

**RELATIONSHIP BETWEEN FINANCIAL INCLUSION AND PROFITABILITY OF
COMMERCIAL BANKS IN KENYA**

ABDIRAHMAN ABDIRIZAK GELLE

**A THESIS REPORT SUBMITTED IN PARTIAL FULLFILLMENT OF THE
REQUIREMENT FOR THE AWARD OF MASTER OF SCIENCE IN FINANCE AND
INVESTMENT, AT THE KENYA METHODIST UNIVERSITY**

JULY, 2024

DECLARATION

I declare that this thesis report is my original work and has not been presented for award of degree in any other University or for any other award.

Signature_____

Date: _____

Abdirahman Abdirizak Gelle

MFI-3-1446-3/2019

The thesis report has been submitted for examination with our approval as the University supervisors.

Signature: _____

Date: _____

Mr. Moses Kithinji

School of Business and Economics

Kenya Methodist University

Signature: _____

Date: _____

Mr. Anthony Murithi

School of Business and Economics

Kenya Methodist University

DEDICATION

To my parents Mr. Abdirizak Gelle and Mr Ahmed Elmi for their support throughout my educational journey

ACKNOWLEDGEMENT

I thank Allah for giving me grace to complete this thesis report. My sincere appreciation goes to my supervisors, Mr. Moses Kithinji and Mr. Anthony Murithi, who helped me to complete this thesis report.

TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT.....	iv
TABLE OF CONTENTS	v
ABBREVIATIONS AND ACRONYMS.....	vii
LIST OF TABLES	viii
LIST OF FIGURES	ix
ABSTRACT.....	x
CHAPTER ONE	1
INTRODUCTION.....	1
1.1 Background to the Study.....	1
1.2 Statement of the Problem.....	5
1.3 Research Objective	5
1.4 Research Hypotheses	6
1.5 Significance of the Study	6
1.6 Scope of the Study	7
1.7 Limitations of the Study.....	7
1.8 Operational Definition of Terms.....	7
CHAPTER TWO	9
LITERATURE REVIEW	9
2.1 Introduction.....	9
2.2 Theoretical Review	9
2.3 Empirical Review.....	11
2.4 Conceptual Framework.....	20
2.6 Operationalization Framework	21
2.7 Summary of Literature and Knowledge Gaps	22
CHAPTER THREE	22
RESEARCH METHODOLOGY	23
3.1 Introduction.....	23
3.2 Research Design.....	23

3.3 Population of the Study.....	23
3.4 Sample Design and Sample Size.....	23
3.5 Data Collection	24
3.6 Data Analysis and Presentation	24
CHAPTER FOUR.....	26
FINDINGS AND DISCUSSIONS.....	26
4.1 Introduction.....	26
4.2 Summary of Descriptive Statistics.....	26
4.3 Diagnostic Tests.....	27
4.4 Correlation Analysis	28
4.6 Regression Results and Hypothesis Testing	29
4.7 Discussion of the Findings.....	39
CHAPTER FIVE	45
SUMMARY, CONCLUSION AND RECOMMENDATIONS	45
5.1 Introduction.....	45
5.2 Summary of the Findings.....	45
5.3 Conclusion	46
5.4 Implication of the Findings and Practical Contribution of the Study to Knowledge.....	47
5.5 Recommendations of the Study	48
5.6 Suggestions for Further Research	48
REFERENCES.....	50
APPENDICES	64
Appendix I: Commercial Banks in Kenya	64
Appendix II: Data Collection Sheet.....	66
Appendix III: Kemu Authorization Letter.....	67
Appendix IV: Nacosti Research Permit.....	68

ABBREVIATIONS AND ACRONYMS

ATMs	Automated Teller Machines
CBK	Central Bank of Kenya
CBKL	Consolidated Bank of Kenya Ltd
DBK	Development Bank of Kenya
GDP	Gross Domestic Product
KCB	Kenya Commercial Bank
<u>KeMU</u>	Kenya Methodist University
NBK	National Bank of Kenya
NIM	Net Interest Margin
ROA	Return on Asset
ROE	Return on Equity
SPSS	Statistical Package for Social Sciences
TAM	Technology Acceptance Model

LIST OF TABLES

Table 2.1: Summary of Literature and Knowledge Gaps	22
Table 3.1: Target Population.....	23
Table 4.1: Summary of Descriptive Statistics.....	26
Table 4.2: Autocorrelation Test	27
Table 4.3: Multicollinearity Test	27
Table 4.4: Normality Test	28
Table 4.5: Correlation Results with Return on Equity as Measure of Profitability	29
Table 4.6: Correlation Results with Return on Assets as a Measure of Profitability	29
Table 4.7: Model Summary linking Financial Inclusion Strategies and Return on Equity	30
Table 4.8: ANOVA Linking Financial Inclusion Strategies and Return on Equity	30
Table 4.9: Beta Coefficients and Significance of Financial Inclusion Strategies and Return on Equity	31
Table 4.10: Model Summary Linking Financial Inclusion and Return on Assets.....	33
Table 4.11: ANOVE between Financial Inclusion and Return on Assets	33
Table 4.12: Beta Coefficients of Financial Inclusion and Return on Assets	33
Table 4.13: Moderated Model Summary linking Bank Size, Financial Inclusion and Return on Equity	36
Table 4.14: ANOVA on Bank Size, Financial Inclusion and Return on Equity	37
Table 4.15: Beta Coefficients on Bank Size, Financial Inclusion and Return on Equity	37
Table 4.16: Regression Model Summary on Bank Size, Financial Inclusion and Return on Assets	38
Table 4.17: ANOVA findings on Bank Size, Financial Inclusion and Return on Assets.....	38
Table 4.18: Beta Coefficients of Bank Size, Financial Inclusion and Return on Assets	39

LIST OF FIGURES

Figure 2.1: Conceptual Framework	20
Figure 2.2: Operationalization Framework.....	21

ABSTRACT

In order to establish a connection between financial inclusion efforts and Kenyan commercial banks' profitability, the study sought to: determine the link between Kenyan commercial banks' profitability through the use of agency banking, internet banking, mobile banking, and ATM banking, with bank size being the moderating factor. Financial intermediation theory, contemporary portfolio theory, agency theory, and technological acceptance model theory were the principles that acted as the study guide. Targeting 41 commercial banks in Kenya, an explanatory descriptive research approach and a census were utilized. Auxiliary information from financial statements was obtained on a period starting with 2016 all through to 2020. The obtained data was examined descriptively (means and standard deviations) and inferentially (correlation and regression analysis). In conducting the analysis, the SPSS. It emerged that ATM banking ($\beta=0.130$, $p<0.05$), ($\beta=0.021$, $p<0.05$) as well as mobile banking ($\beta=0.261$, $p<0.05$), ($\beta=.034$, $p<0.05$) had a large impact on returns on assets and equity, respectively while Internet banking ($\beta=0.016$, $p<0.05$) and agency banking ($\beta=0.008$, $p<0.05$) only significantly affected return on assets among commercial banks in Kenya and this is significantly moderated by bank size. The study recommends that senior management team of the commercial banks in Kenya should modernize and modify the existing ATM machines by including more features like the capability to deposit cash and cheque. The sales and marketing of those who manage commercial banks in Kenya ought to give attention on creating awareness for the uptake of internet banking to improve on ROA. The Central Bank of Kenya's decision-makers should establish a level ground by formulating and enacting relevant financial inclusion rules and regulations while considering the smaller, medium and large stable commercial banks operating in Kenya. The inquiry will contribute to literature on interplay between financial inclusion strategies and profitability.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Banks are established to run financial operations that would generate revenues hence profitability (Tan et al., 2017). To generate profits, the need to focus on financial inclusion (FI) is critical (Ratnawati, et al., 2018). Financial inclusion is the only mechanism that banks can leverage to provide financial services to the marginalized and under banked population (Otiato, 2016). The growing attention on the need to alleviate poverty has heightened the popularity of financial inclusion among the policy makers around the world (Hannig & Jansen, 2010).

Literature suggests access, practice and worth of the financial as the key indicators when it comes to FI in an economy (Shihadeh & Liu, 2019). Financial inclusion seeks to allow the unbanked people to access formally established financial services (Maherali, 2017). FI is regarded as one of the policy direction against poverty alleviation especially in developing Nations. Financial institutions seek to enhance the access to financial services so as to grow their revenue streams thus improved profitability (Mokaya & Omagwa, 2018). Some of the mechanisms used by the commercial banks to attain financial inclusion include the Automated Teller Machines (ATMs), agency banking, internet (online) banking and mobile banking.

In Japan, Kumar, et al. (2021) shared that financial inclusion is a significant concept in established economies. Tightening of the branches of the bank lowers profitability, although the use of ATMs and number of loan accounts were seen to have no significant link with profitability (Kumar *et al.*, 2021). As shared by Sarma (2016), as compared to most Asian countries, Japan is one of the countries characterised by highly developed financial system. While leveraging the Index of FI for the period 2003 all through 2013, Sarma (2016) shared that Brunei Darussalam, Korea, Malaysia and Japan had attained high near of financial inclusion around the world and this enhanced their profitability. In a comparative analysis Fung'a'cov'a and Weill (2014) realized that Japan is characterised by high level of FI compared with the world regular in light of savings and formal accounts. On the basis of ownership of bank accounts, Metzge et al. (2022) noted that 98% of the adults in Japan have formal savings and bank accounts.

Therefore, although there is plenty of literature on financial inclusion, few of them have integrated it with the profitability of the banks. However, a profitable banking industry is a prerequisite for the growth and development of an economy (Bitar, et al, 2019). Different bank related variables like efficiency, liquidity, size and non-performing loans among others have been shown to have an effect on profitability, however, the link between FI and profitability more so in the banking sector is still not clear (Kumar et al., 2020). The study by Shihadeh and Liu (2019) centred on bank risks and financial inclusion covering a total of 189 nations where branch network was the adopted indicator of FI. It was shown that accumulative the numeral of branches of banks enhances their profitability.

In Jordan, Shihadeh, et al. (2018) shared that the numeral of ATMs and credit cards are key indicators of financial inclusion driving profitability of banks. Shihadeh et al. (2018) further noted that just as financial inclusion can reduce poverty, so can it enhance profitability of a financial institution, financial inclusion is directly linked with nonperforming loans (Shihadeh & Liu, 2019). On the contrary, Chen, et al.(2018) used a case of China arguing that efforts to enhance FI go a long way to reducing the level of NPLs. Worthwhile to memorandum is that these two inquiries used dissimilar proxies to measure financial inclusion, which imply that use of different indicators of financial inclusion produce different results. In China, Chen and Yuan (2021) shared that financial inclusion has undergone significant progress in the recent past supported by advancement in technologies like ATMs, online banking platforms and mobile phones as well as agency networks. In Palestine, Shihadeh (2021) shared that through financial inclusion, banks are able to improve on their performance through increased revenues.

In Africa and specifically in Eswatini, Hlophe (2018) argue that financial development in an economy leads to financial inclusion. Using a case of Nigeria, Jimoh, et al. (2020) shared that ATMs, expansion of bank branches and point of sales terminal were key proxies of financial inclusion that enhance performance of the banks. In Sub-Sahara Africa (SSA), FI support and promote the ability of lending institutions to generate profits (Nsiah, et al., 2021). Efforts should be made by SSA member countries to develop right policies to enhance FI. Mdasha, et al. (2018) argued that FI has contributed towards overall robustness of the financial enterprises in Tanzania (Nsiah et al., 2021).

In Kenya, there hasn't been much research on the relationship between financial inclusion and profitability especially with regard to commercial banks. The study by Nzyuko and Jagongo (2017) perform. Samuel and Mbugua (2019) concentrated on initiatives that support FI and their contribution towards performance in monetary terms.

1.1.1 Profitability

Profitability is the net income of the entity that is left once expenses have been paid off. The income is generated from the daily activities of the bank while the expenses include the costs incurred to generate the income. Firms are largely established to generate profits and in determining this, ratios like returns generated on assets and equity are instrumental. Profitability is the ultimate goal and objective of any organization and all the strategies put in place and geared towards the same (Zalloum et al., 2019). In the context of commercial banks, they should be profitable enough in order to carefully realize the intermediation role. In most cases, commercial banks generated profits from the fees they charge on the transactions besides the interests that accrue from the assets of the bank.

Some of the common indicators of gauging profitability of the bank comprise returns on assets (ROA) and equities (ROE) and the net interest margin (NIM). The ability of the banking institution to provide products in an efficient and effective manner is key indicator of profitability (Nasution, et al., 2017). Ratios are critical when it comes to ascertainment of the profit levels accruing in financial entities. Trading in variety of services and products require banking entities to embrace ratios in majority of the incidences. It is possible for the banking entity to gauge the level of profits generated by leveraging ratios.

1.1.2 Financial Inclusion Strategy

The definition of FI is that they are mechanisms that are made aimed at availing financial related products to all individuals including those vulnerable in the society. FI aims at increasing the account holders in the bank while promoting the use of formal modes of payment include the use of cheques, mobile phones, automated teller machines (ATMs) and the internet (Samuel & Mbugua, 2019). Financial inclusion strategies aim at ensuring that all adults can be in position to access wider range of formal financial products in accordance to their specified needs at a cost that

is affordable. The financial inclusion strategies are geared towards ensuring there is access to affordable, safe and easy finances (Wale-Awe, et al. 2020).

As shared by Dienillah, et al. (2018), indicates that financial inclusion help in reducing information asymmetries that may increase the transaction costs. This is also important in reducing market frictions that may create inefficiencies arising from lack of access to quality information. Financial inclusion has been operationalized differently by the available empirical studies. Okoye, et al. (2017) used the ratio of loans to deposit, loans to rural regions and the branch network as the indicators of financial inclusion strategy. Wale-Awe et al. (2020) used the loans and deposits arising from bank branches in rural areas, the branch network and the rate of interest as the indicators of financial inclusion strategy. Samuel and Mbugua (2019) covered lending requirements, licensing and access to financial capital as the measures of financial inclusion initiatives. Nzyuko and Jagongo (2017) covered ATMs, financial inclusion innovation tools which are mobile banking, agency banking, and online banking. Thus, in this study, financial inclusion was measured using ATMs, internet, agency and mobile banking.

1.1.3 Commercial Banks in Kenya

Commercial banks operate in the larger financial sector within the banking industry and they all under Central Bank of Kenya (CBK), which is the regulator. They mobilize savings and deposits from customers while extending credit facilities to all people including the marginalized and vulnerable group hence financial inclusion. Kenyan commercial banks operate in private and public segments of the economy at large. The privately established banking entities are further categorized as those that owned by foreigners and the local ones (Central Bank of Kenya [CBK], 2020).

Profitability has remained a challenge among most of these institutions as demonstrated by persistent reporting of losses by Consolidated Bank among institutions. Because of the financial challenges, NBK was bought by KCB in the year 2019. This was meant to enhance its financial performance. The other struggling banks like CBKL have been forced to close down their branches in order to stay afloat. Other institutions that have been placed under receivership include Chase Bank. It is against this background of dwindling profitability of these banks that the present study seeks to establish their FI and its contribution towards profitability.

1.2 Statement of the Problem

Loss generating record has remained one unresolved challenges facing Kenyan commercial banks. Ideally, it is the hope of the government to ride on these institutions as a way of achieving Vision 2030 (Government of Kenya [GoK], 2018). However, the earlier indicated loss making record of these institutions raises a question of whether the government would be able to achieve the aforementioned Big-Four Agenda. This is because majority of the banks are expected to loan out mortgages as an enabler of then housing aspect of the Big-Four Agenda. This has an implication that is that consistent reporting of losses among these institutions is detrimental to the government hence the need for this study.

The available studies include the study done in Pakistan by Ikram and Lohdi (2015) that mainly focused on financial inclusion and profitability of the banks. The study done by Aliffianti and Arifiansyah, (2020) creates appropriate gap because it was done in Indonesia and not in Kenya. The study accompanied in the banking sector of Jordan by Al-Chahadah et al. (2020) paid focus on financial inclusion and its link with profitability at the corporate level. The relationship between the Palestinian banks' performance and the measures of financial inclusion was examined by Shihadeh (2021) where it was noted that through financial inclusion, banks are able to improve on their performance through increased revenues. They further investigated risks and financial inclusion in banks covering a total of 189 nations where branch network was the utilized as financial inclusion indicator where it was shown that increasing the number of branches of banks enhances their profitability. Locally in Kenya, Musau (2018) focused on Kenyan banks failed to link FI and profitability. Oranga and Ondabu (2018) who looked at financial inclusion and attention relied mostly on listed commercial banks' financial performance. All these previous studies indicated a gap whereby this research study intended to fill through a prove interplay between financial inclusion and revenues commercial banks gain in Kenya.

1.3 Research Objective

Specific and general objectives that guided the study were:

1.3.1 General Objective

The study aimed at establishing the connection between financial inclusion and profitability of commercial banks in Kenya

1.3.2 Specific Objectives

Specific objectives guiding the study:

- i. To determine the relationship between ATM banking and profitability of commercial banks in Kenya
- ii. To establish the relationship between internet banking and profitability of commercial banks in Kenya
- iii. To find out the relationship between agency banking and profitability of commercial banks in Kenya
- iv. To assess the relationship between mobile banking and profitability of commercial banks in Kenya
- v. To determine how bank size affects the link between financial inclusion policies and Kenyan commercial banks' profitability.

1.4 Research Hypotheses

Study hypotheses:

H₀₁: ATM banking has significant relationship with profitability of commercial banks in Kenya

H₀₂: Internet banking has significant relationship with profitability of commercial banks in Kenya

H₀₃: Agency banking has significant relationship with profitability of commercial in Kenya

H₀₄: Mobile banking has significant relationship with profitability of commercial banks in Kenya

H₀₅: Bank size has significant moderating effect in the relationship between financial inclusion strategies and profitability of commercial banks in Kenya

1.5 Significance of the Study

The policy makers at CBK would formulate prudential guidelines to stabilize the banking sector in these respective countries. The policy makers working in the respective commercial banks will be capable of developing solid policies that would promote financial inclusion for better

profitability. The policy makers at the Kenya Bankers Association will be able to develop sound policies for the members. Kenyan banks may increase the adoption of financial inclusion that would spur profitability. The overall growth of Kenya's economy would be aided by all of these activities. The management team at CBK would be in position to develop and implement sound strategies of promoting financial inclusion. The existing literature and knowledge on financial inclusion and profitability may be enhanced. This literature would be available for evaluation by future researchers who wish to conduct related research.

1.6 Scope of the Study

Financial inclusion strategies and their link with profitability was explored by the inquiry. More specifically, the study focused on ATMs, agency, internet and mobile banking as they relate with profitability. Kenyan banks were covered by this inquiry as established in their tiers. The study covered a five-year period (2016-2020).

1.7 Limitations of the Study

During data collection, some information was not in place for some periods because of significant activities in the banking sector including branding, mergers and takeovers. Some of the institutions affected include Jamii Bora Bank currently called Kingdom Bank. This affected gathering of data by creating gaps. In order to overcome this limitation, the different sources were included in data collection and extrapolation was done on the missing data.

1.8 Operational Definition of Terms

Agency banking is used in this study to refer to number of bank agents who have been authorized by respective banks to provide some specified banking services to customers.

ATM banking in this study, this refers to the number of ATMs among commercial banks in Kenya

Financial inclusion is employed in this study to encompass Kenya's commercial banks deployment of ATMs, online banking, agency banking and mobile banking.

Internet banking is used to describe the volume of transactions moved through internet by customers of the commercial banks in Kenya

Mobile banking it refers to the volume of transaction moved by customers through mobile banking is performed in Kenya.

Profitability it represents the proportion of net profit generated by Kenya's commercial banks leveraging the available assets

Bank size is represented by commercial banks natural logarithm of the assets in Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A survey of the literature, both theoretical and empirical investigations, is the main objective of this chapter. The study variables are diagrammatically illustrated through conceptual framework.

2.2 Theoretical Review

A discussion on key theories is as below provided:

2.2.1 Financial Intermediation Theory

Gurley et al. (1960) and Goldsmith (1969) were the proponents of this theory. In this theory, commercial banks are regarded as intermediaries obliged to drive FI in an economy. As intermediaries, it is envisaged that these institutions would play a role in lowering the costs incurred by customers to carry out their transactions. It is the role of FI to make efforts in ensuring that surplus is utilized to support lending activities for customers (Gurley, et al., 1960). Bisignano (1998) shared that there are four categories of financial intermediaries: deposits on a fixed term, deposits covering a shorter timeframe, liabilities that are withdrawn on demand with delays and the last category covers liabilities and cash that can't be transferred readily. Hence, financial intermediaries seek to ensure steady flow of funds from units having deficits to those with surplus (Thakor & Boot, 1997). The theory demonstrates how having in place mechanisms like ATMs and agency banking can allow banks to achieve FI in an economy.

2.2.2 The Modern Portfolio Theory

On the other hand, the modern portfolio theory (MPT) by Markowitz (1952) seeks to incorporate the risk return trade off in explaining how the firm can leverage on diversification to mitigate against risk exposure and thus enhance on returns that translates to better profitability. There are two principles that inform this theory: the need to ensure returns have been maximized in view of any exposure to risk and the need to diversify investments to lower risks. The premise of this theory stem from the notion that investors have high preference of ensuring they put their money

in portfolio having minimal risk relative to some returns. As such, the need to invest in businesses or activities requiring high risks is only evident when the probable returns would be so high. The other premise of this theory is the fact that two risks are systematic (where diversification is not able to minimize them) and unsystematic (where one can diversify them).

Different inquiries have leveraged this theory, for instance, Obed (2023) who did an extension of this theory in an analysis of how Kenyan pension funds can be allocated in a strategic manner. With emphasis on passiveness and activeness in management of investment, mean-variance approach was developed by Markowitz to solve issues revolving around risks. Lubatki and Chatterjee (1994) borrowed evidence from this theory to argue that the need to reduce risks require investors to ensure they have diversified into related forms of businesses. Different criticisms have been leveled against this theory for instance, Chow et al. (2001) shared that the application of this theory has been limited to old investors in the field of technology. The other criticism is the fact that optimization of returns means errors are maximized.

Despite the criticism, this theory will inform how investment in ATMs, internet banking, agency and mobile banking platforms may allow banking entities to enhance their profits. Investing in these financial inclusion strategies is risky as argued by this MPT, but the returns can be incredible. Some of the operational risks that is associated with investment in ATMs, internet banking, agency and mobile banking platforms include system downtime and possibility of hacking of the system that may result into potential loss of customer data to third parties as well as reputational risks. The MPT will therefore guide the commercial banks on how to diversify their portfolio (by investing in these financial inclusion strategies) while minimizing the possible resultant risks and thus maximizing on returns (profitability) as argued by this theory. Thus, this theory was found relevant in light of the present study.

2.2.3 The Agency Theory

Meckling and Jensen (1976) developed this theory to offer an explanation of how agents and principals interact to achieve the stated goals in a contract. In a contract, agents are given obligation that the owner (principal) expects them to be achieved. However, the interests and wishes of the agents are not always aligned with those of the principals creating mismatch hence possible conflict of interest. The conflict of interest may arise because of information asymmetry that may

be evident between these two parties (Panda & Leepsa, 2017). Thus, aligning the interests of these two parties is the only way in which the said conflicts of interest may be resolved (Pouryousefi & Frooman, 2017).

The agency banking aspect of FI is where the bank assigns some of the financial services to third parties to carry out on behalf of the institution. Hence, the theory anchored the variable agency banking.

2.3 Empirical Review

Past inquiries are reviewed in this section

2.3.1 Automated Teller Machine Banking and Profitability

Among commercial banks in Joshi (2019) linked ATMs' service values and how their users were satisfied. In gathering the information, this study relied on first sources with the value of n at 60. Hypotheses had been developed and their testing was supported by inferential statistics. A direct link was registered between variables after processing the gathered information. The inquiry showed that availability of cash supported by ATMs was the greatest factor that shaped satisfaction of the end users followed by location of these ATMs. Ali (2016) did an inquiry into ATM and how it impacts on delivery of the banking services. The period of consideration of the inquiry was 2009 all through to 2013. Gathering of the views was done from auxiliary sources. It was shown that the transactions of ATMs and demand deposits in the private sector are significantly linked with each other. The recommendations raised were the need for the depositors to be enlightened on the use of ATMs with the aid of mass media platforms.

The study conducted by Jimoh (2019) used a case of Nigeria to link electronic banking and profitability. The adopted variables include ATMs, mobile and internet platforms of carrying out banking activities. The adopted methodology was quantitative within a time frame from 2006 all through to 2015. Information sourced from auxiliary sources was used in the investigation and profit margin was an indicator of profitability. The inquiry showed that apart from internet banking, all the remaining indicators of electronic banking had direct and significant link with profitability. Ekanem, et al. (2017) looked at ATM and its link with the degree of users' satisfaction levels. It was conducted in the context of Nigeria with quantitative techniques being embraced.

Firsthand sources were used to gather data for the inquiry. The evidence showed that ATMs are linked with greater satisfaction of the end users besides boosting the level of profits generated.

Harelimana (2018) did an inquiry to link ATMs and profitability of Rwandese commercial banking entities. The horizon covered was from 2010 all through to 2016. The methodologies covered include qualitative and quantitative aspects. Data was gathered from primary sources based on the users of ATMs. From the results, ATMs and profitability were seen to be interlinked with each other in significant terms. It was noted that accessibility, differentiation and low costs are the key issues that shape the degree of satisfaction of the users of ATMs. Magara (2018) focused on ATMs and their link with the level of satisfaction of the clients. The diffusion of innovation theory provided anchorage to this inquiry. In total, 144 participants were covered during gathering of the data. The interplay between ATM and monetary performance was direct.

In Kenya, Mutiso and Senelwa (2017) focused on ATMs and their link with ROA of the banking entities. In total, 11 banking entities listed at the Nairobi securities exchange (NSE) were covered. From 2007 through 2016, data which was gathered from auxiliary sources was utilized. ATMs and ROA were noted to be directly and significantly linked with one another. The recommendation raised by the inquiry was the need for banking entities to enhance their efforts in adoption of the ATMs while automating their delivery of services to the end users.

The study done by Halima and Wepukhulu (2020) placed emphasis on financial innovations and how they relate with financial performance. This study in particular emphasized on placed particular on tier I banks in Kenya. ATMs, mobile, agency and internet banking were the covered variables in this inquiry. Cross-sectional descriptive design was embraced by the inquiry that supported gathering of information from first hand sources. The information from primary sources was complemented by the available statistics from auxiliary sources. The inquiry showed that internet banking enhanced the uniqueness of the products available to clients. Through mobile banking, customers enjoyed reduction in costs of operation. There was ease in the operations of the business due to adoption of agency banking. The investment and cost of ATM was informed by the income of the bank.

2.3.2 Internet Banking and Profitability

In Iran, Manesh et al. (2014) shielded the time frame from 2005 all through to 2010. The variables covered include cards against ATMs, facilities to branch network and ROA was the proxy of profitability. The methodology adopted in the study was panel data where 17 banks were incorporated in the analysis. It indicated that development in electronic banking has a direct link with profitability of the banks. A similar study in Iran was conducted by Amiri and Ahmadian (2017) with a focus on e-banking and profitability of banking entities. Survey was the design that was embraced in this inquiry covering 30 banking entities over a period 2005 all through to 23015. Estimation of the study finding was supported by panel data methodology. The inquiry used ROA and ROE in gauging profitability and a direct nexus was pointed out.

A study in Nigeria by Aduaka and Awolusi (2020) focused on electronic banking and profitability of the banks. Information was obtained from first hand as well as auxiliary sources to complement each other. The time period was 2010 all through to 2017. The inquiry showed that the channels of e-banking have significant contribution towards profitability of the banking entities. The recommendations raised was the need of banking entities in Nigeria to put a lot of investment in cards products in addition to ATMs since they create more revenues for the banking entities. The study in Ghana by Mawutor and Kwaku (2015) looked at e-banking and how it impacts on profitability of banking entities. The inquiry was supported by a quantitative methodology and information was gathered from first hand sources. The inquiry had developed hypotheses whose testing was done inferentially. E-banking and profitability were noted as being significantly connected with each other.

In another study in Nigeria, Eze and Egoro (2016) looked at e-banking and the profitable nature of banking entities. The parameters of e-banking covered ATMs, e-banking, internet and point of sales. The time frame that was covered by the inquiry was 2006 all through to 2014. The study showed that e-banking and profitability are significantly related with each other. The study in Zimbabwe by Santu et al. (2017) considered both qualitative and quantitative methods and it was noted that electronic banking was poor regulated in Zimbabwe and this was a serious concern.

Vekya (2017) focused on electronic banking and its link with profitability of the banking entities. The investigation's chosen design was descriptive. 43 commercial banks participated supported

with the consumption of census. Information gathering was done from auxiliary sources. The link between the study variables was explored regressionally. It was noted that the transactions of ATMs and profitability are significantly linked with each other. The largest amounts of transactions of ATMs were registered within the year of 2012. ATMs were seen to explain 16.9% of the variability in profitability.

Abdullai and Micheni (2018) covered internet banking and how it is linked with performance in operational terms. The researcher selected cross sectional with 56 participants being targeted. A significant interplay between variables was registered. The recommendations raised by the inquiry were the need for the management of the banking entities to put much of the investment in internet banking activities. Mateka et al. (2016) looked at internet banking in liaison with monetary performance. The inquiry focused on Kenyan banking entities. The unique contribution of the inquiry to theory, policy and practice arise from the fact that because of the increased demand of internet banking as a relevant means of service delivery, the need for the banking entities to tighten the level of security with regard to data emerged.

Ali (2018) looked at online banking and FP. The specific focus of the inquiry was on accessibility and risk management strategies related with online banking and their link with financial performance. The inquiry covered a period of 2012-2017. The information was gathered from first hand sources of Absa Bank. The selection of the participants was done using stratified sampling that helped in gathering of information from first hand sources. It was noted that online banking explains 35% variability in financial performance of the banking entities in Kenya.

Barasa et al. (2017) carried out a research on online banking and its connectivity to financial performance. The emphasis of the investigation was on Kisumu-based financial organizations. The adopted design was descriptive survey and both qualitative and quantitative methods were adopted. In total, 34 banking entities were targeted and used as a point of reference during gathering of the information. Information was sought from first hand as well as secondary sources. Internet banking was noted as a significant predictor. As a recommendation, the needed for commercial banks to enhance their internet banking platforms strongly emerged.

2.3.3 Agency Banking and Profitability

In Zimbabwean context, Santu, et al. (2017) conducted an investigation into the agency model of carrying out banking operations which lending entities had embraced. Information for processing was obtained from five entities. The analysis pointed out the enterprises that had embraced agency banking had widened their markets. Kiprop and Kiptiony (2018) failed to obtain adequate evidence on whether agency banking was significantly connected with ROE of the banking entities. Kanyugi et al. (2019) did an inquiry into agency banking and how it relates with withdrawals among Kenyan banks. An exploratory non-experimental design was embraced in this inquiry. Information was gathered from auxiliary sources in quantifiable form. A total of 14 banks guided gathering of the data. It was shown that agency banking enhances withdrawals among banks.

Agency banking was the subject of a research by Ndambuki (2016) and the link with profit generating potential. Longitudinal approach was adopted and the entities covered added up to 20. Information was obtained on a horizon from 200 all to 2016. The processed views were that agency banking was non-significant. Argamo (2015) used access cost and transactions incurred by customers through agents as measures of agency banking. After processing the generated information, it was apparent that agency banking was a significant predictor.

Murimi et al. (2021) engaged in an inquiry that entailed 120 participants. The study raised concern on the need of improving care given to customers as well as driving knowledge on agency banking among customers. Kingori and Gekara (2015) placed emphasis on Thika where Cooperative Bank agents were covered. The inquiry noted existence of significant interplay between agency banking and monetary performance. Karimi (2018) covered a total of 11 agents and participants in the inquiry were selected through stratified means. It was apparent that charges incurred by customers through agency banking were high.

In 2014, a study on how financial performance relate with agency banking was conducted by Githiomi focusing on Nairobi's small firms. A total of 120 smaller firms were sampled through stratified random method. It was shown that agency banking and financial inclusion of the smaller firms were directly linked with each other. It was noted that majority of the smaller firms had not adopted agency banking because of the security and cost of transaction. Kanyugi,et al. (2019) looked at the adoption of agency banking and how it is linked with withdrawals in the bank. The

diffusion of innovation theory was used to underpin the inquiry. The adopted method was non experimental with the use of data from auxiliary sources. Event research was the paradigm used in the study. A significant connection was noted between agency banking and withdrawals.

Mungai and Omagwa (2017) conducted an inquiry into the associated issues with regard to the adoption of agency banking model. The selection of the banking entities for inclusion in the study was done purposively. It was shown that the challenges related with the administration are not significantly connected with the use of agency banking model. The recommendations raised was the need for the banks to do more as far as containing the issues linked with agency banking was concerned. Tindi and Bogonko (2017) carried out an inquiry into agency banking and its associated link with users' satisfaction levels. The variables covered by the study contain convenience, agent quality and reliability of the agent as far as customer satisfaction was concerned. The inquiry was done among selected financial entities with operations in Eldoret. Information was sought from first hand sources. The study noted existence of a significant link between agency banking and satisfaction of the end users.

2.3.4 Mobile Banking and Profitability

Islam, Kabir, et al. (2019) executed an inquiry in Bangladesh context with emphasis on online banking adoption and the implication it had on profit potentials. ROE and ROA informed measurement of profitability. It emerged that adoption of mobile banking boosted ROA and ROE of the financial entities. The focus of the inquiry done in Jordan by Zalloum, et al. (2019) was on mobile banking and their implication on trust by users. While obtaining information from first hand sources, it was apparent that mobile banking was linked with trust among its users.

Usman (2020) covered Nigerian context appraising the link between mobile banking and monetary performance. Gathering of statistics for processing was from first hand sources. Processed information failed to note any link between variables covered. A related Nigerian inquiry by Uwalaka and Eze (2020) placed emphasis on m-banking and the interplay it has with users' levels of satisfaction. Survey was the adopted design and 384 participants formed the study sample. It was noted that satisfaction of those using mobile banking was linked with its security as well as responsiveness.

While using a case of Central Africa Building Society (CABS) in Zimbabwe, Chiinze (2017) looked at m-banking adoption and how it relates with performance in financial terms. The emphasis of the inquiry was on bringing out the associated risk in m-banking and the key internal and external issues shaping m-banking. From the targeted 40 participants, 28 were drawn and included in the final inquiry. The study shared that adoption of m-banking enhances monetary performance. Remulo (2018) focused on mobile banking and its associated relationship with profitability. The inquiry covered a period of seven years (2010-2016). The adopted design was causal in nature. Information from auxiliary sources was sought from the reports and publications. It was shown that mobile banking is directly linked with profitability. The study recommended the needs for policy makers to focus on mobile banking as the draft policies.

The study conducted in Namibia by Gomachab and Maseke (2018) was determination of link between m-banking and satisfaction of customers. Information gathering was from first hand sources shaped by questionnaires. Products linked with mobile banking enhanced the level of satisfaction of customers. Ebong and Babu (2021) covered Ugandan context and determined the nexus in mobile banking and how one can save. The embraced design was exploratory in nature and participants were purposively picked. M-banking was noted to have significant link with need for making savings.

Njeru and Omagwa (2018) linked mobile banking and profitability. The study focused on tier 1 banking entities. The design embraced was descriptive with a total of 6 top most tier UI banks being targeted. A significant link was noted between mobile banking and profitability. Mageto et al. (2017) studied mobile banking and how it is associated with financial performance. Security, ease of access and transaction costs associated with mobile banking was the key concerns covered. The focus of inquiry was on banking entities with operation in Kisii and 255 participants. The inquiry noted that mobile banking is linked

According Mutindi (2018) there are factors that guides mobile banking in organizations. His inquiry focused on customers within the town of Machakos. The adopted design of the inquiry was descriptive with a focus on customers. The study noted that bank specific factors, the individual attributes of the customers and the available infrastructures are linked with the adoption of mobile banking. Momanyi (2015) focused on mobile banking and its link with profitability, with emphasis on Kenyan banks. The adopted design was descriptive design. The findings of the study were

determined through regression. The link in these two variables was noted as significant. The recommendation raised was the need for the banking entities to increasingly embrace mobile banking as a channel for generation of revenues.

2.3.5 Profitability

Susetyo, et al. (2020) looked at profitability and its link with the value of the entity. Besides these variables, the dividend policy was considered as the moderator while capital structure was the mediator variable of the inquiry. It was shown that the link between profitability and the value of the entity is direct while the same is inverse with capital structure. Pasukodewo and Susanti (2020) did an inquiry on profitability and its link with valuation of the stock as well as the value of the corporate entity. The time period was 2009 all through to 2018 in Indonesian listed entities. The study noted an important link between profitability and valuation of the entity.

Harb (2019) looked at profitability and its link with productive efficiency while paying emphasis on industrial entities in Jordan. The inquiry relied on first hand sources of information. The study noted a significant link between profitability and efficiency in productive terms. Sabrin et al. (2016) conducted a study among manufacturing entities listed on Indonesia with views gathered from second hand sources. The period of focus was 2009 all through to 2014 supported by path analysis as the methodology for drafting the findings. The study noted existence of significant link between profitability and the value of the entity.

In Africa, Oino and Ukaegbu (2015) focused on the non-financial listed entities with emphasis on pecking order and trade off theories. Profitability and the structure of the assets were seen to be inversely interlinked. Locally in Kenya, Migwi (2015) sought to link profitability and dividend policy of the banking entities. The inquiry covered a period from 2009 all through to 2014 with adoption of descriptive design and covering 27 banking entities. Information was obtained from auxiliary reports where the link between profitability and dividend policy was found to be direct and significant. The recommendations raised were the need for entities to pay dividends so as to increase the values of their respective entities.

2.3.6 Bank Size, Financial Inclusion and Profitability

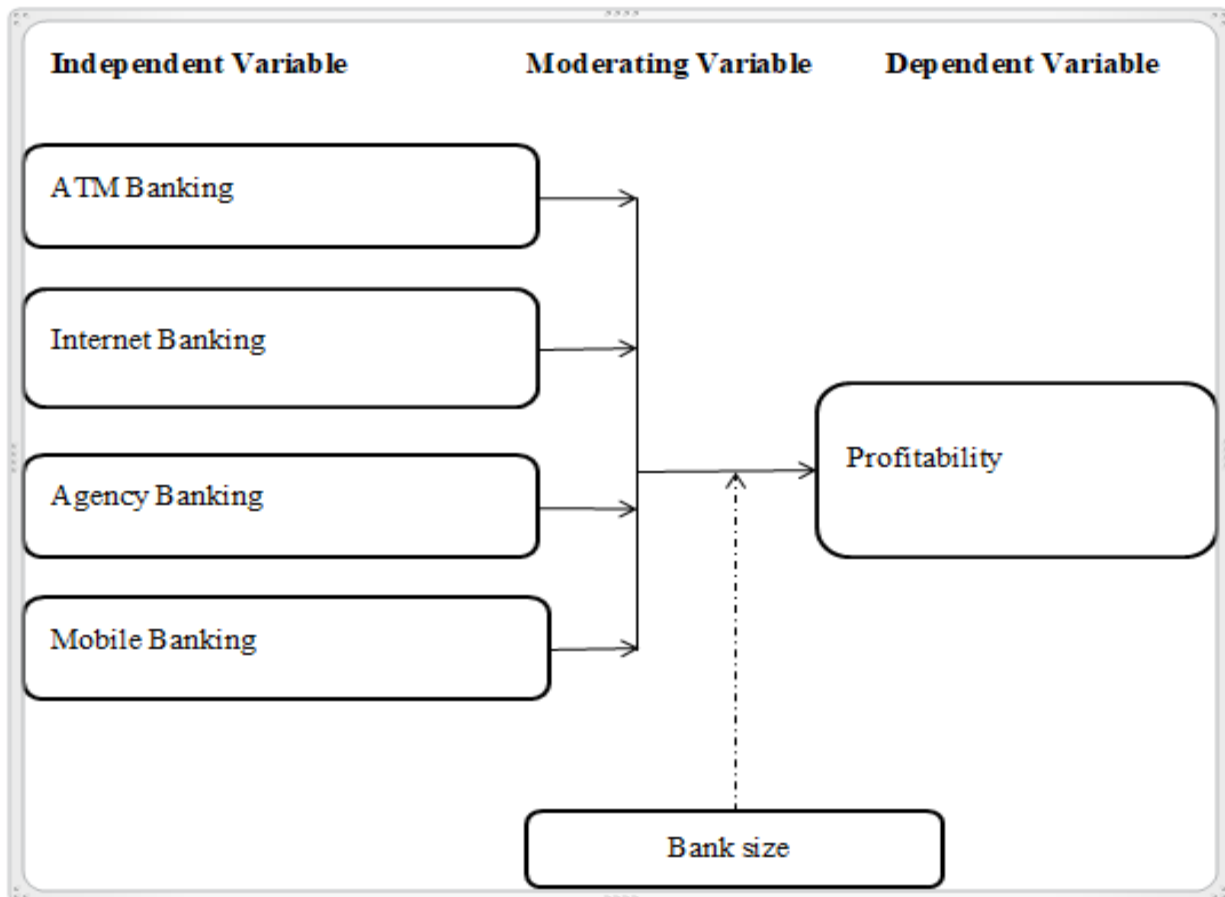
A study conducted in Pakistan by Hussain, et al. (2020) focused on firm size as a moderator in the link between interest rate and capital structure. The study focused listed firm operating in the sugar industry in Pakistan. The inquiry covered a time frame from 2013 all through to 2018. In this inquiry, firm size was found to as a significant moderator variable. Hasan, et al. (2020) explored the key issues determining profitability of banks with size as a moderator. Panel data method was embraced and ROA and ROE were used to gauge profitability. The inquiry shared the size of the bank was a moderator in the determining factors of profitability of the banking entities. In a study in Indonesia by Hapsari (2018), the time frame of this inquiry was 2012 all through to 2016. In total, 13 banking entities were covered and size was found to be an insignificant moderator variable.

Among the manufacturing entities in Kenya, Mutunga and Owino (2017) did an exploration of firm magnitude as a moderator in the link between micro factors and ability to perform in financial terms. Evidence showed that firm magnitude was a significant moderator variable in this inquiry. The study by Ngware, et al. (2020) covered 43 banking entities looking at the period between 2003 all through to 2016. The size of the banking entities was established as critical. While focusing on Kenyan non-financial listed entities. In measuring firm size, the inquiry used natural logarithm of the value of assets in place. The time frame considered by the inquiry was 2006 all through to 2015. The inquiry documented that firm size was a significant moderator variable.

2.4 Conceptual Framework

Figure 2.1

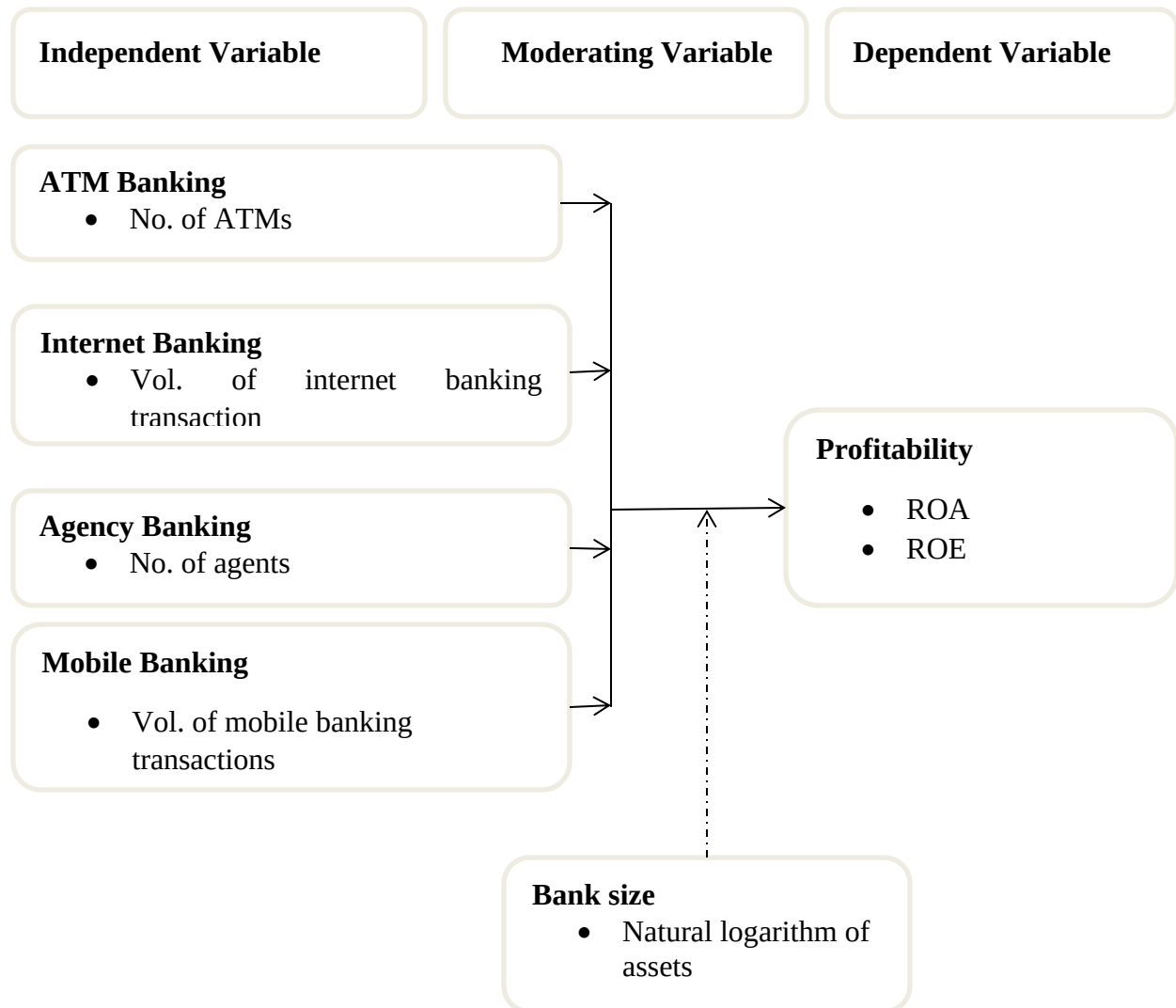
Conceptual Framework



2.6 Operationalization Framework

Figure 2.2:

Operationalization Framework



2.7 Summary of Literature and Knowledge Gaps

Table 2.1 provides a summary of literature with the gaps to be filled

Table 2.1:
Summary of Literature and Knowledge Gaps

Author & Year	Study	Key Finding	Gaps	Focus of Proposed Study
<u>Nondo (2020)</u>	to provide the link between mobile banking and their saving behaviour	mobile banking boosts the ability of users to save	The study used saving ability as the dependent variable and it was done in Uganda	Profitability was the dependent variable in this study which was conducted in Kenya
<u>Halima and Wepukhulu (2020)</u>	placed emphasis on financial innovations and how they relate with financial performance	that internet banking enhanced the uniqueness of the products available to clients	The study covered financial innovations	The present study focused on financial inclusion strategies
<u>Joshi (2019)</u>	ATM's service quality and satisfaction of clients	availability of cash supported by ATMs was the greatest factor that shaped satisfaction of the end users followed by location of these ATMs	Customer satisfaction was taken as a dependent variable	Profitability was the dependent variable in the present study
<u>Abdullahi and Micheni (2018)</u>	internet banking and how it is linked with performance in operational terms	internet banking is significantly linked with operational performance	Performance in operational terms was the dependent variable	Dependent variable, Profitability the present study

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The design to be embraced, respondents targeted and the ways to collect the views for the inquiry are detailed in this chapter. The means of selecting the participants' band associated procedure for processing the data are also detailed in this inquiry.

3.2 Research Design

The design of the inquiry is a layout that informs how the information is to be gathered and processed (Yin, 2013). A descriptive research strategy was picked for this inquiry. Maxwell (2012) indicated that such design is key in providing description of the link in variables. The design adopted in related studies like Kanyugi, et al. (2019) and Islam et al. (2019) and hence it was also found appropriate.

3.3 Population of the Study

Population is a collection of linked items having attributes that are homogenous (Yin, 2013). In total, 41 banking institutions Central Bank of Kenya, (2020) were targeted as established in their respective tiers in Table 3.1.

Table 3.1
Target Population

Tier	Number of Banks (Population)
Tier I	6
Tier II	14
Tier III	21
Total	41

Source: CBK (2019)

3.4 Sample Design and Sample Size

Picking of representative units from the targeted population is generally defined as sampling. As the targeted population of the inquiry was small, census was ideal.

3.5 Data Collection

Information in its auxiliary nature was gathered in this inquiry on the time horizon of 2012-2020. The inquiry leveraged data collection sheet (appendix II) to gather information from auxiliary sources. The information gathered in the inquiry was on annual basis, as extracted from end year financial statements. The information from auxiliary sources was gathered on number of ATMs, volume moved through internet and mobile banking, number of agents, the amount of net income and the asset base in place across the period of consideration.

3.6 Data Analysis and Presentation

SPSS was preferred in the process of coding the data gathered from the field in readiness for analysis. Financial inclusion impact was examined using multiple regressions besides correlation. The model covered in processing of information was specified below:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \dots\dots\dots (i)$$

Where:

Y = Profitability

X_1 = ATM Banking

X_2 = Internet Banking

X_3 = Agency Banking

X_4 = Mobile Banking

β = constant,

$\beta_1, \beta_2, \beta_3$ and β_4 = Regression Coefficients and ε = Error Term

Equation ii incorporates financial inclusion (FI), bank size (BS) and profitability (Y)

$$Y = \beta_0 + \beta_1 FI + \beta_2 BS + \varepsilon \dots\dots\dots (ii)$$

Equation iii is when an interaction term has been introduced in the model:

$$Y = \beta_0 + \beta_1 FI + \beta_2 BS + \beta_3 FI * BS + \varepsilon \dots\dots\dots (iii)$$

The above 3 equations were used to test for moderation and make relevant inferences. Presentation of the study evidence was done in tabular and graphical manner.

3.6.1 Diagnostic Tests

Testing for normalcy in diagnostic procedures, multicollinearity test a test for autocorrelation was performed prior to inferential analysis. .

CHAPTER FOUR

FINDINGS AND DISCUSSIONS

4.1 Introduction

In this chapter data analysis gathered will be detailed along with the results.

4.2 Summary of Descriptive Statistics

Consider Table 4.1.

Table 4.1:
Summary of Descriptive Statistics

	n	Mean	Std. Dev
ATM Banking	180	1.305	.800
Internet Banking	180	2.744	.778
Agency Banking	180	2.561	.609
Mobile Banking	180	3.781	.845
Bank size	180	4.704	.583
ROE	180	.064	.376
ROA	180	.011	.040

The average values for ATM banking in Table 4.1 was (M =1.306), internet banking (M= 2.744), agency banking (M= 2.561), mobile banking (M= 3.782), bank size (M= 4.705), ROE (M= 0.065 and ROA (M=0.011) respectively. Hence, 6.4% and 1.1% of studied banks' profits were derived from utilization of equities and assets in place respectively. This assertion is empirically reinforced by Shihadeh (2021) explored the link between the indicators of financial inclusion and performance of banks in Palestine where it was noted that through financial inclusion, banks are able to improve on their performance through increased revenues. Similarly, Shihadeh and Liu (2019) focused on FI and risks in banks where it was shown that increasing the number of branches of banks enhances their profitability.

4.3 Diagnostic Tests

These included autocorrelation, multicollinearity and normality tests. The essence of these tests was to validate the assumptions of regression models.

4.3.1 Autocorrelation Test

To determine if the data consisted of serial correlation, an autocorrelation test was carried out in readiness for carrying out regression analysis. This test was done through Durbin Watson statistics (d) as summarized in Table 4.2

Table 4.2:

Autocorrelation Test

Model	Durbin-Watson
1	1.533

d values were 1.533, as indicated in table 4.2, which is roughly taken as 2. According to Stevens (2009), the value of d closer or equal to 2 imply, that the data did not have serial correlation in the data. Thus, it follows that serial correlation was not present in the data used in this study.

4.3.2 Multicollinearity Test

This was done through the values of VIF

Table 4.3:

Multicollinearity Test

	Collinearity Statistics	
	Tolerance	VIF
ATM Banking	.523	1.912
Internet Banking	.385	2.599
Agency Banking	.613	1.630
Mobile Banking	.554	1.806
Financial inclusion	.494	2.023
Bank size	.605	1.652
Mean VIF	.529	1.937

VIF of 1.937 is evident in Table 4.3 with a tolerance being 0.529. Shieh (2010) opines that VIF values within the range of 1-10 indicate the absence of multicollinearity in the data.

4.3.3 Normality Test

The values of Skewness and Kurtosis were used in normality test, and Table 4.4 summarizes the results.

Table 4.4:
Normality Test

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
ATM Banking	180	.223	.181	-.614	.360
Internet Banking	180	.290	.181	-.516	.360
Agency Banking	180	.219	.181	-1.090	.360
Mobile Banking	180	-.541	.181	.115	.360
Bank size	180	.290	.181	-1.120	.360
ROE	180	.249	.181	-.664	.360
ROA	180	.553	.181	-.632	.360
Average	180	.183	.181	-.646	.360

For all of the study's variables, Skewness and Kurtosis values are shown in Table 4. 4. From the results, the mean value of Skewness was 0.183 with Kurtosis being -0.646. According to Keith (2006), data is considered regularly distributed when Skewness and Kurtosis values are between + and -2. Hence, the data used in this study had a normal distribution.

4.4 Correlation Analysis

A correlation study was done in determination of extermination of the link in the variables as presented below using ROE and ROA.

4.4.1 Correlation Results-ROE

Table 4.5 is a summary of the correlation results between financial inclusion and ROE.

Table 4.5:
Correlation Results-ROE

		ROE	ATM Banking	Internet Banking	Agency Banking	Mobile Banking	Bank size
Profitability	Pearson Correlation	1					
ATM Banking	Pearson Correlation	.404	1				
Internet Banking	Pearson Correlation	.387	.528**	1			
Agency Banking	Pearson Correlation	.323	.348**	.585**	1		
Mobile Banking	Pearson Correlation	.600	.332**	.634**	.461**	1	
Bank size	Pearson Correlation	.184	.096	.168*	.167*	.237**	1

M-banking and ROE were positively and strongly linked with each other ($r=0.600$, $p<0.05$). On the other hand, ATM banking ($r=0.404$, $p<0.05$), internet banking ($r=0.387$, $p<0.05$) and agency banking ($r=0.323$, $p<0.05$) all have moderate and positive relationship with ROE among commercial banks in Kenya. On the other hand, bank size ($r=0.184$, $p<0.05$) has a weak but positive relationship with ROE among commercial banks in Kenya.

4.4.2 Correlation Results-ROA

According to Table 4.6, a critical evaluation of the link between financial inclusion policies and ROA, profitability measures used by commercial banks in Kenya, was conducted.

Table 4.6:
Correlation Results-ROA

		ROA	ATM Banking	Internet Banking	Agency Banking	Mobile Banking	Bank size
ROA	Pearson Correlation	1					
ATM Banking	Pearson Correlation	.520	1				
Internet Banking	Pearson Correlation	.425	.528**	1			
Agency Banking	Pearson Correlation	.404	.348**	.585**	1		
Mobile Banking	Pearson Correlation	.697	.332**	.634**	.461**	1	
Bank size	Pearson Correlation	.241	.096	.168*	.167*	.237**	1

M-banking ($r=0.697$) and ATM banking ($r=0.520$) all have strong and positive relationship with ROA as a measure of profitability among commercial banks in Kenya. As a measure of the

profitability of commercial banks in Kenya, ROA has a moderately strong association ($r=0.425$) with internet banking, whereas agency banking ($r=0.404$, $p<0.05$) was a bit weaker but still positive connection ($r=0.404$). In contrast, the relationship between ROA and bank size ROA ($r=0.241$) was favorable.

4.6 Regression Results and Hypothesis Testing

The impact of FI on ROE and ROA was determined using regression analysis. The conclusions were reached and compiled as indicated in the following sections.

4.6.1 Financial Inclusion-ROE

Table 4.7:

Model Summary-ROE

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.646 ^a	.417	.404	.29079

$R^2 = 0.417$, hence 41.7% change in ROE of Kenyan banking entities is explained by their financial inclusion strategies.

Table 4.8:

ANOVA-ROE

	Sum of Squares	df	Mean Square	F	Sig.
Regression	10.592	4	2.648	31.317	.000 ^b
Residual	14.797	175	.085		
Total	25.390	179			

The above model was significant in overall ($F=31.317$, $p<0.05$).

Table 4.9:***Beta Coefficients-ROE***

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.959	.113		8.498	.000
ATM Banking	.130	.032	.276	4.058	.000
Internet Banking	.077	.043	.160	1.788	.075
Agency Banking	.031	.044	.050	.693	.490
Mobile Banking	.261	.034	.586	7.767	.000

According to Table 4.9, mobile banking ($\beta=0.261$, $p=0.05$) and ATM banking ($\beta=0.130$, $p=0.05$) indicated a significant relationship with ROE. Ali (2016) did an inquiry into ATM and how it impacts on delivery of the banking services. It was shown that the transactions of ATMs and demand deposits in the private sector are significantly linked with each other. Jimoh (2019) used a case of Nigeria to link electronic banking and profitability. The inquiry showed that apart from internet banking, all the remaining indicators of electronic banking had direct and significant link with profitability. Ekanem, et al. (2017) looked at ATM and its link with the degree of satisfaction of the end users as well as the level of profitability of the banking entities. The evidence showed that ATMs are linked with greater satisfaction of the end users besides boosting the level of profits generated. Harelimana (2018) did an inquiry to link ATMs and profitability of Rwandese commercial banking entities. From the results, ATMs and profitability were seen to be interlinked with each other in significant terms. Mutiso and Senelwa (2017) focused on ATMs and their link with ROA of the banking entities. The analysis showed that the link between ATMs and ROA is direct and significant. The study done by Halima and Wepukhulu (2020) placed emphasis on financial innovations and how they relate with FP. The inquiry showed that internet banking enhanced the uniqueness of the products available to clients.

Chiinze (2017) looked at m-banking adoption and how it relates with performance in financial terms. The study shared that adoption of m-banking enhances monetary performance. Remulo (2018) focused on mobile banking and its associated relationship with profitability. It was shown that mobile banking is directly linked with profitability. In a study by Njeru and Omagwa (2018) a significant link was noted between mobile banking and profitability. Mageto et al. (2017) studied mobile banking and how it is associated with financial performance. The inquiry noted that mobile

banking is linked. Momanyi (2015) focused on mobile banking and its link with profitability, with emphasis on Kenyan banks where the registered link was significant.

On the other hand, internet ($\beta=0.077$, $p>0.05$) and agency banking ($\beta=0.031$, $p>0.05$) had insignificant effect on ROE. These findings contradict Manesh et al. (2014) showed that development in electronic banking has a direct link with profitability of the banks. Amiri and Ahmadian (2017) focused on e-banking and profitability of banking entities and presented existence of direct nexus. Aduaka and Awolusi (2020) showed that the channels of e-banking have significant contribution towards profitability of the banking entities. The study in Ghana by Mawutor and Kwaku (2015) looked at e-banking and how it impacts on profitability of banking entities. It was noted that in deed, e-banking and profitability are significantly linked with each other. Eze and Egoro (2016) looked at e-banking and the profitable nature of banking entities. The study showed that e-banking and profitability are significantly related with each other. Santu et al. (2017) noted that electronic banking was poor regulated in Zimbabwe and this was a serious concern. Vekya (2017) focused on electronic banking and its link with profitability of the banking entities. It was noted that the transactions of ATMs and profitability are significantly linked with each other. Mateka, et al. (2016) and Ali (2018) noted that online banking explains 35% variability in financial performance of the banking entities in Kenya.

Kiprop and Kiptiony (2018) failed to obtain adequate evidence on whether agency banking was significantly connected with ROE of the banking entities. Kanyugi et al. (2019) did an inquiry into agency banking and how it relates with withdrawals among Kenyan banks. It was shown that agency banking enhances withdrawals among banks. Kanyugi, et al. (2019) looked at the adoption of agency banking and how it is linked with withdrawals in the bank. A significant connection was noted between agency banking and withdrawals. Mungai and Omagwa (2017) conducted an inquiry into the associated issues with regard to the adoption of agency banking model. It was shown that the challenges related with the administration are not significantly connected with the use of agency banking model.

4.6.2 Financial Inclusion and ROA

Multiple regression predicted the implication of financial inclusion strategies and ROA as an indicator of profitability among commercial banks in Kenya. Table 4.10 provides an overview of the model summary of the study.

Table 4.10:
Model Summary -ROA

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.786 ^a	.617	.609	.02558

$R^2=0.617$, implying that 61.7% variability in ROA was attributed to FI. ANOVA findings are as shown in Table 4.11:

Table 4.12:
ANOVA-ROA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	.185	4	.046	70.620	.000 ^b
Residual	.115	175	.001		
Total	.299	179			

Table 4.12 shows that on overall, the regression model was significant ($F=70.620$, $p<0.05$). Table 4.13 is a summary of the beta coefficients and the significance.

Table 4.13:
Beta Coefficients of Financial Inclusion and ROA

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.120	.010		12.098	.000
ATM Banking	.021	.003	.406	7.362	.000
Internet Banking	.016	.004	.302	4.172	.000
Agency Banking	.008	.004	.117	2.000	.047
Mobile Banking	.034	.003	.700	11.446	.000

a. Dependent Variable: ROA

Table 4.13 findings shows mobile banking ($\beta=0.034$, $p=0.05$), ATM banking ($\beta=.021$, $p=0.05$), internet banking ($\beta=.016$, $p=0.05$), and agency banking ($\beta=0.008$, $p=0.05$) had the biggest and had most significant effects on the ROA of Kenya's commercial banks. Ali (2016) did an inquiry into

ATM and how it impacts on delivery of the banking services. Jimoh (2019) used a case of Nigeria to link electronic banking and profitability. The study was done in the perspective of commercial banks. The inquiry showed that apart from internet banking, all the remaining indicators of electronic banking had direct and significant link with profitability. Ekanem et al. (2017) showed that ATMs are linked with greater satisfaction of the end users besides boosting the level of profits generated. Harelimana (2018) did an inquiry to link ATMs and profitability of Rwandese commercial banking entities. From the results, ATMs and profitability were seen to be interlinked with each other in significant terms. Magara (2018) focused on ATMs and their link with the level of satisfaction of the clients shared presence of a significant connection was noted. Mutiso and Senelwa (2017) focused on ATMs and their link with ROA of the banking entities. The analysis showed that the link between ATMs and ROA is direct and significant. The study done by Halima and Wepukhulu (2020) placed emphasis on financial innovations and how they relate with FP. The inquiry showed that internet banking enhanced the uniqueness of the products available to clients.

Manesh, et al. (2014) showed that development in electronic banking has a direct link with profitability of the banks. Amiri and Ahmadian (2017) shared existence of significant annexure. Aduaka and Awolusi (2020) showed that the channels of e-banking have significant contribution towards profitability of the banking entities. The study in Ghana by Mawutor and Kwaku (2015) looked at e-banking and how it impacts on profitability of banking entities and the noted link was a significant one. Eze and Egoro (2016) looked at e-banking and the profitable nature of banking entities. The study showed that e-banking and profitability are significantly related with each other. The study in Zimbabwe by Pamhare (2019) noted that electronic banking was poor regulated in Zimbabwe and this was a serious concern. Vekya (2017) focused on electronic banking and its link with profitability of the banking entities. It was noted that the transactions of ATMs and profitability are significantly linked with each other. Mateka et al. (2016) and Ali (2018) noted that online banking explains 35% variability in financial performance of the banking entities in Kenya. Barasa, et al. (2017) carried out a study on how FP and internet banking relate. From the study, it is noted that both relate with each other in significant terms.

Kiprop and Kiptiony (2018) failed to obtain adequate evidence on whether agency banking was significantly connected with ROE of the banking entities. Kanyugi, et al. (2019) did an inquiry into agency banking and how it relates with withdrawals among Kenyan banks. It was shown that

agency banking enhances withdrawals among banks. Ndambuki (2016) established no significant nexus. Githemo (2014) noted that agency banking and financial inclusion of the smaller firms were directly linked with each other. Kanyugi, et al. (2019) looked at the adoption of agency banking and how it is linked with withdrawals in the bank. A significant connection was noted between agency banking and withdrawals. Mungai and Omagwa (2017) conducted an inquiry into the associated issues with regard to the adoption of agency banking model. It was shown that the challenges related with the administration are not significantly connected with the use of agency banking model.

Chiinze (2017) looked at m-banking adoption and how it relates with performance in financial terms. The study shared that adoption of m-banking and monetary performance was significantly linked. Remulo (2018) focused on mobile banking and its associated relationship with profitability. It was shown that mobile banking is directly linked with profitability. In an inquiry by Njeru and Omagwa (2018), a significant link was noted between mobile banking and profitability. Mageto, et al. (2017) studied mobile banking and how it is associated with financial performance. The inquiry noted that mobile banking is linked. Momanyi (2015) focused on mobile banking and its link with profitability, with emphasis on Kenyan banks. A significant link was registered between variables. It then follows that financial inclusion is significant predictor of ROA among commercial banks in Kenya.

4.6.3 Test for Moderation of Bank Size-ROE

Stepwise regression method as recommended by Baron and Kenny (1986) was adopted in moderation testing. Under this method, three regression models were used. Table 4.14 is a summary of the model

Table 4.14:
Moderated Model Summary-ROE

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.318 ^a	.101	.096	.35802	.101	20.078	1	178	.000
2	.319 ^b	.102	.091	.35900	.000	.035	1	177	.851
3	.578 ^c	.334	.323	.30993	.233	61.473	1	176	.000

a. Predictors: (Constant), Financial inclusion

b. Predictors: (Constant), Financial inclusion, Bank size

c. Predictors: (Constant), Financial inclusion, Bank size, Interaction Term

Model 1 links financial inclusion strategies and ROE, model 2 incorporates financial inclusion strategies and in model 3, an interaction term is introduced along the financial inclusion strategies and bank size. In model 1, the change in R squared is equivalent to 0.101, and in model 3, there a change in R square by 0.233 which gives evidence of moderation. Table 4.14 is a breakdown of the ANOVA findings.

Table 4.15:**ANOVA-ROE**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.574	1	2.574	20.078	.000 ^b
	Residual	22.816	178	.128		
	Total	25.390	179			
2	Regression	2.578	2	1.289	10.002	.000 ^c
	Residual	22.811	177	.129		
	Total	25.390	179			
3	Regression	8.483	3	2.828	29.437	.000 ^d
	Residual	16.906	176	.096		
	Total	25.390	179			

a. Dependent Variable: Profitability (ROE)

b. Predictors: (Constant), Financial inclusion

c. Predictors: (Constant), Financial inclusion, Bank size

d. Predictors: (Constant), Financial inclusion, Bank size, Interaction Term

Table 4.15 indicate that the three regression models used to test for moderating effect of bank size in the relationship between financial inclusion strategies and ROE were all significant ($F_1=20.078$, $F_2=10.002$, $F_3=29.437$ & $p<0.05$) respectively.

Table 4.16:**Beta Coefficients-ROE**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.378	.102		3.694	.000
	Financial inclusion strategies	.043	.009	.318	4.481	.000
2	(Constant)	.414	.219		1.891	.060
	Financial inclusion	.041	.011	.310	3.654	.000
	Bank size	.010	.055	.016	.188	.851
3	(Constant)	.280	.190		1.476	.142
	Financial inclusion	.056	.010	.422	5.658	.000
	Bank size	.162	.052	.251	3.110	.002
	Interaction Term	.010	.001	.533	7.840	.000

a. Dependent Variable: Profitability (ROE)

From Table 4.16 model 1 shows that FI and ROE were significant ($p<0.05$). In Model 2, the beta coefficient of bank size was not significant ($p>0.05$). In model 3, bank size and the interaction term had significant beta coefficients ($p<0.05$). This infers that bank size is a significant moderator in the relationship between financial inclusion strategies and ROE as a measure of profitability of commercial banks in Kenya. A study conducted in Pakistan by Hussain, et al. (2020) focused on

firm size as a moderator in the link between interest rate and capital structure. In this inquiry, firm size was found to as a significant moderator variable. Hasan et al. (2020) explored the key issues determining profitability of banks with size as a moderator. The inquiry shared the size of the bank was a moderator in the determining factors of profitability of the banking entities. In Indonesia, Hapsari (2018), size was found to be an insignificant moderator variable.

4.6.4 Test for Moderation-ROA

The inquiry leveraged Baron and Kenny (1986) in moderation testing. Table 4.16 is an overview of the findings of the model summary of the study.

Table 4.17:
Regression Model Summary-ROA

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.340 ^a	.116	.111	.03856	.116	23.334	1	178	.000
2	.347 ^b	.120	.110	.03857	.004	.899	1	177	.344
3	.710 ^c	.505	.496	.02902	.384	136.583	1	176	.000

Table 4.17 presents an overview of 3 regression models that were handy in testing for moderation of bank size. The R²- square change in the 3 models is represented by 0.116, 0.004 and 0.384 respectively.

Table 4.18:
ANOVA-ROA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.035	1	.035	23.334	.000 ^b
	Residual	.265	178	.001		
	Total	.299	179			
2	Regression	.036	2	.018	12.110	.000 ^c
	Residual	.263	177	.001		
	Total	.299	179			
3	Regression	.151	3	.050	59.785	.000 ^d
	Residual	.148	176	.001		
	Total	.299	179			

a. Dependent Variable: ROA

b. Predictors: (Constant), Financial inclusion

c. Predictors: (Constant), Financial inclusion, Bank size

d. Predictors: (Constant), Financial inclusion, Bank size, Interaction Term

The models used in the inquiry were all significant

Table 4.19:
Beta Coefficients-ROA

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(Constant)	.040	.011		3.622	.000
	Financial inclusion	.005	.001	.340	4.830	.000
2	(Constant)	.060	.024		2.533	.012
	Financial inclusion	.004	.001	.297	3.545	.001
	Bank size	.006	.006	.080	.948	.344
3	(Constant)	.041	.018		2.301	.023
	Financial inclusion	.006	.001	.442	6.866	.000
	Bank size	.018	.005	.264	3.789	.000
	Interaction Term	.001	.000	.685	11.687	.000

a. Dependent Variable: ROA

In model 1, financial inclusion and ROA were significant ($p < 0.05$). In model 2, the beta coefficient of bank size is not significant ($p > 0.05$). In model 3, all the beta coefficients are significant ($p < 0.05$). This means that bank size was a moderator regarding ROA. This means that large and stable banks can benefit more from financial inclusion strategies to generate positive ROA as compared to the smaller and unstable banks. Hussain et al. (2020) focused on firm size as a moderator in the link between interest rate and capital structure. In this inquiry, firm size was found to as a significant moderator variable. Hasan et al. (2020) explored the key issues determining profitability of banks with size as a moderator. The inquiry shared the size of the bank was a moderator in the determining factors of profitability of the banking entities. In Indonesia, Hapsari (2018), size was found to be an insignificant moderator variable.

4.7 Discussion of the Findings

It emerged that ATM and profitability were significantly connected with each other. Jimoh (2019) used a case of Nigeria to link electronic banking and profitability. The inquiry showed that apart from internet banking, all the remaining indicators of electronic banking had direct and significant link with profitability. Ekanem, et al. (2017) looked at ATM and its link with the degree of satisfaction of the end users as well as the level of profitability of the banking entities. The evidence showed that ATMs are linked with greater satisfaction of the end users besides boosting the level of profits generated. Harelimana (2018) did an inquiry to link ATMs and profitability of

Rwandese commercial banking entities. From the results, ATMs and profitability were seen to be interlinked with each other in significant terms. Mutiso and Senelwa (2017) focused on ATMs and their link with ROA of the banking entities. The analysis showed that the link between ATMs and ROA is direct and significant. The study done by Halima and Wepukhulu (2020) placed emphasis on financial innovations and how they relate with financial performance where the link registered in variables was significant.

Chiinze (2017) looked at m-banking adoption and how it relates with performance in financial terms. The study shared that adoption of m-banking enhances monetary performance. Remulo (2018) focused on mobile banking and its associated relationship with profitability. It was shown that mobile banking is directly linked with profitability. Mageto, et al. (2017) studied mobile banking and how it is associated with financial performance. The inquiry noted that mobile banking is linked. Momanyi (2015) focused on mobile banking and its link with profitability, with emphasis on Kenyan banks and a significant nexus was noted.

Internet and agency banking were insignificant. Aduaka and Awolusi (2020) focused on electronic banking and profitability of the banks. The inquiry showed that the channels of e-banking have significant contribution towards profitability of the banking entities. The study in Ghana by Mawutor and Kwaku (2015) looked at e-banking and how it impacts on profitability of banking entities where the registered link was a significant one. Eze and Egoro (2016) looked at e-banking and the profitable nature of banking entities. The study showed that e-banking and profitability are significantly related with each other. The study in Zimbabwe by Santu et al. (2017) noted that electronic banking was poorly regulated in Zimbabwe and this was a serious concern. Vekya (2017) focused on electronic banking and its link with profitability of the banking entities. It emerged that transactions of ATMs and profitability are significantly linked with each other. Ali (2018) looked at online banking and its link with performance of the financial banking entities in Kenya. It was noted that online banking explains 35% variability in financial performance of the banking entities in Kenya. Barasa, et al. (2017) carried out a study on internet banking and how it is linked with financial performance where the link registered was found as significant.

Kiprop and Kiptiony (2018) failed to obtain adequate evidence on whether agency banking was significantly connected with ROE of the banking entities. Kanyugi, et al. (2019) did an inquiry into agency banking and how it relates with withdrawals among Kenyan banks. It was shown that

agency banking enhances withdrawals among banks. Githemo (2014) noted that agency banking and financial inclusion of the smaller firms were directly linked with each other. Kanyugi, et al. (2019) looked at the adoption of agency banking and how it is linked with withdrawals in the bank. A significant connection was noted between agency banking and withdrawals. Mungai and Omagwa (2017) conducted an inquiry into the associated issues with regard to the adoption of agency banking model. It was shown that the challenges related with the administration are not significantly connected with the use of agency banking model.

The link between mobile, ATM, internet and agency banking were significantly connected with ROA. Ali (2016) did an inquiry into ATM and how it impacts on delivery of the banking services. It was shown that the transactions of ATMs and demand deposits in the private sector are significantly linked with each other. Jimoh (2019) used a case of Nigeria to link electronic banking and profitability. The inquiry showed that apart from internet banking, all the remaining indicators of electronic banking had direct and significant link with profitability. Ekanem et al. (2017) looked at ATM and its link with the degree of satisfaction of the end users and it was showed that ATMs are linked with greater satisfaction of the end users besides boosting the level of profits generated. Harelimana (2018) did an inquiry to link ATMs and profitability of Rwandese commercial banking entities. From the results, ATMs and profitability were seen to be interlinked with each other in significant terms. Mutiso and Senelwa (2017) focused on ATMs and their link with ROA of the banking entities. The analysis showed that the link between ATMs and ROA is direct and significant. The study done by Halima and Wepukhulu (2020) placed emphasis on financial innovations and how they relate with FP. It was evident that internet banking enhanced the uniqueness of the products available to clients.

Manesh, et al. (2014) showed that development in electronic banking has a direct link with profitability of the banks. Amiri and Ahmadian (2017) focused on e-banking and profitability of banking entities and pointed existence of critical nexus. Aduaka and Awolusi (2020) showed that the channels of e-banking have significant contribution towards profitability of the banking entities. The study in Ghana by Mawutor and Kwaku (2015) looked at e-banking and how it impacts on profitability of banking entities where the noted link was significant. Eze and Egoro (2016) looked at e-banking and the profitable nature of banking entities. The study showed that e-banking and profitability are significantly related with each other. The study in Zimbabwe by Santu

et al. (2017) noted that electronic banking was poorly regulated in Zimbabwe and this was a serious concern. Vekya (2017) focused on electronic banking and its link with profitability of the banking entities. It was noted that the transactions of ATMs and profitability are significantly linked with each other. Mateka, et al. (2016) and Ali (2018) noted that online banking explains 35% variability in FP of the banking entities in Kenya. In a 2017 study, Barasa (2017) explored the relationship between online banking and FP and the noted link was significant.

Kiprop and Kiptiony (2018) failed to obtain adequate evidence on Kanyugi et al. (2019) did an inquiry into agency banking and how it relates with withdrawals among Kenyan banks. It was shown that agency banking enhances withdrawals among banks. According to Ndambuki (2016) agency banking connection with profitability did not exhibit any significant link with profitability. Githemo (2014) focused on agency banking and how it is linked with financial performance. From the research, it was clear that agency banking and financial inclusion of the smaller firms were directly linked with each other. Kanyugi et al. (2019) looked at the adoption of agency banking and how it is linked with withdrawals in the bank. A significant connection was noted between agency banking and withdrawals. Mungai and Omagwa (2017) conducted an inquiry into the associated issues with regard to the adoption of agency banking model. It was shown that the challenges related with the administration are not significantly connected with the use of agency banking model.

Chiinze (2017) looked at m-banking adoption and how it relates with performance in financial terms. The study shared that adoption of m-banking enhances the organization's potential in terms of performance. Remulo (2018) focused on mobile banking and its associated relationship with profitability. It was shown that mobile banking is directly linked with profitability. Mageto, et al. (2017) studied mobile banking and how it is associated with financial performance. The inquiry noted that mobile banking is linked. Momanyi (2015) focused on mobile banking and its link with profitability, with emphasis on Kenyan banks where the link registered was significant.

Profitability was explored and three models were extracted. Model 1 links financial inclusion strategies and ROE, model 2 incorporates financial inclusion strategies and in model 3, an interaction term is introduced along the financial inclusion strategies and bank size. In model 1, the change in R squared is equivalent to .101, and in model 3, there is a change in R square by 0.233

which provide evidence of moderation. Model 1 shows that financial inclusion strategies have substantial impact ($p > 0.05$) on Kenyan commercial banks' ROE. In Model 2, the beta coefficient of bank size was not significant ($p > 0.05$). However, on model 3's inclusion of the interaction term, bank size and the interaction term had significant beta coefficients ($p < 0.05$). This is an indication that, ratio between financial inclusion initiatives and ROE, a measure of Kenyan commercial banks' profitability, is significantly moderated by bank size. A study conducted in Pakistan by Hussain, et al. (2020) focused on firm size as a mediator in the link between interest rate and capital structure. In this inquiry, firm size was found to as a significant moderator variable. Hasan, et al (2020) explored the key issues determining profitability of banks with size as a moderator. The inquiry shared the size of the bank was a moderator in the determining factors of profitability of the banking entities. In Indonesia, the inquiry by Hapsari (2018) was that size was an insignificant moderator variable. Among the manufacturing entities in Kenya, Mutunga and Owino (2017) did an exploration of firm size as a mediator in the link between micro factors and ability to perform in financial terms and a significant nexus was reported. While focusing on Kenyan non-financial listed entities.

A measure of the link between financial inclusion and assets returns that takes into account the moderation of bank size profitability was tested in this study resulting into three models. The R square change in the 3 models is represented by 0.116, 0.004 and 0.384 respectively. It is this R square change that represents the moderating evidence of size of bank. ROA is significantly impacted by financial inclusion efforts in model 1 ($p < 0.05$). In model 2, the beta coefficient of bank size is not significant ($p > 0.05$). However, after introduction of the interaction term in model 3, all the beta coefficients are significant ($p < 0.05$). This means that bank size suggestively moderates the relationship between FI and ROA. This means that large and stable banks can benefit more from financial inclusion strategies to generate positive ROA as compared to the smaller and unstable banks. Hussain et al. (2020) focused on firm size as a moderator in the link between interest rate and capital structure. In this inquiry, firm size was found to as a significant moderator variable. Hasan et al. (2020) explored the key issues determining profitability of banks with size as a moderator. The inquiry shared the size of the bank was a moderator in the determining factors of profitability of the banking entities. Among the manufacturing entities in Kenya, Mutunga and Owino (2017) did an exploration of firm size as a moderator in the link between micro factors and ability to perform in financial terms where a significant nexus was registered. While focusing on

Kenyan non-financial listed entities, Size was discussed by Muigai and Muriithi (2017) as a mediator in the relationship on challenges between the capital arrangement and financial. The inquiry documented that firm size was a significant moderator variable.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

An outline of evidence of the study and the conclusion are shelled out in this chapter. The chapter has also included areas that need more investigation as well as management and policy recommendations.

5.2 Summary of the Findings

A recap of the processed information is detailed below:

5.2.1 ATM Banking and Profitability

ATM banking and ROE were moderately and directly linked with each other. ATM banking had strong and positive relationship with ROA as a measure of profitability amongst commercial banks in Kenya. ATM banking significantly impacted commercial banks' ROE and also significantly affecting Kenyan commercial banks' ROA.

5.2.2 Internet Banking and Profitability

Internet banking and ROE were moderately connected. Internet banking in a way had positive significant with ROA as what measures Kenyan commercial banks' profitability. Internet banking portrayed a minimal impact on commercial banks' ROE. The ROA of Kenyan commercial banks was significantly impacted by internet banking

5.2.3 Agency Banking and Profitability

The connection between agency banking on ROA was moderate and direct. Agency banking and ROA were also linked with each other moderately. In commercial banks, agency banking was not insignificant on ROE .Agency banking proved to be significant on ROA of commercial banks in Kenya.

5.2.4 Mobile Banking and Profitability

The ROE of Kenya's commercial banks is strongly and favorably correlated with the use of mobile banking. Mobile banking, the relationship was strong and positive with ROA as a measure of profitability. Mobile banking had a substantial impact on commercial banks' ROE. Mobile banking in Kenya's commercial banks appeared to have the greatest significant impact on ROA.

5.2.5 Bank Size, Financial Inclusion Strategies and Profitability

Bank size had a positive but weak connection with a. Bank size additionally; the correction with ROA was positive but weak. There were some significance beta coefficients for both the bank size and the interaction term, indicating that the link between FI and ROE as a metric of profitability is significantly moderated by bank size. The interaction and bank size had, suggesting that the size of the bank considerably affects how financial inclusion policies and ROA, a measure of profitability, interact.

5.3 Conclusion

5.3.1 ATM Banking and Profitability

ATM banking positively contributes to both ROE and ROA. In light of the regression results, ATM banking significantly predicts ROA and ROE. Basing on the regression beta coefficients, ATMs significantly contributes more towards ROE as compared to ROA.

5.3.2 Internet Banking and Profitability

Internet banking moderately but positively contributes to both ROA and ROE. In view of the regression results, internet banking is a significant driver of ROA. The ROE is not, however, primarily influenced by internet banking.

5.3.3 Agency Banking and Profitability

The nexus between agency banking and ROE as well as ROA is one that is moderate although of direct nature. The implication of agency banking towards ROA is a significant one. Surprisingly, its contribution to ROE was not critical.

5.3.4 Mobile Banking and Profitability

Mobile banking in respect to ROA and ROE is a strong and positive correlate of both. Mobile banking has a significant implication on ROE aside from ROA of a banking entity. However, it greatly triggers ROE as compared to ROA.

5.3.5 Bank Size, Financial Inclusion Strategies and Profitability

The nexus between size of the bank and ROE as well as ROA was weak but direct. The link between financial inclusion and profitability was significantly moderated by size of the banks. Thus, banks should consider their relative market sizes when deciding on investments in financial inclusion.

5.4 Implication of the Findings and Practical Contribution of the Study to Knowledge

In theory, the findings of this study imply that although financial inclusion strategies are critical in driving profitability of any commercial bank, they do not enhance financial performance in isolation but in unity with other factors like bank size. Larger banks definitely have huge customer and asset base that provide them with an advantage to effectively invest in FI for instance the Kenya Commercial Bank Group that has expanded regional presence across the entire East Africa. Larger banks are able to leverage the economies of scale that they enjoy which accrue from their large scope of operation to effectively and conveniently realize their financial intermediation role which contribute to their profitability. This is in sharp contrast with the relatively smaller and medium banks that like Prime Bank that have limited resources to deploy relevant financial inclusion strategies. Because of their small size, these banks have limited market presence with few branches concentrated in major cities and towns like Nairobi, Mombasa, Kisumu and Nakuru thus living other areas being financially excluded.

This research helps in developing financial intermediation justifications that view commercial banks as financial intermediaries. The study contributes in understanding how best commercial banks can leverage their financial inclusion strategies like the use of ATMs to achieve financial intermediation which is critical for the growth and development of any economy. Thus, the study contributes in answering the questions: How best can commercial banks realize financial intermediation in an economy? This is a relevant question in a growing economy like Kenya in

its efforts to realize Vision 2030 while at the same time seeking to achieve the indicators of Sustainable Development Goals (SDGs).

One of the critical financial inclusion strategies that commercial banks have embraced in the past periods has been the agency banking model. The adoption of agency banking has contributed to cost reduction at the branch level due to reduce labor costs. It has also contributed towards reduction of congestion in the banking halls as customers are not necessarily required to make long queues in banking halls in order to transact. This resonates well with the agency theory that views commercial banks as principles and the contracted third parties to provide financial services on behalf of banks as agents. Thus, this study contributes in extending the views of this agency theory as banks seek to leverage their agency banking models to grow their revenues hence profitability.

5.5 Recommendations of the Study

As per this research, it is the duty of senior management team of Kenya's commercial banks to modernize and modify the existing ATM machines by including more features like the capability to deposit cash and cheque. This will result into a significant improvement in profitability.

The sales and marketing managers of the Kenyan banks should give attention on creating awareness for the uptake of internet banking to improve on ROA. There should be close cooperation between commercial banks and internet service providers to subside the charges incurred by customers in transacting via internet so as to increase its uptake among customers.

Bringing down the chargers incurred by clients when making transaction through mobile banking can lead to its steady rise and hence increasing revenues generated by commercial banks. Kenyan banks should leverage on the existing financial inclusion strategies to improve on their profitability. The Kenyan Central Bank's policymakers ought to establish a level ground by formulating and enacting relevant financial inclusion rules and regulations while considering the smaller, medium and large stable commercial banks operating in Kenya.

5.6 Suggestions for Further Research

Interplay between financial inclusion strategies and profitability while considering the bank size limiting impact was appraised in the present inquiry. Thus, future studies should incorporate a relevant mediator, intervening as well as control variable in the model. Future studies can be

conducted targeting the deposit taking SACCOs in Kenya that have equally adopted financial inclusion strategies in a bid to stay afloat.

REFERENCES

- Abdullai, H. M. & Micheni, E. M. (2018). Effect of internet banking on operational performance of commercial banks in Nakuru County, Kenya. *International Journal of Economics, Finance and Management Sciences*, 6(2), 60-65. Doi: 10.11648/j.ijefm.20180602.14.
- Aduaka, U. & Awolusi, O. D. (2020). Electronic Banking and Profitability in the Nigerian Banking Industry. *Information Management and Business Review*, 12(2(I), 20-37. [https://doi.org/10.22610/imbr.v12i2\(I\).3086](https://doi.org/10.22610/imbr.v12i2(I).3086).
- Al-Chahadah, A. R., Qasim, A., & El Refae, G. A. (2020). Financial inclusion indicators and their effect on corporate profitability. *AAU Journal of Business and Law*, 4(2), 1-15. <https://digitalcommons.aaru.edu.jo/aaujbl/vol4/iss2/1>.
- Ali, A. A. (2018). *Impact of Online Banking on Financial Performance of Commercial Banks: a Case Study of Barclays Bank of Kenya* [Doctoral dissertation, United States International University-Africa]. <https://erepo.usiu.ac.ke/handle/11732/4273#:~:text=URI%3A%20http%3A//erepo.usiu.ac.ke/11732/4273>
- Ali, P. I. (2016). Impact of automated teller machine on banking services delivery in Nigeria: a stakeholder analysis. *Cadernos de Educação Tecnologia e Sociedade*, 9(1), 64-72. DOI <http://dx.doi.org/10.14571/cets.v9.n1.64-72>.
- Aliffianti, S. A. D. & Arifiansyah, S. (2020). Financial Inclusion and Banking Performance in Indonesia. *Journal of Accounting, Finance and Auditing Studies* 6(2), 50-69. DOI: 10.32602/jafas.2020.010.
- Allen, F., Demirguc-Kunt, A., Klapper, L. & Peria, M. S. M. (2016). The foundations of financial inclusion: Understanding ownership and use of formal accounts. *Journal of financial Intermediation*, 27(3), 1-30. <https://doi.org/10.1016/j.jfi.2015.12.003>.

- Amiri, H., & Ahmadian, A. (2017). The effect of electronic banking on profitability of the banking system. *Quarterly Journal of the Macro and Strategic Policies*, 5(18), 69-92. https://www.jmsp.ir/article_47918_en.html?lang=fa
- Argamo, H. H. (2015). *The Effect of Agency Banking on The Financial Performance of Commercial Banks in Kenya in 2014: A Case Study of Chase Bank* [Unpublished Doctoral dissertation], United States International University-Africa.
- Barasa, C., Obura, W., & Anyira, F. A. (2017). Effect of Internet Banking On Financial Performance of Commercial Banks in Kisumu City-Kenya. *Saudi Journal of Business and Management Studies*, 2(10), 904-912. DOI: 10.21276/sjbms.2017.2.10.6
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182. <https://doi.org/10.1037/0022-3514.51.6.1173>.
- Bisignano, J. (1998). *Towards an understanding of the changing structure of financial intermediation: an evolutionary theory of institutional survival* (No. 4). SUERF Studies. The European Money and Finance Forum, Vienna. <http://hdl.handle.net/10419/163436>
- Bitar, M., Pukthuanthong, K., & Walker, T. (2020). Efficiency in Islamic vs. conventional banking: The role of capital and liquidity. *Global Finance Journal*, 46, 100487. DOI: 10.1016/j.gfj.2019.100487
- Boot, A. W., & Thakor, A. V. (1997). Financial system architecture. *The Review of Financial Studies*, 10(3), 693-733. <https://EconPapers.repec.org/RePEc:oup:rfinst:v:10:y:1997:i:3:p:693-733>.
- Central Bank of Kenya (2020). *Annual report & financial statements 2020/21*. https://www.centralbank.go.ke/uploads/cbk_annual_reports/569264497_
- Chen, F. W., Feng, Y., & Wang, W. (2018). Impacts of financial inclusion on non-performing loans of commercial banks: Evidence from China. *Sustainability*, 10(9), 3084-89. <https://doi.org/10.3390/su10093084>.

- Chen, W., & Yuan, X. (2021). Financial inclusion in China: an overview. *Frontiers of Business Research in China*, 15(1), 1-21. <https://doi.org/10.1186/s11782-021-00098-6>
- Chiinze, H. T. (2017). *The impact of mobile banking adoption on financial performance: a case of Central Africa Building Society (CABS)*. [Doctoral Dissertation, Midlands State University]. <http://hdl.handle.net/11408/2892>.
- Chow, G., Kritzman, M. & Van Royen, A. S. (2001). Risk Budgets: Comment. *The Journal of Portfolio Management*, 27, 109-111. <https://doi.org/10.3905/jpm.2001.319818>.
- Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). *Opportunities for Expanding Financial Inclusion through Digital Technology*. https://doi.org/10.1596/978-1-4648-1259-0_ch6.
- Dienillah, A. A., Anggraeni, L., & Sahara, S. (2018). Impact of financial inclusion on financial stability based on income group countries. *Buletin Ekonomi Moneter dan Perbankan*, 20(4), 429-442. <https://bmebbi.org/index.php/BEMP/article/view/859#:~:text=DOI%3A,10.21098/bemp.v20i4.859>.
- Ebong, J. & Babu, G. (2021). Financial Inclusion through Digital Financial Services (DFS): A Study in Uganda" *Journal of Risk and Financial Management* 14(9) 393-399. <https://doi.org/10.3390/jrfm14090393>.
- Ekanem, E. U. U., Alhaji, A. K., Adeniyi, M. Y., & Adeogun, B. S. (2017). Impact of Automated Teller Machine on Customer Satisfaction and Profitability of Commercial Banks. *International Journal of Banking and Finance Research*, 3(2), 15-28. <http://www.iiardpub.org/>.
- Eze, G. P., & Egoro, S. (2016). Electronic banking and profitability of commercial banks in Nigeria. *Journal of Finance Economic Research*, 3(1), 2251-15. <http://absudbfjournals.com/wp-content/uploads/2017/02/>

- Fung'a'cov, Z., & Weill, L. (2014). *Understanding financial inclusion in China*. [Discussion Papers] No. 10/2014, Bank of Finland, Institute for Economies in Transition (BOFIT), Helsinki, <https://nbn-resolving.de/urn:nbn:fi:bof-201408072217>.
- Gitau, A. N (2018). *Effects of Mobile Banking Services on the Financial Behavior of University Students: A Case of United States International University- Africa*. [Master's Thesis, United States International University- Africa]. <http://erepo.usiu.ac.ke/11732/4542> .
- Githemo, M. W. (2014). *The effect of agency banking on financial performance of small and medium sized enterprises in Nairobi County* [Doctoral dissertation, University of Nairobi]. <http://erepository.uonbi.ac.ke/bitstream/handle/11295/74730/>.
- Goldsmith, R.N. (1969) *Financial Structure and Development*. Yale University Press
- Gomachab, R., & Maseke, B. F. (2018). The impact of mobile banking on customer satisfaction: Commercial banks of Namibia (Keetmanshoop). *Journal of Internet Banking and Commerce*, 23(2), 1-18. <http://hdl.handle.net/11070/2432>.
- Gurley, J. G., & Shaw, E. S. (1960). *Money in a Theory of Finance, with a Mathematical Appendix by Alain C. Brookings Inst.*
- Halima, R. & Wepukhulu, J. M. (2020). Effect of financial innovations on financial performance of tier one commercial banks in Kenya. *International Academic Journal of Economics and Finance*, 3(6), 181-196 <https://www.iajournals.org/index.php/8-articles/848-iajef-v3-i6-181-196>.
- Hannig, A., & Jansen, S. (2010). *Financial Inclusion and Financial Stability: Current Policy Issues*. [ADB Working Paper], No. 259, Tokyo: Asian Development Bank Institute. <http://www.adbi.org/workingpaper/2010/12/21/4272.financial.inclusion.stability.policy.issues>

- Hapsari, I. (2018, July). *Moderating Role of Size in the Effect of Loan to Deposit Ratio and Non-Performing Loan Toward Banking Financial Performance*. [Conference session], in *5th International Conference on Community Development, AMCA*.
- Harb, A. S. M. (2019). The Impact of Profitability and Financial Performance on Improving Productive Efficiency in Jordanian Industrial Companies. *Academy of Strategic Management Journal*, 18(5), 1-13. <https://www.abacademies.org/journals/academy-of-strategic-management-journal-archive.html>.
- Harelimana, J. B. (2018). The Automated Teller Machines and Profitability of Commercial Banks in Rwanda. *Global Journal of Management and Business Research*. 18(1), 1-7 <https://www.scirp.org/reference/referencespapers?referenceid=3609568>
- Hasan, M. S. A., Manurung, A. H., & Usman, B. (2020). Determinants of bank profitability with size as moderating variable. *Journal of Applied Finance and Banking*, 10(3), 153-166. https://www.scienpress.com/Upload/JAFB/Vol%2010_3_7.pdf.
- Hlophe, N. (2018). Does financial development mean financial inclusion? A causal analysis for Eswatini. *African Review of Economics and Finance*, 10(2), 120-133. <https://www.ajol.info/index.php/aref/article/view/180365>
- Hussain, S., Quddus, A., Pham, P. T., Rafiq, M., & Pavelková, D. (2020). The moderating role of firm size and interest rate in capital structure of the firms: selected sample from sugar sector of Pakistan. *Investment Management and Financial Innovations*. 17(4), 341-355 [http://dx.doi.org/10.21511/imfi.17\(4\).2020.29](http://dx.doi.org/10.21511/imfi.17(4).2020.29)
- Ikram, I., & Lohdi, S. (2015). Impact of financial inclusion on banks; profitability: An empirical study of banking sector of Karachi, Pakistan. *International Journal of Management Sciences and Business Research*, 4(10), 88-98. <https://api.semanticscholar.org>
- Islam, S., Kabir, M. R., Dovash, R. H., Nafee, S. E., & Saha, S. (2019). Impact of Online Banking Adoption on Bank's Profitability: Evidence from Bangladesh. *European Journal of Business and Management Research*, 4(3). 46-57 <https://doi.org/10.24018/ejbmr.2019.4.3.38>.

- Jimoh, A. (2019). Effect of Electronic Banking on the Profitability of Deposit Money Banks in Nigeria. *Journal of Advances in Education and Philosophy* 3(11) 405-413 DOI: 10.36348/jaep. 2019.v03i11.004.
- Jimoh, A. T., Shittu, A. T., & Attah, J. A. (2020). Impact of financial inclusion on performance of banks in Nigeria. *Fountain University Osogbo Journal of Management*, 4(3). 84–96. <https://www.osogbojournalofmanagement.com>
- Joshi, C. (2019). Impact of automated teller machine (ATM) service quality on customer satisfaction in the Nepalese commercial banks. *Contemporary Research: An Interdisciplinary Academic Journal*, 3(1), 7-18. <https://doi.org/10.3126/craiaj.v3i1.27484>
- Kanyugi, G. E., Gudda, P., Ombok, M., & Kibati, P. (2019a). Agency Banking Adoption and its Effect on Banks Withdrawals in Commercial Banks in Kenya. *International Journal of Academic Accounting, Finance & Management Research (IJAAFMR)* 3(11), 1-10. <http://ir-library.mmarau.ac.ke:8080/bitstream/handle/123456789/10047/>
- Kanyugi, G. E., Gudda, P., Ombok, M., & Kibati, P. (2019b). Banking Agency Adoption and its Effect on Banks Deposits of Commercial Banks in Kenya. *International Journal of Academic Research in Accounting, Finance and Management Sciences* 9(3), 251–263 DOI:10.6007/IJARAFMS/v9-i3/6455.
- Lubatkin, M.H., & Chatterjee, S. (1992). Extending modern portfolio theory into the domain of corporate diversification: Does it apply? *Academy of Management Journal*, 37, 109-136. DOI:10.5465/256772.
- Metzger, M., Were, M., Pédussel Wu, J. (2022) Financial inclusion, mobile money and regulatory architecture, [Working Paper No. 202/2022], Hochschule für Wirtschaft und Recht Berlin, Institute for International Political Economy (IPE), Berlin. <https://hdl.handle.net/10419/268263>
- Momanyi, D. N. (2015). *Effects of Mobile Banking On Profitability of Commercial Banks in Kenya* [Master's Thesis, University of Nairobi]. <http://erepository.uonbi.ac.ke/bitstream/handle/11295/93366/>

- Karimi, K. L. (2018). Effects of Agency Banking on Bank Performance: A Case of Equity Bank Meru Branch, Kenya. *Business and Economic Research*, 8(4), 100-108. DOI:10.5296/ber.v8i4.13941.
- Keith, T. (2006). *Multiple Regression and Beyond*. Pearson Allyn & Bacon.
- Kim, J. H. (2016). A study on the effect of financial inclusion on the relationship between income inequality and economic growth. *Emerging Markets Finance and Trade*, 52(2), 498-512. doi.org/10.1080/1540496X.2016.1110467
- Kingori, E., & Gekara, M. (2015). Effects of Agency Banking on the Performance of Bank Agents Business in Thika Municipality Kenya. *Strategic Journals of Business and Change Management*, 940-972. <https://www.semanticscholar.org/paper/>.
- Kiprop, I. K., & Kiptiony, N. N. (2018). The Effect of Agency Banking on Profitability of Commercial Banks Operating in Kenya. [Master's Thesis, Kabarak University]. <http://ir.kabarak.ac.ke/bitstream/handle/123456789/151/>
- Kumar, V., Acharya, S., & Ho, L. T. (2020). Does Monetary Policy Influence the Profitability of Banks in New Zealand? *International Journal of Financial Studies*, 8(2), 35-43. DOI:10.3390/ijfs8020035.
- Magara, E. (2018). *The Effect of Automated Teller Machine Use on Customer Satisfaction in Banking: A Case Study of Stanbic Bank, Mbarara Bank Branch*, [Doctoral dissertation, Makerere University]. <http://www.ruforum.org/directory/makerere-university-institutional-repository>
- Mageto, I., Muturi, W., & Abuga, V. (2017). Effect of Mobile Banking on Financial Performance of Commercial Banks in Kisii Town, Kenya. *International Journal of Recent Research in Commerce Economics and Management*, 4(1), 116-125. <https://www.paperpublications.org/>.
- Maherali, A. (2017). *Financial inclusion, digital payments and their impact on income and tax revenue around the World*. [Master's thesis, Harvard Extension School] <http://nrs.harvard.edu/urn-3:HUL.InstRepos:33826588>

- Mateka, M., Gogo, J., & Omagwa, J. (2016). Effects of internet banking on financial performance of listed commercial banks in Kenya. *American Journal of Finance* 1(2), 53 - 71, <https://pdfs.semanticscholar.org/>.
- Markowitz, H. (1952) Portfolio Selection. *The Journal of Finance*, 7, 77-91. <https://doi.org/10.1111/j.1540-6261.1952.tb01525.x>
- Mawutor, J., & Kwaku M. (2015). Impact of E-Banking on the Profitability of Banks in Ghana. *Research Journal of Accounting and Finance*, 5(22), 55-67 <https://ssrn.com/abstract=2572982>.
- Mdasha, Z., Irungu, D. D., & Wachira, D. M. (2018). Effect of Financial Inclusion Strategy on Performance of Small and Medium Enterprises: A Case of Selected SMEs in Dar es Salam, Tanzania. *Journal of Strategic Management*, 2(1), 51 - 70. <https://stratfordjournals.org/journals/index.php/journal-of-strategic-management/article/view/130>
- Michael, C. J. & William, H. M. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-306. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X).
- Migwi, E. W. (2015). *The effect of profitability on dividend policy of commercial Banks in Kenya*. [Master's Thesis, University of Nairobi]. <http://erepository.uonbi.ac.ke/handle/11295/94590>
- Mokaya, R. N., & Omagwa, J. (2018). Financial inclusion tools and profitability of selected commercial banks in Kenya. *International Journal of Scientific and Education Research* 2(6), 42-60 http://ijsernet.org/uploads/SER_01_65.pdf.
- Muigai, R. G., & Muriithi, J. G. (2017). The moderating effect of firm size on the relationship between capital structure and financial distress of non-financial companies listed in Kenya. *Journal of finance and accounting*, 5(4), 151-158. DOI:10.11648/j.jfa.20170504.15

- Mungai, E. H. M., & Omagwa, J. (2017). Challenges associated with adoption of agency banking and bank performance: A case of selected commercial banks in Kenya. *IOSR Journal of Business and Management*. 19 (4). 70- 76. DOI:10.9790/487X-1904027076.
- Murimi, R. N., Macheru, J., & Omurwa, J. K. (2021). Effects of Financial Technology on Operation Costs of Microfinance Institutions in Nairobi County. *Journal of Finance and Accounting*, 5(2), 65–85. <https://stratfordjournals.org/journals/index.php/journal-of-accounting/article/view/908>
- Musau, S. M. (2018). *Financial inclusion and stability of commercial Banks in Kenya*. [Unpublished doctoral dissertation,] Kenyatta University.
- Mutindi, K. M. (2018). *Factors influencing the adoption of mobile banking technology by bank customers in Machakos town* [Master's Thesis, South Eastern Kenya University]. <https://repository.seku.ac.ke/bitstream/handle/123456789/3814/>.
- Mutiso, C., & Senelwa, A. W. (2017). Effect of automated teller machines on the return on assets of the listed commercial banks in Kenya. *IOSR Journal of Business and Management*, 19(10), 86-91. DOI: 10.9790/487X-1910048691
- Mutunga, D. & Owino E. (2017). Moderating Role of Firm size on the relationship between Micro Factors and Financial Performance of Manufacturing Firms in Kenya. *Journal of Finance and Accounting*, 1(1), 14 - 27. stratfordjournals.org.
- Nasution, A. A., Siregar, I., & Panggabean, R. (2017, November). *The Effect of Profitability, Asset Tangibility, Corporate Tax, Non-debt Tax Shield and Inflation upon the Financial Capital Structure of the Manufacturing Companies listed on the Indonesian Stock Exchange*. [Conference session], in International Conference on Business and Management Research. Atlantis Press.
- Ndambuki, D. (2016). *The effect of agency banking on profitability of commercial banks in Kenya* [Doctoral dissertation, University of Nairobi]. <http://erepository.uonbi.ac.ke/handle/11295/98266>

- Ngware, S. G., Olweny, T., & Muturi, W. (2020). Do Bank Size Moderate Relationship between Banks' Portfolio Diversification and Financial Performance of Commercial Banks in Kenya? *SEISENSE Journal of Management*, 3(2), 14-30. <https://www.semanticscholar.org/paper/>.
- Njeru, I., & Omagwa, J. (2018). Mobile banking and Profitability of tier 1 commercial banks in Kenya. *International journal of scientific and education research*, 2(4), 1-15. <https://www.semanticscholar.org/paper/>.
- Nsiah, A. Y., Yusif, H., Tweneboah, G., Agyei, K., & Baidoo, S. T. (2021). The effect of financial inclusion on poverty reduction in Sub-Sahara Africa: Does threshold matter? *Cogent Social Sciences*, 7(1), 1903138. DOI:10.1080/23311886.2021.1903138
- Nzyuko, J. M., & Jagongo, H. K. (2017). Financial inclusion innovations and financial performance of commercial banks in Kenya. *International Journal of Management and Commerce Innovations*, 5(2), 849-856. <http://ir-library.ku.ac.ke/handle/123456789/20101>
- Obed, K. T. (2023). The Impact of Digital Financial Services on Financial Inclusion in Kenya. *American Journal of Industrial and Business Management*.13(6), 593-628 DOI: 10.4236/ajibm.2023.136035
- Ogden, T. (2018). *The great convergence: Toward a global strategy for financial inclusion*. The Aspen Institute.
- Oino, I., & Ukaegbu, B. (2015). The impact of profitability on capital structure and speed of adjustment: An empirical examination of selected firms in Nigerian Stock Exchange. *Research in International Business and Finance* 35(3), 111-121 <https://doi.org/10.1016/j.ribaf.2015.03.004>.
- Okoye, L. U., Erin, O., & Modebe, N. J. (2017). Financial inclusion as a strategy for enhanced economic growth and development. *The Journal of Internet Banking and Commerce*, 22(8), 1-14. <http://www.icommercecentral.com>.

- Oranga, O. J., & Ondabu, I. T. (2018). Effect of financial inclusion on financial performance of banks listed at the Nairobi securities exchange in Kenya. *International Journal of Scientific and Research Publications*, 8(5), 624-649. <https://www.researchgate.net/publication/325758179>.
- Otiato, E. H. (2016). Determinants of financial inclusion and performance of small and medium enterprises in Nairobi City County. *International Journal of Finance and Accounting*, 1(3), 62-78. DOI: <https://doi.org/10.47604/ijfa.203>.
- Panda, B., & Leepsa, N. (2017). Agency Theory: Review of Theory and Evidence on Problems and Perspectives. *Indian Journal of Corporate Governance*, 10, 74-95. <https://doi.org/10.1177/0974686217701467>.
- Pamhare, B. (2019). *An assessment on the impact of electronic banking on bank profitability: the case of CBZ Bank*. <http://localhost:8080/xmlui/handle/123456789/10964>
- Pasukodewo, T., & Susanti, N. (2020). The Impact of Profitability on Stock Valuation and Its Impact on Corporate Value. *International Journal of Finance & Banking Studies* (2147-4486), 9(2), 46-55. DOI: <https://doi.org/10.20525/ijfbs.v9i2.728>
- Pouryousefi, S. & Frooman, J. (2017). The Problem of Unilateralism in Agency Theory: Towards a Bilateral Formulation. *Business Ethics Quarterly*, 27(2), 163-180. <https://www.jstor.org/stable/26290831>
- Ratnawati, T., Mujanah, S., & Lokajaya, N. (2018). Financial Inclusion Strategy to Increase the Welfare of Regional Community Industry in Gresik Regency of East Java. *Archives of Business Research*, 6(7).23-33 DOI: <https://doi.org/10.14738/abr.67.4859>
- Remulo, K. I. (2018). *Impact of mobile banking on the bank profitability of Kenyan commercial banks* [Doctoral dissertation, Strathmore University]. <https://su-plus.strathmore.edu>.
- Sabrin, A., Sarita, B., Takdir, D. & Sujono, C. (2016). The effect of profitability on firm value in manufacturing company at Indonesia Stock Exchange. *The International Journal of Engineering and Science*, 5(10), 81-89. <https://www.researchgate.net/publication/338158702>.

- Manesh, S. A., Shah Mohamadi, F., & Kiani, A. (2014). The effects of electronic banking development on Iranian banks' profitability. *European Online Journal of Natural and Social Sciences*. 2(3), 1-15. www.european-science.com.
- Samuel, H. M., & Mbugua, D. (2019). Effect of financial inclusion initiatives on the financial performance of women-owned small and medium-sized enterprises in Kenya. *The Strategic Journal of Business & Change Management*, 6 (2), 2052 –2064. <https://www.strategicjournals.com>.
- Santu, T. V. C., Mawanza, W., & Muredzi, V. (2017). An evaluation of the agency banking model adopted by Zimbabwean commercial banks. *Journal of Finance*, 5(2), 58-66. DOI: 10.15640/jfbm.v5n2a6 URL: <https://doi.org/10.15640/jfbm.v5n2a6>
- Sarma, M. (2016). Measuring financial inclusion for Asian economies. In *Financial inclusion in Asia* (pp. 3-34). Palgrave Macmillan, https://econpapers.repec.org/bookchap/palpsifcp/978-1-137-58337-6_5f1.htm#:~:text=https%3A//EconPapers.repec.org/RePEc%3Apal%3Apsifcp%3A978%2D1%2D137%2D58337%2D6_1
- Shieh, G. (2010). On the misconception of multicollinearity in detection of moderating effects: Multicollinearity is not always detrimental. *Multivariate Behavioral Research*, 45, 483-507. doi: 10.1080/00273171.2010.483393.
- Shihadeh, F. (2021). Financial inclusion and banks' performance: Evidence from Palestine. *Investment Management and Financial Innovations*, 18(1), 126-138. doi:10.21511/imfi.18(1).2021.11.
- Shihadeh, F. H., Hannon, A. M., Guan, J., Ul Haq, I., & Wang, X. (2018). Does financial inclusion improve the banks' performance? Evidence from Jordan. In *Global tensions in financial markets*. 3(34), 60 -63. <https://doi.org/10.1108/S0196-382120170000034005>
- Shihadeh, F., & Liu, B. (2019). Does financial inclusion influence the Banks risk and performance? Evidence from global prospects. *Academy of Accounting and Financial Studies Journal* 23(3), 1-12 doi:10.21511/bbs.15(1).2020.07

- Stevens, J. P. (2009). *Applied Multivariate Statistics for the Social Sciences* (5th ed.) Routledge.
<https://doi.org/10.4324/9780203843130>
- Sulong, Z., & Bakar, H. O. (2018). The role of financial inclusion on economic growth: theoretical and empirical literature review analysis. *Journal of Business & Financial Affairs*, 7(356), 2167. DOI: 10.4172/2167-0234.1000356
- Susetyo, A. B., Sujianto, A. E., Faizin, M. A., Anjarsari, K. Y., & Nafisah, C. D. R. (2020). The Indirect Impact of Profitability on Firm Value: Evidence Dividend Policy as Moderators and Capital Structure as Mediator. *Technium Social Science Journal*, 10(4), 299-307. *RePEc:tec:journl:v:10:y:2020:i:1:p:299-311*
- Tan, Y., Floros, C., & Anchor, J. (2017). The profitability of Chinese banks: impacts of risk, competition and efficiency. *Review of Accounting and Finance*. 16(1):86-105 DOI: 10.1108/RAF-05-2015-0072.
- Tindi, P. O., & Bogonko, J. B. (2017). Effects of agency banking on customer satisfaction in the banking industry in Kenya. *International Academic Journal of Economics and Finance*, 2(3), 141-160. http://www.iajournals.org/articles/iajef_v2_i3_141_160.pdf
- Usman, M. (2020). *Effect of Mobile Banking on Financial Performance of Deposit Money Banks in Maiduguri Borno State: a Case of United Bank of Africa*. <http://dx.doi.org/10.2139/ssrn.3612701>.
- Uwalaka, S. C., & Eze, P. (2020). Effect of Mobile Banking On Customers Satisfaction in Commercial Banks in Anambra State. *International Journal of Innovative Social Sciences & Humanities Research* 8(1), 101-109 <http://www.seahipaj.org/>.
- Vekya, J. M. (2017). Impact of electronic banking on the profitability of commercial banks in Kenya. *Journal of Technology and Systems*, 1(1), 18-39. DOI:10.47941/JTS.148.
- Wale-Awe, O. I., Kehinde Miracle, A., & Najeem Adekunle, O. (2020). Impact assessment of the financial inclusion strategy in Nigeria: Lessons from BRICS and other countries. *Business Economics Quarterly*, 13, 3-22. *RePEc: ris: buecu: 0029*.

Zalloum, L., Alghadeer, H., & Nusairat, N. (2019). The Effect of Using Mobile Banking Services Applications on Electronic Word of Mouth: The Mediating Role of Perceived Trust. *International Business Research*, 12(9), 62-80. DOI:10.5539/ibr.v12n9p62.

APPENDICES

Appendix I: Commercial Banks in Kenya

Tier I Commercial Banks

1. Standard Chartered Bank
2. Barclays Bank
3. Co-operative Bank of Kenya
4. NCBA
5. Equity Bank
6. Kenya Commercial Bank(KCB)

Tier II Commercial Banks

1. Family Bank
2. I&M Bank
3. Diamond Trust Bank
4. Bank of Africa
5. Housing Finance
6. Ecobank
7. Prime Bank
8. Bank of Baroda
9. CFC Stanbic Bank
10. Citibank
11. Guaranty Trust Bank
12. National Bank
13. Bank of India
14. NIC Bank

Tier III Commercial Banks

1. Fidelity Bank
2. Development Bank
3. Paramount Universal Bank
4. ABC Bank
5. Jamii Bora Bank

6. Consolidated and Development Bank
7. Credit Bank
8. Equatorial Commercial Bank
9. Guardian Bank
10. Victoria Bank
11. Middle East Bank
12. Giro Bank
13. Oriental Commercial Bank
14. Trans-National Bank
15. Habib Bank
16. First Community Bank
17. UBA Bank
18. Gulf Bank
19. Habib A.G Zurich Bank
20. Sidian Bank
21. Consolidated Bank

Source: CBK (2019)

Source: CBK (2019)

Appendix II: Data Collection Sheet

Year	No. of ATMs	Vol. of internet banking transaction	No. of agents	Vol. of mobile banking transactions	Net income	Equity	Total assets
2020							
2019							
2018							
2017							
2016							

00

KENYA METHODIST UNIVERSITY

Tel: 254-064-30301/31229/30367/31171 Email: info@kemu.ac.ke

Our ref: NAC/ MBA/1/2022/01 6th JANUARY 2022

Commission Secretary,
National Commission for Science, Technology and Innovations,
P.O. Box 30623-00100,
NAIROBI.

Dear Sir/ Madam,

ABDIRAHMAN ABDIRIZAK GELLE MFI-3-1446-3/2019

This is to confirm that the above named is a bona fide student of Kenya Methodist University, undertaking masters in Business Administration. He is conducting a research titled: **RELATIONSHIP BETWEEN FINANCIAL INCLUSION STRATEGIES AND PROFITABILITY OF COMMERCIAL BANKS IN KENYA.**

In this regard, we are requesting your office to issue a permit to enable him collect data for his masters dissertation.

Any assistance accorded to him will be appreciated.

Yours faithfully,

PROF. Evangeline Gichunge, PhD.
ASS DIRECTOR POSTGRADUATE STUDIES

Encl.

Appendix IV: Nacosti Permit

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 325813	Date of Issue: 21/February/2022
RESEARCH LICENSE	
	
This is to Certify that Mr. ABDIRIZAK ABDIRIZAK GELLE of Kenya Methodist University, has been licensed to conduct research in Nairobi on the topic: RELATIONSHIP BETWEEN FINANCIAL INCLUSION STRATEGIES AND PROFITABILITY OF COMMERCIAL BANKS IN KENYA for the period ending : 21/February/2023.	
License No: NACOSTI/P/22/15674	
325813 Applicant Identification Number	 Director General NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Verification QR Code 	
NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.	