businesses for this cross-sectional study. The research found that efforts to increase financial inclusion followed trends of increased licensing, capital formation, and financial accessibility.

Marus, *et al* (2021) established the financial dynamics on growth of SMEs in Uganda. The contribution of information technology was examined which showed influence on performance. Qamruzzaman and Wei (2019) examined the growth of mobile banking in Asia and its impact on financial inclusion. In addition to other areas of financial innovation, examining innovation on the inclusion matrix. The study concluded that the introduction of mobile banking significantly improves people's access to financial services. Oshora, Betgilu, Desalegn, Hegyes, Farkas, and Zeman (2021) identified the

factors that affect SMEs financially in Ethiopia. The research, which employed an experimental approach, linked financial inclusion favorably to the success of SMEs.

2.4.2 Agency Banking and Financial Inclusion

In banking, agency arises when banks set up points where customers can access banking services mostly on the main function of deposits and withdrawals. Though few agents offer withdrawal services but majors on deposit services. Accessibility to banking services has been rendered a key factor limiting customers. Limited access to financial services makes usage of banking services a challenge hence preference for agency banking (Djankov *et al.*, 2013).

Kirimi (2011) looked into the Kenyan Commercial Banks' agency customer financial practices. This assessed the yearly volume of transactions conducted via agents, the quantity of agency banks, and the monetary worth of transactions facilitated by agency banking. The study found a statistically significant and favorable impact of study variables among bank users in Kenya.

Mwangi (2021) examined agency banking for four commercial banks that were exercising agency banking in Kenya. Using primary data questionnaire approach the study found that agency banking improved funds accessibility to persons. This further increased performance of customers. Financial inclusion was therefore positively and significant impacted by the agency banking.

Kamau (2017) examined agency banking and financial inclusion among Kenyan Banks. Agents were of a significant number of 9,748 in the year 2022 from 8,809 in 2021. The

number of deposits, number of withdrawals was noted to be of value, making accessibility to banking services a reality.

Kithuka (2018) examined determinants of agency based banking performance, a case of equity bank, equity bank agents had positively contributed to small medium business growth. The financial inclusion aspect was realized as many business persons could easily deposit, save and withdraw funds with ease.

Waithanji (2019) examined influence of agency banking on financial deepening among small businesses in Kenya. Financial deepening was low due to low number of agents.

Mwando (2018) investigated customers' access to financial services. The research conducted showed that the implementation of agency banking resulted in enhanced accessibility to financial services, thereby leading to increased performance.

2.4.3 Internet Banking and Financial Inclusion

Internet banking requires the internet connectivity to the banking websites to access the services. Access to the financial institutions such as banks is currently done through the innovation of internet banking. Globally banks have devised internet banking avenues to help reach citizens with ease. Customers who feared wasting time queuing at banking facilities have found it easy to use internet banking services for time saving purposes. This has brought service delivery at the doorstep of the customers (Domeher, Frimpong, & Appiah, 2020).

According to Waiganjo (2018), he examined internet banking for SMEs. Conclusively lack of knowledge, internet services and lack of internet accessibility or costs involved in accessing the internet made financial inclusion more challenging. It concluded that

bank users should be trained on technology and internet provision should be effective and cheaper.

Thuku, (2017) studied internet banking for Kenyan banks performance. Banks got addition in numbers of transactions as the internet banking transactions grew making the entire banking service provision easier and faster.

Kithinji (2017) examined Kenyan banks internet banking. The study used a descriptive study design. It examined 42 banks. The use of internet was however preferred by the younger generation aged 18-40 years as those above 40 years preferred non-digital approach transactions.

2.4.4 Firm size

According to Kigen (2016) alludes that the larger the SMEs, the more prone they are likely to utilize financial innovation hence leading to financial inclusion. The size of the business was examined by use log of business assets.

Businesses that are large have highly invested in financial innovation approaches compared to small businesses. Furthermore, use of financial innovation approaches is mostly preferred by larger businesses due to cost cutting measures (Oshora *et al*, 2021).

2.5 Research Gap

Research gaps from past studies are provided based on methodologies applied, regions, geographical, variables applied and sectors used.

Table 2.1: Research Gap

Author & Year	Title	Methodology	Findings	Gap
Mwania (2018)	Influence of Mobile technology usage Machakos financial inclusivity for SMEs	Descriptive research design Case study design on Machakos County Target population was 60 SMEs Variables: Mobile banking, Internet banking Used primary data	Technology positively affected financial inclusivity	Current paper introduced extra variables; agency banking and the moderator, firm size. The study was in Machakos County whereas the current study is in Kakamega County.
Njagi & Njoka (2021)	Financial innovation for microfinance institutions in Kenya	Descriptive design, Ordinary least squares (OLS) model. Theory: Intermediation Financial Theory Population: 13 Microfinance institutions under CBK reports	Micro finance entities were of positive effect on financial inclusion	Current study incorporated other variables such as mobile banking, agency banking, internet banking. This current study was on SMEs and not microfinance institutions as was in the other study.
Samuel & Mbugua (2019).	Women owned small enterprises financial inclusion programs in Nairobi City County	Descriptive research Area; Nairobi Sample size; 377 SMEs in Nairobi CBD Sampling method; purposive Variables: training, licensing, digital lending Descriptive survey design	Findings were that financial inclusion impacted women programs	The current study incorporated causal research for this current study. The current study was on the entire SMEs and not women-owned ones only as per this study.
Marus, Mwosi, Obura, Turyeheb & Uwonda (2021)	Financial inclusivity dynamics for growth of SMEs in Uganda	Explanatory research design	Financial inclusion positively influenced SMEs' growth.	A moderating variable, firm size was introduced in the current study and the study took place in Kakamega County, Kenya and

				not in Uganda. The current study also incorporated the financial innovation parameter.
Qamruzzaman & Wei (2019)	Financial based innovations on financial inclusivity in South Asia	Explanatory research design Multiple regression and t-statistic analysis. Population: SMEs Variables: financial innovation, financial inclusion	The study findings from Panel ARDL confirmed the positive association for financial innovation and financial inclusivity.	This current study incorporated other variables as recommended by this study, other variables under current study are mobile, agency banking and internet banking. The current study was in Kakamega County, Kenya and not in South Africa.
Oshora, - Hegyes, & Zoltan. (2021)	Financial inclusivity for SMEs in Ethiopia	Explanatory research design, Correlation and multiple regression analysis	Findings showed that the determinants such as supply-side factors affected financial inclusivity of SMEs in Ethiopia	The current study involved financial innovation variables that were not incorporated in this study.

Source: Author (2023)

2.6 The Conceptual Framework

In Figure 2.1, the independent variable was financial innovation, which encompasses mobile, agency, and internet banking. Financial inclusion as dependent variable encompassed various dimensions including access to soft loans, affordability of loans, timeliness of loans, and utilization of financial services. Furthermore, the impact of company size as a moderating variable was examined.

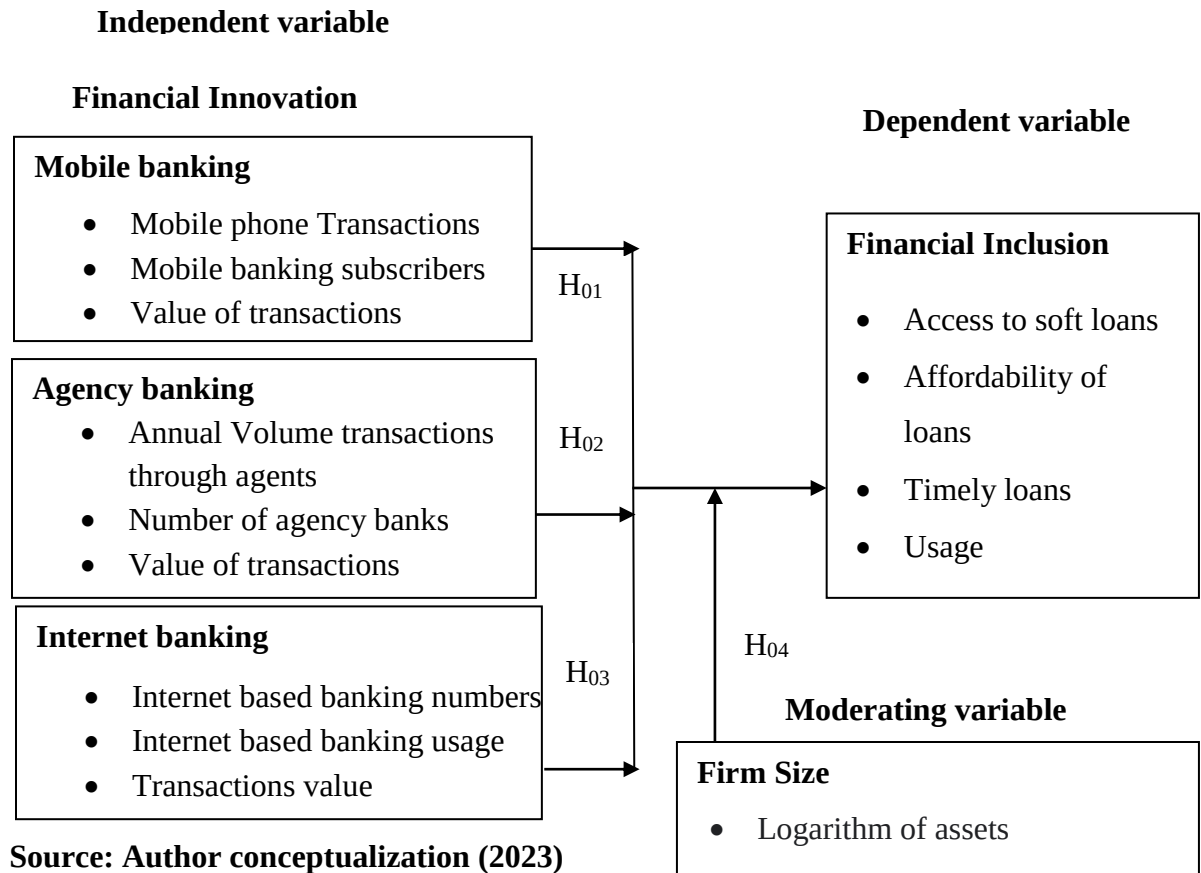


Figure 2.1: Conceptualization

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides an overview of many components related to research design, including the population under study, sample size determination, data collection techniques, processes for data collection, methods for data processing, and approaches for presenting the collected data.

3.2 Study Area

The study was conducted in Kakamega County SMEs. Kakamega County has a large population of 1,867,579 being the second largest after Nairobi with limited financial capacity (Census, 2019). The average elevation of Kakamega County is 1,535 meters. The county covers an area of 3,033.8 km². It borders Vihiga to the South, Siaya on the West, Transzoia and Bungoma on the North and Nandi and Uasin Gishu to the East. The County has a number of potential SMEs.

3.3 Research Design

The study used a mixed research design that is causal and descriptive design. Descriptive captures possible behavior, attitudes, values, and characteristics of the subject matter (Mugenda, 2015). That is why it was the choice of the researcher as it described financial innovation and financial inclusion of SMEs in Kakamega County. Causal is based on the relationship and association of the study variables.

3.4 Population of the Study

According to Collins and Hussey (2019), a population refers to a clearly defined group of individuals or entities that are being examined for statistical analysis. According to Okoth (2016), a target population refers to a comprehensive collection of individuals or items that have a common characteristic as indicated by the researcher's stated sample criteria. The research targeted a population of 9,116 respondents comprising of 5,108 small businesses and 4,008 medium businesses (Kakamega County Ministry of Trade SMEs, 2022). Therefore, the study targeted 9,116 SMEs owners one for each SME businesses.

3.5 Sampling Design

Curri van and Rose (2016) indicates that a sample is a part of the community from which the researcher wants to find people to take part in the study. This population is sometimes referred to as the working population because it ultimately supplied units for the study (Zikmund, 2016). A strategy for drawing a representative sample from a larger population is called a sample size (Kothari, 2019). Krejci and Morgan (1970) formula was used in the sample computation.

$$S = \frac{X^2 NP (1-P)}{d^2 (N-1) + X^2 P (1-P)}$$

Where:

S =sample to be computed

X^2 is the table value of chi-square thus $1.96 \times 1.96 = 3.841$

N = Entire population

P = the 0.5 degree of accuracy expressed as a proportion 0.05

$$S = \frac{3.8416 \times 9116 \times 0.5 (1 - 0.5)}{0.05^2 (9116 - 1) + 3.8416 \times 0.5 (1 - 0.5)}$$

$$S = \frac{8,755.0064}{23.7479} = 368.66 = 369 \text{ Respondents.}$$

3.6 Data Collection Instruments

The research used simple, closed-ended questions to collect and analyze data (Mwangi, 2015). The researcher recommends this instrument due to its convenience and low cost for surveying big populations (Orute, 2016). Questionnaires were designed in two sections, the background information and study variables sections. Furthermore, questions were in a Likert scale, that is, strongly agree to strongly disagree. Questionnaires were distributed by the help of three research assistants.

3.6.1 Pilot Test

Piloting permits questionnaires to be tested before final data collection begins. The pilot tests focused on two elements of data collection tools for effective and efficiency in the subsequent data processes and analysis, namely, data validity and data reliability. The pilot involved 37 respondents in Bungoma County representing 10% of the sample population. According to Cooper and Schindler (2017), a pilot test of 10-30% is acceptable.

3.6.2 Data Validity

Prior to conducting the full study, Cooper and Schindler (2017) suggest running a pilot test of the data collection tools. In Bungoma County, 18 small and medium-sized businesses participated in the pilot research. The primary objective was to spot any hazy questions and flag issues with the research design and data gathering procedures (Kihuthu, 2015). Validity was also ascertained by the expert opinion (Mugenda, 2016). The researcher's supervisors were involved as experts in determining validity.

3.6.3 Data Reliability

Cronbach's alpha coefficients were utilized to determine the reliability test, which was the Internal Consistency technique. A Cronbach alpha of 0.7 is suggested by Mugenda & Mugenda (2017). The obtained coefficient was 0.793, and as a general rule, an absolute value larger than 0.7 is considered sufficient for analyzing data.

3.7 Data Collection Procedures

A visit was made to the 369 SMEs in Kakamega County. The research tools were administered to the respondents in their respective enterprise premises, being a conducive environment for primary data collection. The questionnaires were delivered to the complete 369 SMEs as per the study sample size. A strong rapport was built with the respondents by providing assurances regarding the confidentiality and anonymity of the information they provided. A further inquiry was conducted to serve as a reminder to the participants on the completion of the questionnaires, with the aim of ensuring a dependable response rate for the study.

3.8 Data Analysis

The effective management of raw data is crucial in order to facilitate its analysis (Boeije, 2016). The research employed a combination of descriptive statistics, including frequencies, percentages, mean, and standard deviation, as well as inferential statistics, such as correlation analysis and regression analysis. According to Hersbon (2016), the utilization of correlation and regression analysis is employed in order to assess the causal connections between the financial inclusion variable and the independent variables. The study conducted by Mbucho (2015) utilized the SPSS software application for the purpose of conducting correlation and regression analysis. The authors Fujo and Ali (2016) utilized tables as a means of presenting data. The data acquired was subjected to analysis using simple linear regression and correlation analysis. Additionally, the significance of each independent variable was tested at a confidence level of 95% (Kiplimo, 2017). The regression model utilized in this investigation is presented below.

Econometric equation.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

With firm size as a moderator

$$Y = \alpha + \beta_1 X_1 X_4 + \beta_2 X_2 X_4 + \beta_3 X_3 X_4 + \varepsilon$$

Where, Y = SMEs financial inclusion

α = Constant

$\beta_1 \dots \beta_4$ = slope of each independent variable.

X1= Mobile Banking

X2= Agency Banking

X3= Internet Banking

X4= Firm size

ε = error term

3.9 Diagnostic Estimations

Diagnostic estimations in this research encompassed range of tests related to assessing, evaluating, and predicting collected data for research processing, analysis, and interpretation. Discussed below are some of the tests that were undertaken in this study.

3.9.1 Normality Test

The process included evaluating the normality of the data using P-P plots whereby deviation from the line of fit on the P-P plot, was minimal. Since the data was considered to follow a normal distribution, it was appropriate to use parametric statistical procedures such as correlation, regression, analysis of variance, and t-test.

3.9.2 Multicollinearity

Describes a situation in which two or more variables display a significant association. The VIF, or variation inflation factor, was put into place. The basis for multicollinearity is based on VIF value of 10 and below as tolerance value should be below 1 (Neuman, 2003).

3.9.3 Homoscedasticity/Homogeneity Test

This assessment is designed to gauge the degree to which data exhibits dispersion. To determine how well the collected data matches up Levene test was conducted. A p-value of less than 0.05 is deemed statistically significant according to the Levene statistics. The null hypothesis is rejected in these instances.

3.10 Operationalization of Variables

Table 3.1: Operationalization of Variables

VARIABLE	NAME OF VARIABLE	OPERATIONALIZATION	MEASUREMENT
DEPENDENT VARIABLE	Financial inclusion	• Access to soft loans • Potential to repay loans • Timely loans • Usage	• Access to soft loans • Potential to repay loans • Timely loans • Usage
INDEPENDENT VARIABLE	Mobile Banking	• Value of transactions • Mobile phone Transactions • Mobile banking subscribers	3-pointLikert scale
	Agency Banking	• Annual Volume transactions through agents • Number of agency banks	3-pointLikert scale
	Internet Banking	• Number of Internet banking subscribers • Number of Internet banking usage	3-pointLikert scale
	Firm size	• Log of assets	Logarithm of assets

Source: Author (2023)

3.11 Ethical Considerations

The researcher must take into account essential ethical components when conducting the study. Ethics entails the deliberate selection of morally correct actions, especially when there are other options that may include unethical behaviour. The researcher ensured the preservation of integrity and confidentiality when collecting any private information in good faith during this academic research. The researcher requested a letter from both NACOSTI and MMUST Directorate of Postgraduate Studies. The study adhered to ethical considerations by appropriately acknowledging all scholarly work and data through citation and referencing.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This research study indicates results guided by the study objectives. It avails the turnout and detailed analysis first through descriptive analysis, and then inferential analysis as well as hypothesis testing.

4.2 Response Rate

Out of 369 purposed respondents, 200 fully complied. Hence 200 (54.2%) response rate.

A 50% response rate is acceptable for research (Mugenda & Mugenda, 2013).

4.2.1 Reliability Test

Table 4.1: Pilot Results

Variable	CA
Mobile Bank	.812
Agency Bank	.719
Internet Bank	.817
Firm size	.809
Financial inclusion	.809
Overall	.793

Source: Field data (2023)

Table 4.1 avails pilot test findings that articulate mobile, agency and internet banking, firm size and financial inclusivity. The instrument were considered reliable for since the individual and overall Alphas were higher than 0.7 levels. Reliability was actualized based on the items provided for each variable.

4.3: Social Demographic Characteristics

Table 4.2: General information about social demographic characteristics

Demographic Characteristics	Frequency (%)
Gender	
Female	80 (40%)
Male	120 (60%)
Age Bracket	
18–24	74 (37%)
25–35	80 (40%)
36–41	32 (16%)
42 and above	14 (7%)
Level of Education	
Secondary	26 (13%)
Diploma	64 (32%)
Bachelors	100 (50%)
Postgraduate	10 (5%)
Occupation	
Owner	84 (42%)
Manager	84 (42%)
Employee	32 (16%)
Business Experience	
0-5years	18 (9%)
6-10years	88 (44%)
11-15years	62 (31%)
16-20 years	32 (16%)
Type of business	
Agricultural activities	64 (32%)
Other	50 (25%)
General Trade	86 (43%)

Source: Field data (2023)

The sample population consisted of 120 male respondents, accounting for 60% of the total sample population, while the remaining 80 respondents were female, representing 40% of the sample. These figures suggest that a greater proportion of the respondents were male. The predominant age cohort represented in the data was those aged 25 to 35, comprising 40% of the total sample. More than half of the participants possessed a minimum of a bachelor's degree, with diploma holders comprising 32% of the respondents. Only 13% of the individuals had completed secondary school education, while a mere 5% of the respondents had received postgraduate level training. The survey

sample consisted of an equal distribution of participants, with 42% identifying as managers and business owners. The majority of the participants possessed a business background ranging from 6 to 10 years (44%), while 31% had a company experience spanning 11 to 15 years. Most of the respondents (43%) conducted general business with (32%) majoring in agricultural activities. The education level was of significance on financial innovation initiatives, while business experience was of value in telling the knowledge acquired in running the business.

4.4 Descriptivism

Research results were presented by the mean, percentages, standard deviation and frequencies.

4.4.1 Mobile Banking and Financial Inclusion among Small Medium Enterprises

Table 4.3: Mobile Banking Inclusivity

Response	5	4	3	2	1	Mean value	Std. Dev
1. Our business has achieved a greater value from transactions of mobile banking services	32 (16)	100 (50)	62 (31)	4 (2)	2 (1)	3.41	0.89
2. Our business has increased the number of transactions from mobile banking service.	24 (12)	104 (52)	64 (32)	4 (2)	4 (2)	3.68	0.80
3. Our business has increased the frequency of accessing financial services using mobile banking service	36 (18)	118 (59)	32 (16)	10 (5)	4 (2)	3.85	0.83
4. Our business is able to access timely and reliable financial services using mobile banking	58 (29)	104 (52)	12 (6)	14 (10)	6 (3)	3.94	1.02
5. Mobile banking has enabled affordable access to financial services in our organization	28 (14)	124 (62)	8 (4)	30 (15)	8 (4)	3.68	1.04

Source: Field data (2023)

A 50% agreement that their business had achieved a greater value from transactions as 31% were uncertain, as 3.41 was mean value. A total of 52% agrees as 12% strongly agreed that our business has increased the number of transactions from mobile banking services. When asked whether the business had increased the frequency of accessing financial services using mobile banking service; 59% agreed, 18% were uncertain, 5% disagreed while 16% strongly agreed. Furthermore, the business was able to access timely and reliable financial services using mobile banking mean value 3.94 and Mobile banking had enabled affordable access to financial services in our organization mean value 3.68.

These findings agrees with Mwanja (2018) who found mobile technology usage as positively significant on financial inclusion of Machakos County small medium enterprises. It further agrees with Njagi and Njoka (2021) who found the influence of mobile banking significant. The study disagrees with Samuel and Mbugua (2019) who found out that mobile banking as insignificant.

4.4.2 Agency Banking Inclusivity

Table 4.4: Agency Banking and Financial Inclusion among Small Medium Enterprises

Responses	5	4	3	2	1	M value	SD. Dev
1. Our business has achieved a greater value from transactions of agency banking services	96 (48)	56 (28)	36 (18)	4 (2)	8 (4)	4.15	1.05
2. Our business has increased the number of transactions from agency banking service.	44 (22)	80 (40)	36 (18)	38 (19)	2 (1)	3.62	1.08
3. Our business has increased the frequency of accessing financial services using agency banking service.	32 (16)	94 (47)	44 (22)	24 (12)	6 (3)	3.62	0.99
4. Our business is able to access timely and reliable financial services using agency banking	32 (16)	94 (47)	44 (22)	24 (12)	6 (3)	3.62	0.99
5. Agency banking has enabled affordable access to financial services in our organization	44 (22)	80 (40)	36 (18)	38 (19)	2 (1)	3.62	1.08

Source: Field data (2023)

A 48% of respondents were strongly in agreement as 28% agreeable that their business had achieved a greater value from transactions; while whether business had increased the number of transactions from agency banking service, 19% disagreed, 18% were uncertain, 40% agreed while 22% were in strong agreement. Furthermore, 47% agreed as 16% strongly agreed that their activities had increased the frequency of accessing financial services using agency banking service and also that, agency banking had enabled affordable access to financial services in their organizations. Furthermore, businesses were able to access timely and reliable financial services using agency

banking. Hence in tandem with Mwangi (2021) who found agency banking for banks exercising agency banking in Kenya led to financial inclusivity. Further agrees with Kamau (2017) and equally Kithuka (2018) who found that equity bank agents had positively contributed to small medium business growth.

4.4.3 Internet Banking Inclusivity

Table 4.5: Internet Banking Inclusivity

Response	5	4	3	2	1	Mean value	Standard Deviation
1. Our business has achieved a greater value from transactions of internet banking services.	38 (19)	96 (48)	42 (21)	18 (9)	6 (3)	3.72	0.97
2. Our business has increased the number of transactions from internet banking service.	58 (29)	104 (52)	12 (6)	20 (10)	6 (3)	3.94	1.02
3. Our business has increased the frequency of accessing financial services using internet banking service.	28 (14)	124 (62)	10 (5)	30 (15)	8 (4)	3.68	1.04
4. Our business is able to access timely and reliable financial services using internet banking	58 (29)	104 (52)	12 (6)	20 (10)	6 (3)	3.94	1.02
5. Internet banking has enabled affordable access to financial services in our organization	38 (19)	96 (48)	42 (21)	18 (9)	6 (3)	3.72	0.97

Source: Field data (2023)

The findings were that 48% agreed as 19% strongly agreed that their business had achieved a greater value from the transactions hence a mean value of 3.72. Furthermore, 52% agreed as 29% strong agreement that business had increased transactions from internet banking service. Businesses were able to access timely and reliable financial

services using internet banking since 62% agreed with the statement as 14% strongly agreed though, 15% disagreed, the mean was 3.78. Businesses were able to access timely and reliable financial services using internet banking. Internet banking had enabled affordability on fund access in the respondents' organizations. These findings agree with Mwanja (2018) and Kamau (2017) who found agency banking to significantly affect financial inclusion among Kenyan Banks. However, the study disagrees with Samuel and Mbugua (2019) who found that internet banking financial innovation as not significant. The difference could be due to women and small businesses relationship.

4.4.4 Firm Size moderation for Innovation and Inclusivity

Table 4.6: Firm Size moderation for Innovation and Inclusivity

Response	5	4	3	2	1	Mean value	Std. Dev
1. Under SMEs category I offer small business services	32 (16.0)	100 (50)	62 (31.0)	4 (2.0)	2 (1.0)	3.41	0.89
2. Under SMEs category I offer medium business services	24 (12)	104 (52)	64 (32)	4 (2)	4 (2)	3.68	0.80
3. The size of my business is attributed to my customer base	36 (18)	118 (59)	32 (16)	10 (5)	4 (2)	3.85	0.83
4. The size of my business is attributed to the stock of the business	58 (29)	104 (52)	12 (6)	20 (10)	6 (3)	3.94	1.02
5. The size of my business has played a role in the adoption financial innovations for financial inclusion	28 (14)	124 (62)	10 (5)	30 (15)	8 (4)	3.68	1.04

Source: Field data (2023)

Results shows that 50% of business persons under SMEs category I offered small business services as indicated by 3.41 mean value. A total of 52% agreed to be under SMEs category I by offering medium business services. When asked on whether the size of their businesses was attributed their customer base, 59% agreed. The size of their businesses was attributed to the stock of the business. Furthermore, the size of their businesses had a played a role in inclusivity as indicated by 3.68 mean value. These findings agree with Mwangi (2021) who found that firm size to be of significant moderating effect though disagrees with Kithuka (2018) who found firm size to be insignificant.

4.4.5 Financial Inclusion among Small Medium Enterprises

Table 4.7: Financial Inclusion among Small Medium Enterprises

	5	4	3	2	1	Mn	SD
1. Financial innovation has led to easy access to soft loans for our business	64 (32)	94 (47)	26 (13)	8 (4)	8 (4)	3.96	1.01
2. Financial innovation has made access to loans affordable to our business	96 (48)	74 (37)	16 (8)	6 (3)	8 (4)	4.22	1.02
3. Financial innovation has led to timely access to loans for our business	40 (20)	74 (37)	40 (20)	24 (12)	22 (11)	3.40	1.26
4. Financial innovation has led to the increase in usage of financial services in our business	96 (48)	74 (37)	16 (8)	6 (3)	8 (4)	4.22	1.02

Source: Field data (2023)

With 47% agreeing, 32% were in strong agreement that financial innovation led to easy access of soft loans for their businesses, while 37% agreed and 48% strongly agreed that financial innovation had made access to loans affordable to their businesses as shown by a mean of 4.22. Further, 37% of the respondents were in agreement as 20% strongly agreed that financial innovation had led to timely access of loans for their businesses. Furthermore, 48% agreed that financial innovation had led to the increase in usage of financial services in their businesses.

4.5 Diagnostic Tests

Table 4.8: Collinearity Test

Variable	Tolerance value	VIF value
Mobile Banking	.807	3.513
Agency Banking	.573	2.413
Internet Banking	.615	2.273
Financial Inclusion	.507	1.975

Source: Field data (2023)

The VIF thus Variable Inflation Factor values were on the range of 1.975 to 3.513, hence below the threshold value of maximum 10, ascertaining lack of multicollinearity issues. The tolerance values were at a range of 0.507 to 0.807, thus were below threshold of 1.0, hence no multicollinearity (Mnyuny, 2018).

Table 4.9 Test for Normality

	Statistic value	Wilk Shapiro Diff	Significance
Mobile Banking	0.8100	200	0.087
Agency Banking	0.9202	200	0.142
Internet Banking	0.9001	200	0.254
Firm size	0.7103	200	0.142
Financial Inclusion	0.8151	200	0.254

Source: Field data (2023)

The Shapiro-Wilk test threshold of normality requires a significance level of less than 0.05, thus with MobileB (0.087), AgencyB (0.142), InternetB (0.254), Firm size (0.142) and Financial Inclusion (0.254) hence none was below 0.05 significance level threshold, therefore the data was normal.

Table 4.10: Homogeneity

Variable	LeveneStat	df1	df2	Signif.
Mobile Banking	1.206	1	200	.369
Agency Banking	1.123	1	200	.258
Internet Banking	1.882	1	200	.649
Firm size	1.350	1	200	.459
Financial Inclusion	1.841	1	200	.134

Source: Field data (2023)

Results in table 4.10 confirms the dependent variable variances as being steady at different levels hence asserting the homogeneity assumption on the basis of $p > 0.05$.

4.5.3 Pearson Correlations Analysis

Table 4.11: Pearson Correlations Analysis

		MB	AB	IB	FS	Financial_ Inclusion
Mobile_ Banking	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	200				
Agency_ Banking	Pearson Correlation	.045	1			
	Sig. (2-tailed)	.492**				
	N	200	200			
Internet_ Banking	Pearson Correlation	.147*	.196**	1		
	Sig. (2-tailed)	.002	.003			
	N	200	200	200		
Firm_ Size	Pearson Correlation	.001	.409**	.610**		
	Sig. (2-tailed)	.005	.000	.000		
	N	200	200	200		
Financial Inclusion	Pearson Correlation	.651**	.574**	.725**	.673**	1
	Sig. (2-tailed)	.003	.002	.000	.000	
	N	200	200	200	200	200

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

The MobileB(0.651**), AgencyB (0.574**) and InternetB (.725**) as well as firm size (.673**) values had a significant association with financial inclusivity values, below the 0.9 threshold for non-multicollinearity. It agrees with Njagi and Njoka (2021) who found existence of significant influence. The study disagrees with Samuel and Mbugua

(2019) who conducted a study on women owned small enterprises on financial inclusion programs in Nairobi City County. The difference could be due to women and small-business relationship.

4.6 Regression Analysis

Simple Linear regression was utilized in the analysis of the independent variables and the dependent variable.

4.6.1 Mobile Banking Inclusivity

Table 4.12: Mobile Banking Inclusivity

Model Summary ^a									
Model	R	R S	AdjR S	Sd. Err Est	R S C	F C	Change Stat		Signif. F C
							df1	df2	
1	.651 ^a	.423	.414	.38791	.000	13.004	1	199	.003
a. Mobile banking									
b. Financial inclusion									
ANOVA ^a									
	Model		Sum of Squares	Df	Mean Square		F		Signif.
1	Regressions		20.001	1	.001		13.004		.003 ^a
	Residuals		14.459	199	.150				
	Total		34.460	200					
a. Mobile banking									
b. Financial inclusion									
Coefficients ^a									
	Model		Unstandardized Coeffs		Standardized Coefficients				
			B	Sd. Err	B		t		
1	(Constant)		1.355	.088			10.326		
	Mobile Banking		.603	.056	.504		5.060		
a. Financial inclusion									

Source: Field data (2023)

Table 4.12 indicate a substantial view of mobile banking and financial inclusivity. The R^2 of 0.423 applies that 42.3% of financial inclusion is attributed to mobile banking. This suggests that mobile banking is responsible for a significant proportion of the variation in financial inclusion, accounting for 42.3%. The coefficient for financial inclusion was found to be $\beta = .504$.

$$Y = 1.355 + 0.603 X_1$$

Where; Y= Financial inclusion, X_1 = Mobile banking

First, **hypothesis one (H_{01})** rejection was based on $\beta = .504$; $p = 0.003$ at $P < .05$. These findings agreed with Mwanja (2018) who found mobile technology usage as significant on financial inclusion of the Machakos County small medium enterprises. It further agreed with Njagi and Njoka (2021) and disagreed with Samuel and Mbugua (2019) who conducted a study on women owned small enterprises on financial inclusion programs in Nairobi City County due to probably women-owned and small businesses relationship.

4.6.2 Agency Banking inclusivity

Table 4.13: Agency Banking inclusivity

Model Summary ^b									
Model	R	R S	Adj R Sq	Sd. Err of the Estim	R Square Change	F Chang	df1	df2	Sig. F Chang
1	.574 ^a	.330	.320	.38609	.009	12.168	1	199	.002
a. Predictors: Agency banking									
b. DV Financial inclusion									
ANOVA ^b									
Model		Sum of Squares	Df	Mean Square	F	Sig.			
1	Regression	14.323	1	.323	12.168	.002 ^a			
	Residual	20.137	199	.149					
	Total	34.460	200						
a. Predictors: (Constant), Agency banking									
b. Dependent Variable: Financial inclusion									
Coefficients ^a									
Model		Unstandardized Coefficients	Std. Error	Beta	T	Sig.			
1	(Constant)	1.204	.102		11.772	.000			
	Agency banking	.096	.065	.097	1.472	.002			

a. Dependent Variable: Financial Inclusion

Source: Field data (2023)

Agency banking do affect financial inclusion significantly; $R^2 = 0.330$, $F = 12.168$, significant at $p < 0.05$. Therefore agency banking accounts for 33.0% variations in financial inclusion. Further, the regression coefficients which explains the extent to which changes financial inclusion explained through agency banking with $\beta = 0.96$.

$$Y=1.204+0.096X_2$$

Hence;

Y= financial inclusion

X_2 = Agency banking

Secondly, **hypothesis two (H₀₂)** assertion was rejected. The beta coefficient for Agency banking is $\beta=.097$; $p=0.002$ at $P<.05$. This was rejected as findings shows Agency banking is positive and significant related to financial inclusion an agreement with Mwangi (2021) who found agency banking for banks exercising agency banking in Kenya. Further, it agreed with Kamau (2017) and Kithuka (2018) who found that equity bank agents had positively contributed to small medium business growth.

4.6.3: Internet Banking Inclusivity

Table 4.14: Internet Banking Inclusivity

Model Summary ^b									
		Std. Adjuste			Change Statistics				
Model	R	R Square	Error of Estimate	R Square Change	F	Change	df1	df2	Sig. F Change
1	.725 ^a	.526	.26716	.526	253.823		1	199	.000
a. Predictors: Internet banking									
b. DV Financial inclusion									
ANOVA ^b									
Model			Sum of Squares	df	Mean Square	F	Signif.		
1	Regression		18.116	1	18.116	253.823	.000 ^a		
	Residual		16.344	199	.071				
	Total		34.460	200					

Model Summary^b									
		Std. Error of the Estimate			Change Statistics				
Model	R	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	
1	.725 ^a	.526	.26716	.526	253.823	1	199	.000	

a. Predictors: (Constant), Internet banking
b. Dependent Variable: Financial inclusion

Coefficients^a					
		Unstandardized Coefficients		Standardized Coeff	
Model		B	Std. Err	B	t
1	(Constant)	.411	.061		6.688
	Internet banking	.689	.043	.725	15.932

a. Dependent Variable: Financial inclusion

Linear regression indicate that internet banking significantly affects financial inclusion; $R^2=0.526$, $F= 253.823$, significant at $p<0.05$. This implies that internet banking led to a 52.6% change in financial inclusion among small medium enterprises. Further, regression coefficient for internet banking is; $\beta= 0.411$. $Y=0.411+0.689X_3$

Where;

Y = financial inclusion

X_3 = internet banking

Thirdly, **hypothesis three (H₀₃)** stated that internet banking does not significantly affect financial inclusion among small medium enterprises. Internet banking coefficient β value=.725; $p=0.000$ at $P<.05$. The **Hypothesis was rejected** since internet banking is positive and significantly related to financial inclusivity. These findings agreed with Mwanja (2018) and Kamau (2017) who found internet banking to significantly affect financial inclusion among Kenyan Banks. The study disagrees with Samuel and Mbugua (2019) who found internet banking financial innovation was not significant.

4.6.4 Firm Size Moderation Results

Firm size moderation on the relationship between financial innovation and financial inclusion was as follows.

Table 4.15: Firm Size Moderation Results

Model Summary^a										
M	R	R Squar	Adj R Sq	Sd. Err of the Est	R Sq C	F C	df1	df2	Signif. F C	Change Stat
1	.097 ^a	.009	.001	.38693	.009	1.087	2	198	.339	
2	.735 ^b	.540	.534	.26422	.531	261.951	1	197	.000	
3	.808 ^c	.653	.647	.20006	.113	73.424	1	196	.000	
ANOVA^b										
Model		Sum Sq	Df	Mean Sq	F	Signif.				
1	Regressions	.326	2	.163	1.087	.339 ^a				
	Residuals	34.134	198	.150						
	Total	34.460	200							
2	Regression	18.613	3	6.204	88.872	.000^b				
	Residual	15.847	197	.070						
	Total	34.460	200							
3	Regression	22.499	4	5.625	106.276	.000^c				
	Residual	11.961	196	.053						
	Total	34.460	200							

Model	Coefficients				Sig.
	Unstanrdized Coef		Standard t	ized	
	B	Sd. Er	B		
Con	.769	.174		4.422	.000
1. Financial innovation	1.486	.471	.371	3.155	.003
Constant	1.486	.471	.371	3.155	.003
2. Firm size	0.937	.356	.197	2.632	.009
Constant	0.937	.356	.197	2.632	.009
3. Financial innovation * Firm size	1.309	.120	.661	9.882	.000

1. Predictors: (Constant), Financial innovation

2. Predictors: (Constant), Firm size

3. Predictors: (Constant), Financial innovation * Firm size

Source: Field data (2023)

Significantly firm size had a moderation role since R squared value rose from 0.09 to 0.540 to 0.653. Similarly, significance value in model 2 and 3 is 0.000 implying firm size was significant. These findings agree with Mwangi (2021) that found firm size to be of significant moderating effect, however disagrees with Kithuka (2018) that found firm size to be insignificant.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

It presents a comprehensive overview pertaining the interplay between the variables under investigation. Specifically, it examines the impact of financial innovation among small and medium firms in Kakamega County on financial inclusion.

5.2 Summary of the Findings

5.2.1 Mobile banking

The study investigated how mobile banking affected SMEs access to financial based products and services. The findings from the linear regression analysis noted a statistically notable significant positive association coefficient between the utilization of mobile banking services and the level of financial inclusion observed among small and medium firms. Hypothesis one (H_{01}) posited that there was no significance, but this hypothesis was rejected ($p=0.003$ at $P<.005$).

5.2.2 Agency Banking

The findings from the linear regression analysis noted a favorable correlation coefficient for agency banking innovation and financial inclusivity among small and medium firms. Hence hypothesis (H_{02}) was rejected ($p=0.002$ at $P<.005$).

5.2.3 Internet Banking

The linear regression analysis noted a statistically significant influence of correlation coefficient for utilization of internet banking and the level of financial inclusivity

observed among SMEs. The third hypothesis (H_{03}) in the study was rejected ($p=0.000$ at $P<.005$).

5.2.4 Firm size

The purpose of objective four was to investigate how size of the firm influences the association of financial innovation and financial inclusion among SMEs. The size of the firm significantly moderated financial innovation with financial inclusivity. However, the hypothesis was rejected based on the statistical analysis ($p=0.000$ at $P<.005$). Additionally, the R square value consistently increased throughout all the three models.

5.3 Conclusion

The study presented various conclusions in regard to the study hypotheses.

Firstly, mobile banking significantly influenced financial inclusion among SMEs. Mobile banking financial innovation enables SMEs to execute financial transactions and undertake their operations more conveniently and in an affordable manner.

Agency banking on the other hand enables small-medium enterprises to access locations offering financial services in satellite towns and/or villages especially to SMEs or individuals who have no other means of access such as internet banking. It saves on transportation costs and queuing time which can be allocated in running the businesses.

Internet banking also enables SMEs to handle promptly financial transactions anywhere and whenever, provided that they have access to the internet and bank website. It allows SMEs to transact both locally and internationally at their convenience without visiting a physical financial institution such as a commercial bank.

Lastly, the business size moderated financial innovation with financial inclusivity. Business expansion is desirable because it will allow SMEs which are relatively small to benefit economically arising from financial innovations and services which will enable them to perform better, therefore yielding more profits.

5.4 Recommendations

SMEs should subscribe to mobile banking to enable them to execute easily their operations and affordably make transactions, hence conveniently accessing financial inclusivity.

SMEs secondly should utilize the agency banking services available at their convenience locations to save on transportation costs, queuing time and other indirect costs. The saved resources can be diverted to the business to improve its performance.

SMEs should subscribe to internet banking in order to conveniently access financial services and products in an easier manner, quicken operations and make transactions whether locally or internationally comfortably.

Finally, the findings showed that size of business was of positive significance hence SMEs owners should make an effort to grow and expand their business. This will enable them to integrate most financial innovations into their businesses as well experience the economies of scale from utilizing those innovations.

5.5 Suggestion for Further Research

Further investigation can look at financial innovation and financial inclusion of large businesses. Future research also can investigate each financial innovation component across other sectors in Kenya, such as, in the insurance sector.

The study recommends research on financial innovations and financial inclusion using other moderators such as age of the firm and liquidity levels. A further study would be ideal on large business enterprises as well. This study was employed on business owners target populations of business managers for further studies are recommended.

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APPENDICES

Appendix I: Introduction Letter

I am Benard Omae Ouncho a Masters student at Masinde Muliro University of Science and Technology, School of Business Management and Economics. I am pursuing a course in Master of Business Administration (M.B.A) and hence conducting research on **“Effect of Financial Innovation on Financial Inclusion among Small Medium Enterprises in Kakamega County, Kenya.”** I will appreciate if you honestly share your views and experiences on the topic under consideration.

Sincerely,

Benard Omae.

Appendix II: Questionnaire

Please tick where appropriate.

SECTION A: BACKGROUND INFORMATION

1. Gender parity?

Male ☐ Female ☐

2. Your Age?

18–24 ☐ 25–35 ☐ 36–41 ☐ 42 and above ☐

3. Education attained?

Post graduate (specify).....☐ Graduate ☐ Diploma ☐

High School ☐ Primary School ☐ Other ☐

4. Period your business has been in existence?

0-5years ☐ 6-10 years ☐ 11-15years ☐ 16-20 years ☐

5. Category your business belongs?

Agricultural activities ☐ General Trade ☐ Other
category.....

6. Your position in the business?

Owner ☐ Manager ☐ Employee ☐ Other.....

PART B: FINANCIAL INNOVATION

1.0 Mobile Banking

Using the scale given below, indicate level of agreement on mobile banking innovation in your organization. Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD).

	Mobile Banking	SA	A	UD	D	SD
1	Our business has achieved a greater value from transactions of mobile banking services					
2	Our business has increased the number of transactions from mobile banking service.					
3	Our business has increased the frequency of accessing financial services using mobile banking service.					
4	Our business is able to access timely and reliable financial services using mobile banking					
5	Mobile banking has enabled affordable access to financial services in our organization					

2.0 Agency Banking

Using the scale given below, indicate level of agreement on agency banking innovation in your organization.

	Agency Banking	SA	A	UD	D	SD
1	Our business has achieved a greater value from transactions of agency banking services					
2	Our business has increased the number of transactions from agency banking service.					
3	Our business has increased the frequency of accessing financial services using agency banking service.					
4	Our business is able to access timely and reliable financial services using agency banking					
5	Agency banking has enabled affordable access to financial services in our organization					

3.0 Internet Banking

Using the scale given below, indicate level of agreement on internet banking innovation in your organization.

	Internet Banking	SA	A	UD	D	SD
1	Our business has achieved a greater value from transactions of internet banking services					
2	Our business has increased the number of transactions from internet banking service.					
3	Our business has increased the frequency of accessing financial services using internet banking service.					
4	Our business is able to access timely and reliable financial services using internet banking					
5	Internet banking has enabled affordable access to financial services in our organization					

PART C: FINANCIAL INCLUSION

	Financial inclusion	SA	A	UD	D	SD
1	Financial innovation has led to easy access to soft loans for our business					
2	Financial innovation has made access to loans affordable to our business					
3	Financial innovation has led to timely access to					

	loans for our business					
4	Financial innovation has led to increase in usage of financial services in our business					

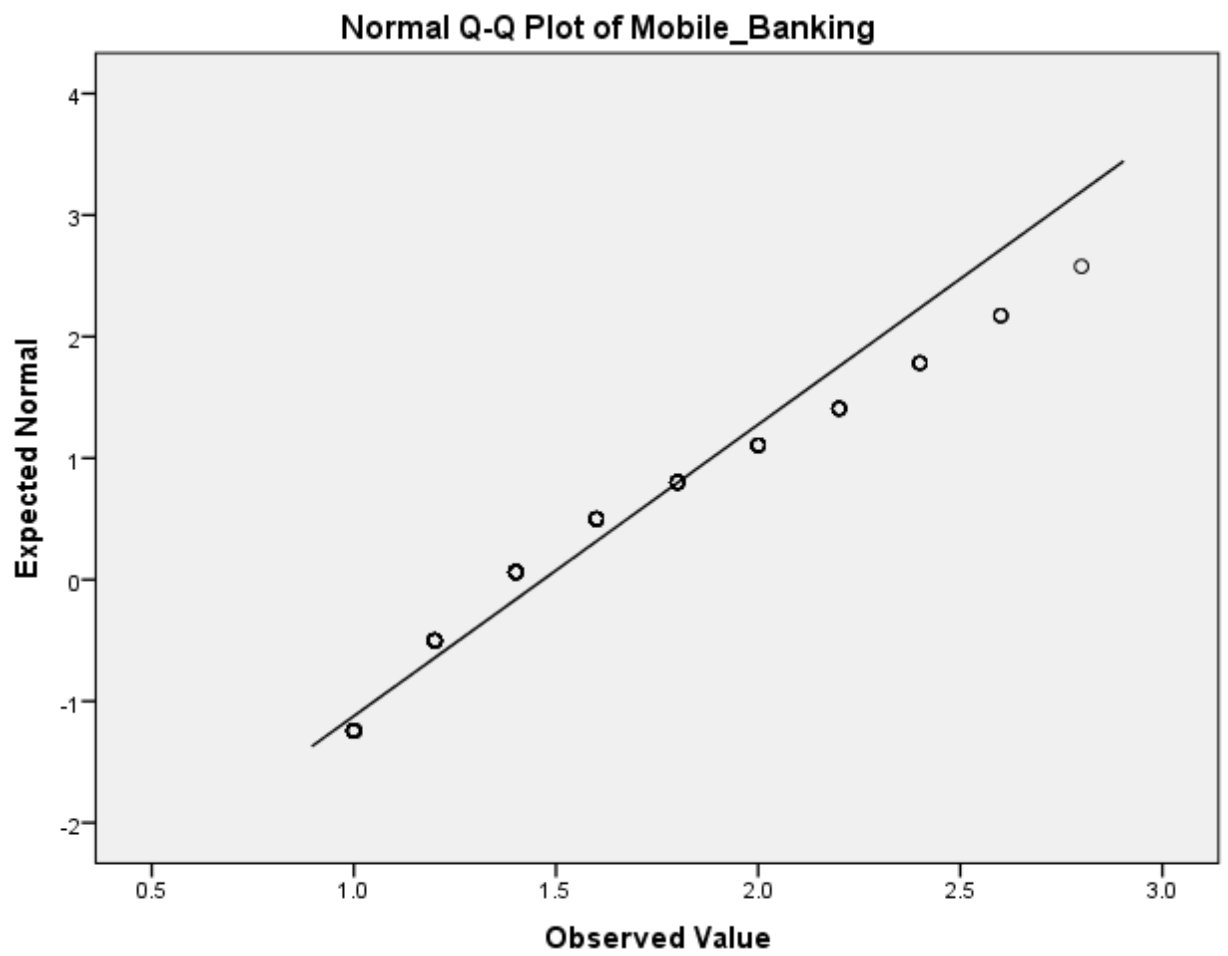
PART D: FIRM SIZE

Using the scale given below, indicate level of agreement on the effect firm size on financial innovation and financial inclusion in your organization.

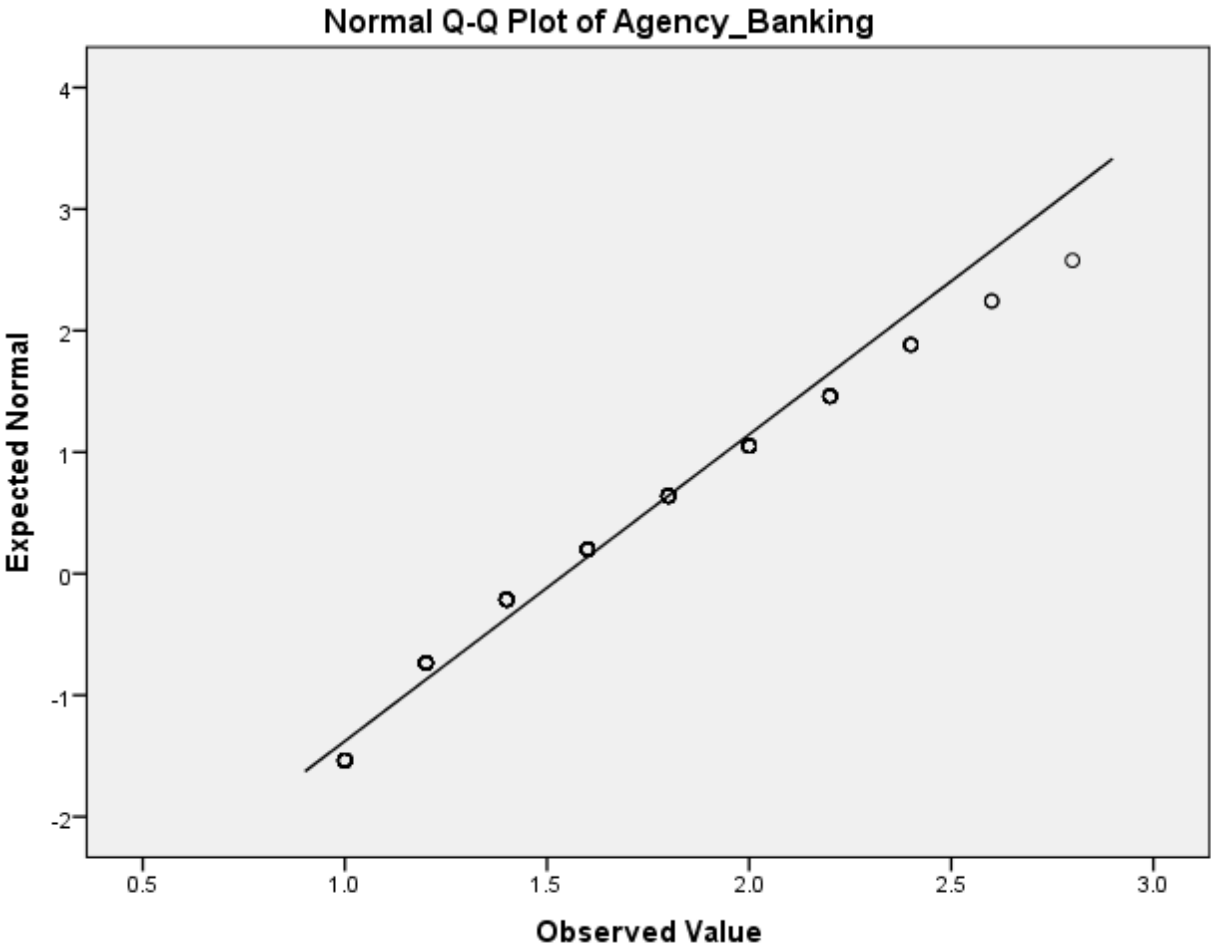
	Firm size	SA	A	UD	D	SD
1	Under SMEs category I offer small business services					
2	Under SMEs category I offer medium business services					
3	The size of my business is attributed to my customer base					
4	The size of my business is attributed to the stock of the business					
5	The size of my business has a played a role in the adoption financial innovations for financial inclusion					

THANK YOU!

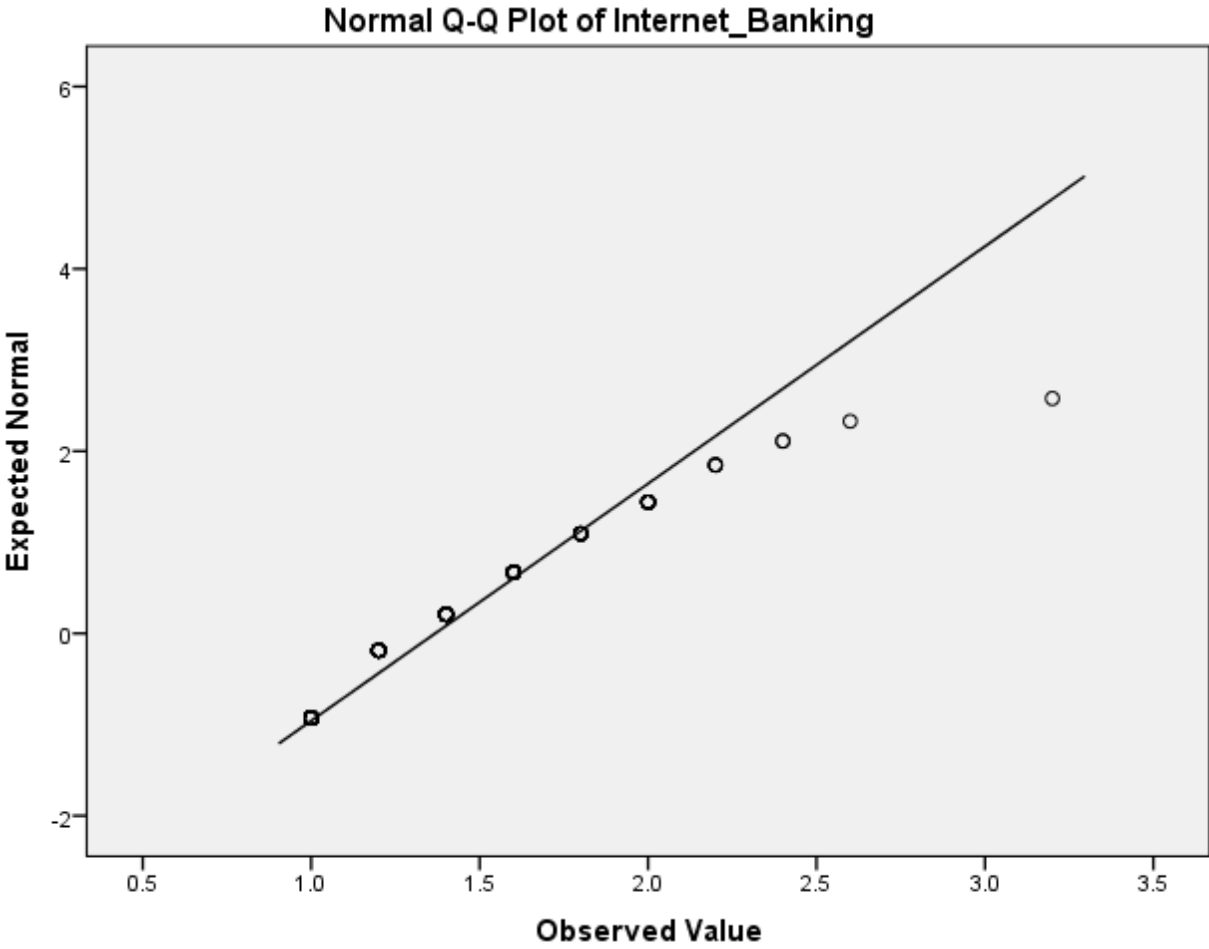
Appendix III: Q-Q Plot of Mobile Banking



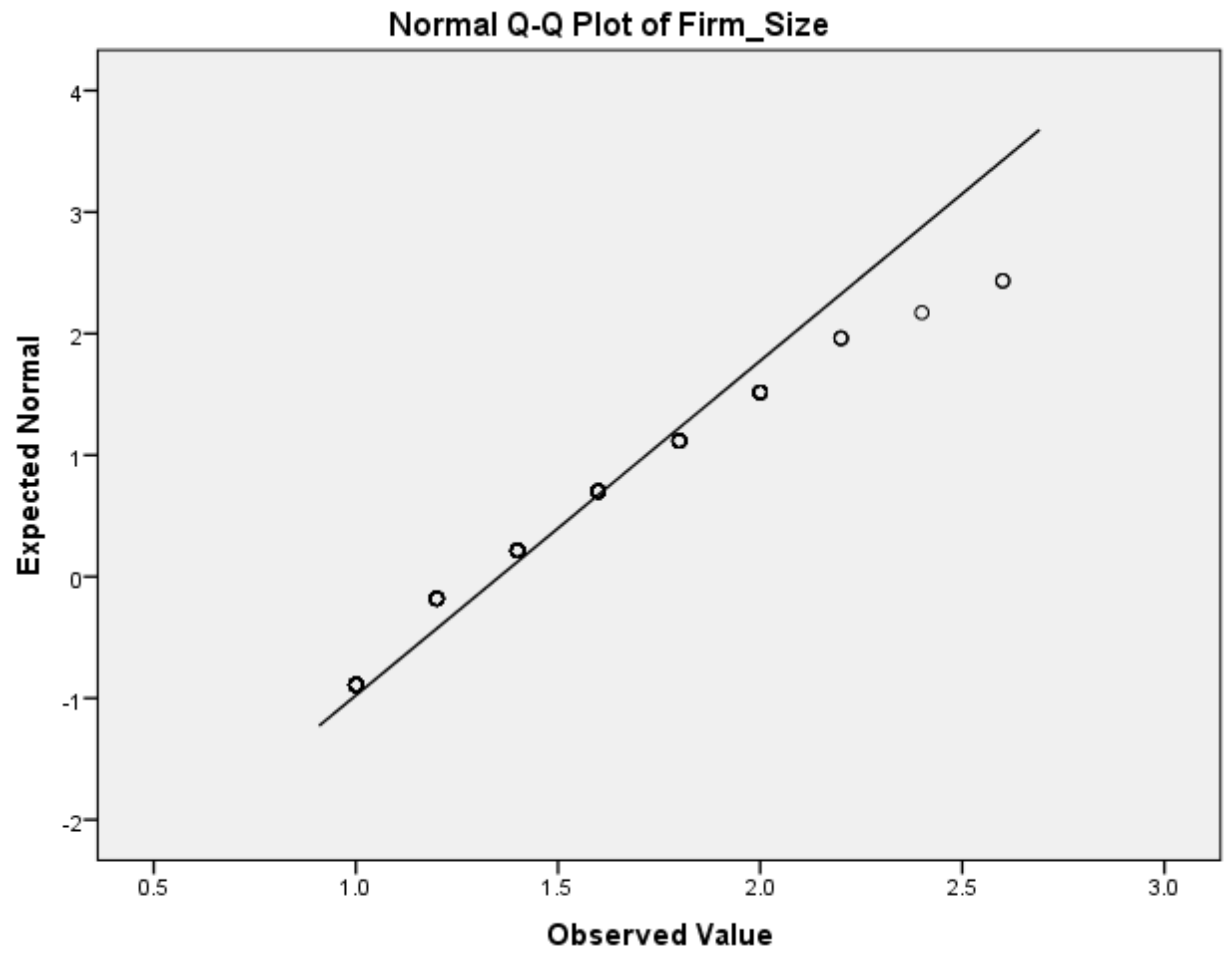
Appendix IV: Q-Q Plot of Agency Banking



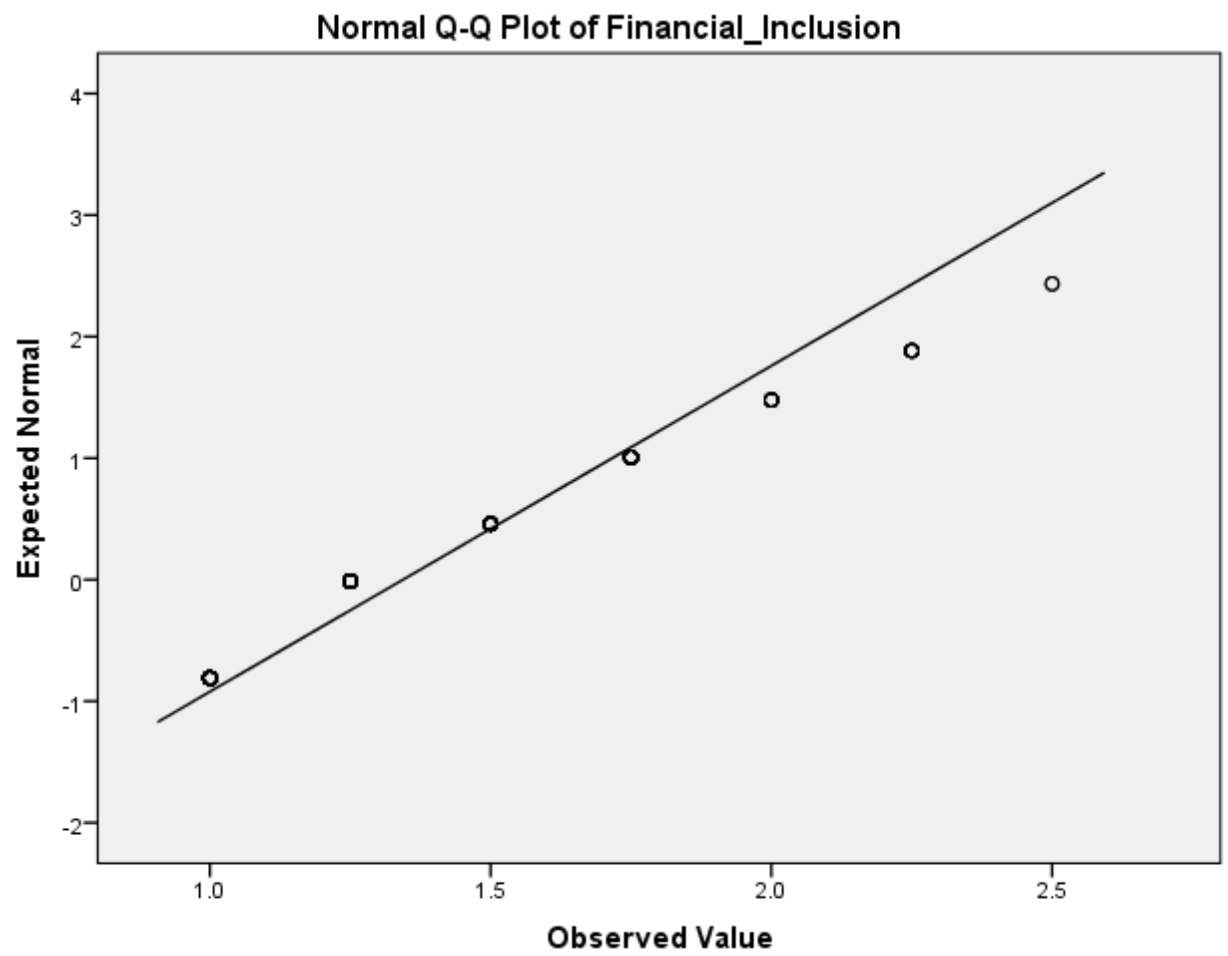
Appendix V: Q-Q Plot of Internet Banking



Appendix VI: Q-Q Plot of Firm size



Appendix VII: Q-Q Plot of Financial Inclusion



Appendix VIII: Research Permit NACOSTI

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RESEARCH LICENSE	
	
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