FINANCIAL INCLUSION AND FINANCIAL STABILITY OF COMMERCIAL BANKS IN KENYA

ANNE WANGECI IRUNGU

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTERS OF BUSINESS ADMINISTRATION IN FINANCE, FACULTY OF BUSINESS AND MANAGEMENT SCIENCES, UNIVERSITY OF NAIROBI

SEPTEMBER 2021

DECLARATION

I declare this is my original work and has not been submitted at any other academic institution for examination purposes.

Signature **:** ……… **Date:**……06/09/2021………………

Anne Wangeci Irungu

D61/10740/2018

This research project has been submitted for presentation with my approval as the University Supervisor.

Signature **:** …………………… **Date** **:** 7th September, 2021………

Prof. Mirie Mwangi

Department of Finance and Accounting

University of Nairobi

ACKNOWLEDGEMENT

I thank my Almighty God for granting me the strength to work on this research proposal. My sincere appreciation goes to Prof. Mirie Mwangi who persistently guided me towards the completion of this project and all other scholars whose materials were quite useful in my research.

DEDICATION

This project is dedicated to my family for their moral support and continuous encouragement during my studies.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

ATM   Automated Teller Machine

BOP   Balance of Payments

BOSA   Back Office Service Activity

CBK   Central Bank of Kenya

CBR   Central Bank Rate

CMA   Capital Markets Authority

EPS   Earnings Per Share

EASE   East Africa Securities Exchange

FEM   Fixed Effects Model

FOSA   Front Office Service Activity

GDP   Growth Domestic Product

ICT   Information Communication and Technology

LIQ   Liquidity

MFIs   Microfinance Institutions of Kenya

NBFSIs   Non-Banking Financial Institutions

NPLs   Non-Performing Loans

NSE   Nairobi Securities Exchange

PBT   Profit Before Tax

PER   Price earnings Ratio

REM   Random Effects Model

SACCOs   Savings and Credit Cooperative Societies

SASRA   SACCOs Regulatory Authority

SPSS   Statistical Packages for Social Sciences

ABSTRACT

Economies of all nation majorly are reliant on the banking sector. The health, soundness and stability of banking institutions is thus paramount to the well-being of any nation's overall economy due to the significant role they play especially in accumulating capital, growth of organizations and economic advancement. Subsequently, banks have considered financial inclusion by innovating product lines and diverse products with the sole aim of targeting unbankable consumers. It is notable that notwithstanding these undertakings, some banking institutions have continuously encountered stability related hurdles in Kenya resulting to a few be under receivership and some closing business. Subsequently, it becomes imperative for banking firms to fully consider the interlinkages in deepening financial inclusion and its efficacy on their stability. The theories applied for this study were financial intermediation theory, banking led theory and contemporary banking theory. This study scrutinized the effect of financial inclusion on stability of banks with a targeted focus on all commercial banking institutions hailing from Kenya for a duration of time ranging between 2012 to 2019. The examined bank financial inclusion were deposit accounts, loan accounts, branch network and internet and mobile banking. The study will adopt descriptive research design with the targeted population being all the 43 commercial banking firms that were in operation in the period under consideration. Data analyzed in this study was gathered from the yearly reports of the firms and also from CBK supervisory reports. The collected data was analyzed using STATA version 13 and this basically was descriptive, correlation and regression analysis. A significant association between deposit accounts, loan accounts, branch network, internet and mobile banking and financial stability was reported from the analysis conducted. Further, bank size had a positive moderating effect. From the inferences, it was recommended that institutions of governance ought to streamline polices that are geared towards anchoring adoption of the operationalized measures relating to financial inclusion to amplify accessibility and continuous usage of financial products. A need also arises to divest in banking internal controls and management of security gaps to cushion customers against risk exposure that may arise from usage of alternative service provision channels such as mobile, internet, ATMs, agency and other online channels of banking.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Financial inclusion is a pivotal development yardstick in the global arena as one of the variables that spearhead widespread economic advancement by enhancing access to finance thereby improving liquidity circulating in the economy, drives the degree of economic action plans and minimizes the poverty index of any nation. Financial stability depicts a situation under which commercial banking institutions absorbs shocks and occurrences of financial imbalances (ECB 2007). Inclusion emanates from hypothesis of financial intermediation whereby banks are viewed as major means through which funds are allocated to investors from savers (Ongore and Kusa 2013). To proceed with their roles of financial intermediation dissuaded from interruptions, banking institutions need financial health, soundness, stability in addition to being profitable (Onuonga, 2014). As stated by Sufian (2011), the financial health, banks' productivity, wellbeing and stability of banking institutions is of significance to ranking of a nation's overall economy due to their considerable and key part in accumulation of overall capital, advancement and economic progression.

Githemo, (2014) outlined that stability of banks and financial inclusion is impacted by environmental variables emanating internally and externally. Factors emanating internally are categorized as bank specific or individual attributes and significantly impact bank's stability. Ideally, these variables are controlled by choices, policies and

1

controls reached by management internally. Among these variables are the entire size of the bank, market share, and adequacy of capital, efficiencies in operations, diversity of income streams and ownership.

Korir et al (2015) indicated that the innovations drivers for mobile banking and online banking is majorly competition, advancement in technology, globalization and deregulation. Survival of banking sector has been promoted by frequent and steady adoption of digital banking advancements to enhance financial performance. Following the adoption of digital practices, various players in the financial sector have in a bigger margin improved the quality of services to meet the varying needs of customers, enhance financial inclusion and subsequently survival rate and performance improvement. The adoption of financial innovativeness is highly capital intensive and rate of failure is very high and consequently banks significantly struggle in designing, deployment and implementing the best and current digital banking practices available in the markets (Camara and Tuesta, 2014).

1.1.1 Financial Inclusion

It was stated by CGAP (2018) based on a global perspective that over 2 billion adults who are working, and this is above half total adult population, don't have access to formal bank accounts with organizations in the financial sector. Efforts put in financial inclusion are undertaken to make sure that every business and household has access and consume services from financial sector not withstanding income cadres. Terminals of paying digitally are essential components of financial inclusion across the globe. As

alluded by CGAP (2018) while taking Russia as a nation into consideration, there exists an account exceeding 70 million people utilizing terminals once per month. In the context of Azerbaijan, there exists over ten bank outlets per 100,000 adults and therefore an upsurge in consumption of payment terminals seven folds compared to Russia. Utilization of payment terminals contextualized in nations like Brazil, Colombia, India and US performs as expected.

Financial inclusion is a pertinent metric of development in the global arena as among the variables which leads to widespread economic advancement by simulating accessibility to financial offerings that ensures there is proper levels of marketability in the economy and fast tracks degree of activity stimulating the economy and minimizes poverty levels in a nation (Ishengoma, 2011). Financial inclusion is a broader term used to refer to delivery of financial offerings to lower income cadres in a society by financial sector at costs that are affordable. Camara and Tuesta (2014) instigated financial inclusion to be a process whereby accessibility to formal financial offerings and their uptake is maximized while minimizing any hinderances to its accessibility. Sarma and Pais (2010) explain financial inclusion to mean a process designed to enhance accessibility and utilization of formal financial system to every economic sector. Systems labelled as inclusive financially should enable efficiency in allotment of productive resources and consequently lead to reduced cost of capital and low uptake of informal financial systems. Inclusivity in financial system upscales efficiency in utilization of resource efficiency and diversifies avenues that improve safe financial conduct.

According to Kenya Bureau of Statistic Report (2017), approximately 7 million adults from rural areas are either under-banked or not banked at all. The reason for this is due to high costs of maintenance for bank accounts and branches it thus becomes unproductive to set up branches and ATMs in rural areas. Nonetheless, branchless banking has been adopted by banking industry and it's aimed at reduction of costs of operations by banks. The technological advancements have triggered enhanced customer flexibility, and some of these advancement tools include ATM, internet and mobile banking (Mwando, 2013).

Technological tools like handheld devices, mobile devices, point-of-sale devices and ATMs booths have scaled upwards the channels of financial delivery targeting the poor and rural areas (Bansal,2012). Ndungu et al (2015) asserted that when everybody is brought onboard in accessing affordable financial services, the overall contribution to the larger development agenda creates quicker and quantifiable efficacy. The current financial inclusion innovations aim at improvement of efficiency and efficacy and among them is branchless, internet and mobile banking. These financial innovation avenues in Kenya are targeted at improving financial accessibility taking into consideration minimal transactions costs.

Kitali (2015) highlighted that financial innovations have progressively improved on efficacy of formal financial system. Funds availability to business activities has been boosted leading to a positive effect in the long run pertaining economic growth. Credit market development in return has been improved enabling hedging of credit risk, management of maturity and credit mismatches and consequently advancing a stable

financial system. Ndungu et. al. (2013) contended that progressive levels of financial inclusion in both under-served and un-served markets anchors part of the core aim of agency banking innovations. Kenya's Vision 2030 also aims at inclusion of more residents under formal financial systems.

The CBK (2009) prepared guidelines for agency banking targeted at upscaling financial inclusion and enhance access to formal financial systems by the majority. Agency banking idea was brought forth in such a way that they are contracted by financial firms to undertake transactions of clients on behalf of the financial firms. Additional financial inclusion avenues include branch networks, ATM networks and mobile banking which have promoted access and usage of cheap and affordable financial offerings. Ndungu et.al (2015) highlighted that financial inclusion is a core pillar in advancement of the economy and financial wellbeing of people. It advocates for ease of financial services access which subsequently lowers income inequality, overall poverty globally and underdevelopment.

1.1.2 Financial Stability

Bank stability refers to how far a bank is from being rendered insolvent or collapsing. Bank stability is assessed by deploying standalone indicators or by adopting composite metrics. One of the commonly used metric of bank soundness as was adopted in Basels Acord was calculating adequacy of capital, quality of the assets, top managers soundness, earnings quality, levels of liquidity normally abbreviated as CAMELS (Beck et al., 2009). An additional common metric of bank stability is banking stability index which was advanced by Ghosh (2010). The measure is based on prerequisite pertinent aspects of

banking operations and afterwards putting into perspective which sets of components are most impactful in influencing the indices. Common metrics of single and joint bank stability which are premised on accounting data, include Z-score and ratio of non-performing loans (Beck et. al., 2009; Ongore & Kusa, 2013; Ghosh, 2008).

Dating back as early as 2007, Kenya has inadvertently made strides in financial inclusion expansion to enhance banks' financial stability and upscale economic advancement. A number of variables have contributed to the higher degree of inclusion. First is ensuring access to various financial providers including commercial banks (CBK, 2012). Secondly, it's prioritizing financial inclusion to be mentioned as national agenda in Vision 2030 blueprint. Finally, it's widening accessibility as enhanced by the financial sector innovativeness especially in the commercial banking firms.

Allen et *al*. (2013) study alluded existence of three indicators of financial inclusivity: availability of bank services dimension, banking accessibility dimension and banking usage dimension. Dimension of banking availability is derived from the degree at which banks have penetrated and their physical presence of outlets. Physical proximity separating banks touching points and consumers of its services is a pertinent contributor of financial inclusion objectives.

This study will adopt deepening of brick and mortal outlets, ATMs lobbies and agents to operationalize the aspect of banking availability (Mostak & Sushanta, 2015). To operationalize banking accessibility and usage, number of accounts for banking deposits, loans and mobile accounts will be adopted for purposes of accounting for the financial

inclusion within the country. Onuonga (2014) stated that bank assets, capital weighting, concentration of ownership, cost of operation and diversification significantly directs earning capabilities of the banks under scrutiny. Kamau and Were (2013) highlighted that cradle of good results by the Kenyan banks is a framework coupled with collusive power as opposed to efficiency hence conforming with SCP hypothesis. Amongst the control variables, the study confirmed bank size to associate significantly and positively with performance. The outcome of the scrutiny highlighted that there is a role played by structure and efficiency in determination of performance operationalized as log of NIM and log of profitability before tax.

Berger, Klapper et al. (2009) while undertaking an investigation on bank competition and stability, deployed banks' Z-scores in order to operationalize bank stability. Amongst crucial findings, bank size, the HHI of advances and loans and HHI of total deposits were found positively and significantly associated with banks' Z-scores. It was noted however that the loans to bank assets ratio had a negatively directed and significant association with the reviewed banks' Z-scores.

1.1.3 Financial Inclusion and Financial Stability

The global financial crisis that happened in 2007-2009 challenged the efforts of financial inclusion where lack of good performance was directly associated with financial inclusion measures (Carneiro, 2011). Globally, Chauvet and Jacolin (2017) highlighted that financial inclusion on the other hand has an association with improved banking institutions' financial performance. Banks which tend to be competitive encounter growth at high degree of inclusion. Financial services distribution across firms impacts positively the growth of the organizations.

The key aim of financial inclusion is bringing closer the "unbanked" populace into the formal financial system to get the opportunity for accessing financial services among them savings, transfers to credit, payments, and insurance (Hannig & Jansen 2010). A scrutiny undertaken by Allen et.al., (2012) in the context of Kenya confirmed that bank presence raises accessibility to bank accounts and enhances credit accessibility. The author subsequently posited that all these undertakings through enhancement of financial inclusion bears the capability of impacting positively in entrenching stability and efficiency of banks. Subsequently, Kipesha and Zhang (2013) raised a warning that the effect in the long run can be found to be directed negatively if programs related to financial inclusion measurements are not well designed.

Agency banking has enabled clients have accessibility to fundamental financial offerings by enabling small ventures to operate as satellite outlets paid on commission (Musau, Muathe & Mwangi, 2018). Dating back to 2012, Safaricom together with CBA bank, one of banks licensed in Kenya, innovated a service and called it M-shwari that in an automated functionality that assists in opening all types of account for customers in the bank who are registered for M-pesa and is operated entirely as a bank account. The innovation has led to accessibility of services in banks by accelerating additional unbanked customer base.

Nthambi (2015) undertook research on financial inclusion, stability of banks, banks concentration of ownership and earning capability of banking institutions in Kenya and highlighted that financial inclusion bears a directed efficacy on the bottom line of banks.

Study associated with Simboley (2017) scrutinized the impact of agency banking on the banking institutions' financial performance. Cherungong (2015) scrutinized the influence of programs relating to financial literacy on performance of small and medium scale enterprises operating in the county of Trans Nzoia. Kipngetich (2013) assessed agency banking influence on financial inclusion in Kisumu. Kithaka (2014) highlighted the link between mobile banking and financial performance of banks in the Kenyan context. Considering these studies and many others, this field of financial inclusion is still a grey field with minimal studies on financial inclusion and it's impacts on the performance of banking institutions in the context of Kenya and hence a need arose fill this glaring gap by conducting further assessment.

1.1.4 Commercial Banks in Kenya

The history of financial sector in the context of Kenya dates to the year 1896 in which the Indian national bank started its operations in Kenya. The banking sector in Kenya is coordinated by apex bank CBK and other players include NBFIs and Forex Bureaus\. Jointly, they are the components of banking sector in Kenya (Matete, 2014). As at 2019, Kenyan financial sector was composed of 43 banking institutions. Subsequently, four institutions namely Chase Bank, Charter House bank, Dubai Bank and Imperial Bank, were all under statutory management and thus leaving thirty-nine banking institutions in operation.

A new concept of Agency banking has enhanced the spread of banks' branches fairly. As alluded by CBK (2012) the model of agency banking intention was to tackle the

challenge of low financial inclusion which was at 32% as per the fin Access survey (2009). Guidelines of banking through agents were passed in 2010 in the month of April and took effect the same year beginning in May. In February 2011, CBK published framework of regulations to guide a new model of Agency Banking. Since 2011, the numbers of agencies and transactions done have significantly increased. Between 2007 and 2012, Safaricom, established approximately 40,000 mobile payment agencies around the nation (Cracknell, 2012). By the third quarter of year 2015, a composition of 17 banking institutions in Kenya had contracts with 39,871 agents who had transacted 193.4 million transactions with a value above Ksh. 1.0 trillion (CBK, 2017). FSD (2015) cited banking through agents as a relatively popular channel despite it being a new concept.

In Kenya, banking through the mobile has also significantly been adopted with transactions averaging around 15 percent of the total GDP as of financial year 2018 (CBK, 2019). Basing on mid-year results by Safaricom for the year 2013-2014, M-PESA alone accounted for 18.2 million customers in active status (Nyaga, 2014). CBK (2019) also highlighted that technology through ATM was the preferred technology in majority of user's banks. Branch outlets and call centers accounts to largest average per-cost of transaction ranging at $4.0 to $3.8 respectively, with ATMs bearing the minimal average per cost of transaction at $0.9.

As stated by CBK (2019) savings in terms of deposits by customers grew by 12.41 points from Ksh.2.9 trillion by end of year 2017 to Ksh.3.26 trillion by financial year 2018. This upsurge was enhanced by the deep drive of deposits through the use of various channels

like agency banking and mobile phones. Scrutinizing the same period of operations, gross loans and advances in banking sector upsurged by 3.07 points from Ksh.2.41 trillion in financial year 2017 to Ksh.2.49 trillion in financial year 2018. This is evidence that services from the banking institutions drive nations' development and catapults GDP. Banking institutions therefore assume a very critical role in the economies of the world.

It has been noted that banks have encountered challenges as evidenced by several banking institutions collapsing (Maina, 2015). These banks include Bullion, Reliance, Trust and Prudential banks, chase bank and imperial bank. Their collapse was as a result of fragility in the sector, underwhelming management and unfavorable economic circumstances. The study illustrates further that CBK has tremendously been in pursuance of reforms in the banking sector that are geared towards enhancing access to financial offerings, increase efficiency levels and consequently sector stability while undertaking offsite and onsite assessments to make sure banks comply with the laws and regulations.

1.2 Research Problem

The CBK supervision reports have highlighted progressive deterioration in the performance of banking sector as depicted by average Return on Assets (ROA) for the entire industry at 3.7 percent in 2010 to 2.96 percent in 2014 (CBK, 2015). In 2009, ROE was 26.5 percent which declined to 20.8 in 2018 (CBK, 2018). Additionally, negative EPS of 13.8% was reported by banking institutions at the NSE in the first quarter of financial year 2017 taking a comparison to a growth of 15.5% in average over the same

duration of time in financial year 2016. According to Bansal (2014) banks should continuously develop tools that enhance financial inclusion and ensure financial stability. The stability of banking institutions operating in Kenyan environment has not exhibited robustness. Some banks have encountered challenges related to liquidity and issues of corporate governance which has led to two banks to be under receivership in the financial year 2015 followed by another bank in early 2016. This being the first encounter of such in over a decade (CBK 2016). CBK (2016) alluded that these challenges occurred at the backdrop of increasing growth in total assets of the banking sector.

There lacks theoretical and empirical coherence on financial inclusion and financial stability of banks as some studies were positive, negative, significant or non-significant. Some of these studies done on impact of various bank variables on financial stability includes Demirgüç-Kunt and Huizinga (2013), Mwai (2020), Obamuyi (2013), Saira, Jamil et al. (2011), Berger, Klapper et al. (2009), Kamau and Were (2013), and there seems to be no comprehensive conclusions and are mixed at best on their results and findings. Majority of these studies made use of data gathered from foreign economies with Turk-Ariss (2010), Onuonga (2014) and Kamau and Were (2013) point of attention being banks in Kenya but utilized other variables such as bank size, non-performing loans while this assessment was focused on financial inclusion measures such as loans accounts, deposits accounts and alternate channels accessibility. Few of these studies however, focused specifically on the commercial banking institutions in operation in Kenya. Additional scrutiny on financial inclusion and stability of banking institutions in Kenya will avail data helpful in the formulation of better policies that will ensure

enhancement of stability of the banking system in the long run and additionally bridge the gaps noted in review of empirical literature.

In line with the gaps, this in-depth scrutiny was to scrutinize the effect of financial inclusion on financial stability of banking firms in Kenya. The study is different as the financial stability of banks was measured by their Z-score. Z-score combines in a single measure profitability, leverage and return volatility. A bigger value of Z-score means a smaller exposure profile for any banking institution and thus a greater bank stability. The population of interest was commercial banking firms in Kenya and taking into consideration that banking sector is the biggest player in a nation's financial sector. The scrutiny at large is useful to the well-being of the nation's economy.

1.3 Research Objective

This study focused on the effect of financial inclusion on financial stability of commercial banks in Kenya.

1.4 Value of the Study

The current study is likely to contribute to the literature and fill the gap by revealing how financial inclusion influence financial stability of banks. This gives credence to the study as the findings can be replicated in another region. Therefore, the findings of the current study could be of importance to various interest groups including investors, researchers and upcoming scholars, banking sector, regulators of financial institutions, bank customers, policy makers and the treasury.

The Government will understand sections of the country that are satisfactorily served financially and come up with policies that enhance their financial inclusion among them deepening the infrastructure of agents and enrichment by subsidizing tools of enhancing financial inclusion in financially excluded sections to enhance economic empowerment of people living in the unbanked areas.

Financial sector players will understand the underserved and unserved market areas thus helping them develop strategies of improving on their uptake in the market in sections underserved and any identifiable gaps in the market that subsists and how the gaps can be attended to. This will promote their customer base and improve on their revenues and therefore promote the nation's economic growth.

The study will also be beneficial to both senior and upcoming scholars. The study will immensely add value to academic research as it will add to the already available and published literature that can be used for further investigations. This study will also suggest areas that can further be explored. It will also benefit the banks' shareholders by enabling them to have a clear perspective on efficiency divers and therefore get an impetus to be able to hold the banks' managers accountable on improvement of the highlighted areas relating to efficiency.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section scrutinizes prior work done by scholars relating to financial inclusion and financial stability of commercial banking institutions in Kenya. It also illustrates a summary on findings from work done by other researchers relevant in this field. The review covers the existing theoretical and empirical literature. Theoretical framework acts as a guide to the researcher to comprehend the current body of knowledge on the field of study while the empirical review guides one to understand what other prior related research studies have researched on and their findings, conclusions and recommendations. Gaps in the research were identified and a comprehensive conceptual framework drawn highlighting the variables informing this study.

2.2 Theoretical Foundation

The relevant theoretical foundations helpful in this research study were analyzed under this section. This research was informed by three theories namely, financial intermediation theory, bank-led theory and the contemporary banking theory.

2.2.1 Financial Intermediation Theory

Work that was undertaken by Raymond Goldsmith (1969) forms the background of the financial intermediation hypothesis. Goldsmith highlighted wide-berth factual statements related to the field of financial components and economic advancement. It stated that as a nation pursues economic advancement, the formal financial system grows rapidly than

wealth of the nation. Determination of the depth financial system in a nation is the separation of key part held by saving and investment amongst the diverse economic units (Goldsmith, 1969). The inference that was reached in the 1960s is still of relevance to the system format of present-day financial intermediation. Ever changing societies have continuously appreciated the role assumed by financial intermediation in economic advancement (Scholtens & Van Wensveen, 2003). Theoretical and empirical scholars have confirmed that financial intermediation assume a pertinent role in the enhancement of the economy.

The work done in this field confirmed that one of the precursors for financial exclusion is minimal income levels and assets among society residents. With financial intermediation, there is likelihood of efficient capital allocation in the economy having the major objective of making sure that growth of the economy is realized. Additional factor highlighted to enhance financial exclusion is absence of information concerning certain financial offerings. Financial intermediation aids in relying information to capital owners and those with deficit capital. The financial intermediation process links the deficit units with surplus units operating in unfamiliar environment (Mandell, 2008).

Banking institutions through financial intermediation deepens financial inclusion. Banking institutions therefore take risks in an economy in the process of making sure there is accessibility of information, literacy and efficiency in allotment of the resources in the country (Scholtens & Wensveen, 2003). This risk appetite level during the process of financial intermediation is covered by financial organizations by charging interest

rates. This aspect of financial intermediation is the backbone of the study in this context as it expounds on the fact that financial organizations can make profits through their taking part in financial intermediation hence maximizing their financial performance. The critical part of financial intermediation have assumed a pertinent role in making sure financial inclusion deepens, alluding that scholarly work of this focus would aim at determining whether the financial inclusion yields profits for financial organizations that offer services of intermediation in nature. This theory, therefore, becomes relevant to the extent offerings of deposits and loans contributes to financial stability of banking institutions.

2.2.2 Bank-Led Theory

Proponents of the hypothesis are Lyman, Ivatury and Staschen (2006) and premised it on the basis that financial institutions that are licensed do render financial services through agency channels. It consequently expounds the roles of financial firms to be of developing financial offerings and their distribution channeled through retail agents engaged in handling transactions of customers. Owens (2006) highlighted that banks role is that of providing financial offerings and maintaining accounts belonging to customers. Retail agents are tasked with carrying functions of banking predominantly those of cash withdrawals and deposits just like the functions of branch tellers.

It's applicable from this theory that banking institutions in collaboration with other financial sector institutions offer banking services to clients through leveraging on platforms of system of mobile banking. The contracted entities must undergo vetting

conclusively to meet guidelines set out by the respective banking institutions in the provision of their banking products (Yakub, Bello & Adenuga, 2013). Costs of transactions incurred by banks among them building and maintenance of channels of delivery costs are thus minimized. Agents are contracted by these institutions to deliver on their behalf the basic customer offerings to their clients. This leads to customers not queuing in banking centers to access banks offerings thus ensuring that the underserved sections are reached too.

Under the theory of bank led, retail agent has a direct contact with clients as a bank teller does inside a banking hall. These agents additionally handle functions pertaining to cash as they take deposits and process customers withdrawals. In other nations, the adoption of retail agents is at an advancing level where opening of accounts is conducted and marketing to customers done to extend loans (Kiburi, 2016). These pints of contacts provide banking products closer to the customers and the retail agents services. Subsequently, the retail agent maintains a direct electronic communication with the bank they are acting on behalf.

Bank led hypothesis is key in this assessment as it forms the background at which bank branches numbers becomes an important contributor of financial inclusion. While assessing the agent's adoption, proliferation of ATMs and mobile banking platforms, what is more feasible is the bank led theory (Kendell, 2016). Analyzing this theory, it is viewed to explain why banking institution continuously use aspects prescribed under the variables as ways of improving financial inclusion. However, though the theory

attempted to form the backbone of the perspective of agency banking, it failed to establish the gains of the practice pertaining returns to the banks and to the customers' side. Simply, the theory prescriptions have highlighted the mode to which agency banking process is adopted.

2.1.3 Contemporary Banking Theory

Bhattacharya and Thakor (1993) came up with contemporary banking theory which was an extension of hypothesis of financial intermediation. The theory highlights that banking institutions together with other financial intermediation players are pertinent about fair distribution of capital resources in a nation's economy. The players of financial intermediation take up a key role in any economy through minimization of the transaction costs for services offered.

While scrutinizing the contemporary hypothesis of financial intermediation, the focus area includes its contribution, and the deep entrenchment of the understanding of why financial intermediaries exist. Taking into consideration that the hypothesis has assisted largely in understanding the aspects of financial intermediation, it should focus on elements pertaining financial intermediation theory. The second perspective is that it has led to complication in regulation due to its widening of the scope of financial intermediation through diverse intermediaries (Bhattacharya & Thakor, 1993).

Linking this theory with the current study, it will support immensely the independent variables relating to financial inclusion and the dependent variable financial stability of commercial banking institutions. Mobile coupled with internet banking enhances clients

to have prompt access to offerings of banks without having to go to traditional bank outlets which were the primary meeting point between the banks with its clients in the past. Quick accessibility to information regarding bank products via channels of agency and electronic banking has contributed to improvement of financial inclusion and subsequently financial stability. Commercial banking firms can operate a single branch by taking into account the competitiveness and the dire call for financial inclusion and they end up operating a network of outlets. Operating network of branches is among the roles of the contemporary banking institutions that endeavor to narrow the disconnect existing between the customers and banks.

2.3 Financial Stability Determinants

2.3.1 Financial Inclusion

Mwai (2020) conducted a study on measures of financial inclusion and their relationship with financial deepening in the context of the Kenyan banking system. The variables under consideration were mobile banking, ATM banking, online banking and agency banking. Consequently, bank size as a moderator on the linkage between adoption of the main variables and commercial banking financial deepening was also ascertained. The scrutiny reported positive associations that were deemed significant between banking through mobile phones, ATM, banking through internet, banking through countrywide agents and financial deepening. The size of banks was reported to have a positively significant moderating effect on financial deepening of banks in Kenya.

In economies classified as emerging like Kenya, banking institutions dominates the channel of financial intermediation which is a precursor to financial inclusion. Studies that have been conducted in the prior two decades in sub-Saharan Africa have highlighted an increased banking activity resulting from new customers entrants through financial inclusion. Commercial banking institutions have additionally been announcing superior profits in comparison to other parts of the globe (Ongore & Kusa, 2013).

Better profits and stability have been associated to huge investments in high risk ventures an anomaly between demand side and supply side of banking offerings as well as concentrated government ownership of this sector. Kerata (2007) and Allen *et al.* (2013) posited that the undertakings through the platform of financial inclusion bears the capacity of directing positively the stability of banking firms. Inadvertently, Kipesha and Zhang (2013) gave a warning that long- term efficacy can be negative whenever financial inclusion platforms implemented are substandard.

2.3.2 Bank Size

Kalunda (2015) highlighted that large firms bears more power in negotiations that result to on average lower costs of financing that subsequently betters overall stability of the entire market. Large firms can hedge and diversify exposures greatly as compared to smaller organizations. In turn, this impacts capability of a firm to exploit diverse methods of flexibility that subsequently impact survival in the long run. Bowa (2015) assessed impact of capitalization by banks on liquidity in the context of commercial banking firms in Kenya. Results inferred that asset size and asset quality do significantly influence

21

ratios of banks liquidity. It was however confirmed that bank size had the biggest impact on ration of banks liquidity. Subsequently the results indicate assets held by banking institutions that is both fixed and current controls the general stability of banks to a bigger extent. It was confirmed by the results that banks in the category of large banks fundamentally advantage from economies of scale that subsequently influences positively their profitability and eventually their stability (Tumin, 2011). Laeven, Ratnovski and Tong (2014) study on size of banks, requirements of capital and undiversifiable risk, an international scrutiny found astounding evidence to confirm that financially stable banks are stronger with increased bank size.

2.4 Review of Empirical Literature

Nthambi (2015) work was on effects of financial inclusion on the bank's performance. The study deployed hierarchical regression and regression analysis to test hypothesized objective of the study. The outcome of the study insinuates that financial inclusion had a direct impact on the banking institution's performance in the context of Kenya. There is not enough evidence to warrant rejection of the theory that stability of the bank is linked in a directed manner to financial inclusion and the banking sectors' financial performance. However, there was incoherence on financial inclusion's direct impact on the bank's performance as operationalized by ROE and ROA, though a directed impact was confirmed on NIM.

Oyugi, (2014) assessed the effect of automated services on performance of 45 SACCOs licensed by SASRA and were in operation in Nairobi and Kiambu Counties.. The

outcome of this study highlighted that the majority of Saccos had adopted internet services and the major service line was ATM. This study confirmed a significantly positive linkage existing between digital banking and financial performance of Saccos domiciled in Kenya.

Koduk (2015) undertook a research on impact level of financial innovations on financial performance of Saccos in the county of Nyeri, Kenya. 56 Saccos that were in operation were sampled. The inferences from analysis suggested that telephone and internet banking were seen as the major drivers of financial performance of financial institutions. It can henceforth be envisaged that huger benefits among them effective service delivery, cost minimization and services access will be derived by many clients, institutions and regulators that deploy digital banking

Research work on the effect of improving financial access in the context of Kenya at the district level was conducted by Allen et al. (2013). Banking channels were found to enhance access to financial services. The study also confirmed that branch networks upsurge in Kenya between year 2006 and year 2009. The research sampled Equity Bank only as the case study, thus this limitation made it a weak research design. The current study will take care of this gap by making use of panel data analysis, involving all the banks in the banking sector in Kenya.

Cull et al., (2012) undertook a paper on financial inclusion and stability of institutions. The paper confirmed that at personal and household level, savings enhances stability and taking into considerations the large numbers of savers who save small, potentially

increase stability at the overall level of the financial system. Savers from low-income level in some way tend to retain steady financial behavior in the course of the business cycle. Henceforth, during the time of crises, deposits from clients in the low-income levels act predominantly as a foregoing source of funds even in instances where sources of bank finance dry up or become impossible to roll over. Customers who are small savers thus bring forth big opportunities for mobilization of stable deposits. More financial inclusion including accessibility to savings, can also significantly improve financial stability in an indirect manner by providing individuals, households, and small enterprises with bigger opportunities of access to tools of management of financial risk. This enhanced access can improve survival and stability of the economy and consequently the financial system that supports it.

Han and Malecky (2013) conducted an assessment on financial inclusion and stability of banks across nations, using data gathered from World Bank. The outcome of the assessment highlighted that increasing the count of customers bearing deposits accounts revealed a positive inference on stability and favor a reduction in returns volatility and more so during financial crises. The utmost decline in bank deposits surge was deployed as explained variable spanning for a period between 2006 and 2010. Outcome of the assessment revealed that averagely, bank deposits increment and utilization of other banking products by customers leads to enhanced stability and resilience in instances of economic and financial decline. The inquiry considered a cross country survey and gave attention only on ATMs and Branches access dimension of financial inclusion. This current assessment will consider banking firms in Kenya and accounts availability and

usage through deposits and loans accounts perspectives of financial inclusion which are not taken into perspective in this study.

Sarma and Pias (2012) laid into perspective financial inclusion and development which was a cross nations inference. The study urged that simply by acquiring a bank account does not guarantee that the holders are utilizing the banks' products and that the bank is financially inclusive. This acts as a perquisite to the formulation of a metric of utilization of banking services. Two basic services of the banks were considered: credit and the deposit outstanding in the accounts. Count of accounts holding deposits and credit was employed to measure this aspect for every bank studied to measure the level of financial inclusion on banks' financial stability.

Morgan and Pontines (2014) studied to scrutinize the linkage between bank stability and financial inclusion employing corroboration from Asian Development Bank Institute. Financial stability was operationalized as the explained variable. The proxy operationalizing bank stability was Z-score and NPLs was measured as proportion of gof bad loans to total loans across banks. The study outcome insinuated that increment of the amount of loaning to businesses categorized as small and medium owners lowers NPLs and exposure to risk from default consequently raising stability. The assessment however considered only one bank in the context of Asia thus created a gap in context. The current study considered all banks in Kenya making it more robust. Additionally, bank deposits and loans were included to operationalize financial inclusion which was a glaring gap in the study.

Amatus and Alireza (2015) conducted a study on the efficacy of financial inclusion on stability in banks domiciled in Sub-Saharan Africa. A trivial dataset was used in the assessment and highlighted that outstanding loans and deposits negatively affects financial stability. A higher GDP per capital aids financial inclusion. Level of inflation had unfavorable impact on stability. The study approach was cross country in sub-Saharan Africa continent. Outstanding deposits and loans operationalized inclusion. The study concluded that banking systems do account for the prevalence of the entire assets in financial sector as well as activities. For any financial system which is predominantly comprised of banking institutions, minimal survival level in the sector adversely impacts its efficacy on economic expansion.

In the study conducted by Tchouassi (2012) that assessed whether banking through mobile phones contributes to extending banking services individuals who are unbanked while making use of empirical lessons contextualized in selected sub-saharan Africa nations. This assessment aim was to elaborate the extent to which mobile phones can be utilized to extend banking products to the population that is not banked, poor and vulnerable. The study highlighted people who fall under low income category who are vulnerable Sub-Saharan Africa (SSA) nations and in most cases did not get access to bank accounts and are challenged with high costs for pursuing basic financial transactions. Mobile devices presented a bigger opportunity for provision of financial products to unbanked individuals. Subsequently, technological and economic innovativeness, policy and regulatory changes was necessary to make these products a reality to the unbanked group in the population.

Mutua (2011) undertook a study on impact of mobile banking on financial performance of commercial banking institutions in Kenya. The conclusion of this study was that there exists a weak but positive link between mobile banking and financial performance of banking institutions in Kenya. This is attributable to the trends which confirmed that financial performance of banking firms was affected to a larger extent by macro-economic variables among them post-election violence, consumer price index and fluctuations of rates of foreign exchange among additional macro-economic variables.

Okiro and Ndung'u (2013) conducted a scrutiny on efficacy of mobile and internet banking on performance of financial institutions operating in Kenya. This study focus was predominantly on financial institutions in entirety. The study was designed to focus on a representative sample of financial institutions operating within the environs of Nairobi and inferred that banking institutions had the biggest rate internet banking adoption amongst the institutions selected. SACCOS have been adopting internet banking at a progressive rate, while majority of micro finance institutions have not yet pursued internet banking adoption. The study inferred that mobile banking challenges includes system delays by providers of mobile money transfer, slow transactions processing, high cost of conducting transactions, limits on amount withdrawn in a single day and fraudulent transactions.

2.5 Summary of Literature Review

The current study involved banks in Kenya and incorporated measurement to operationalize financial inclusion not well taken into perspective by studies such as Han

and Malecky (2013). Amatus and Alireza (2015) stated that pending deposits and loans were used to measure inclusion. The current study will include other customized metrics of financial inclusion like ATMs and agents numbers. People who fall under low income category who are vulnerable Sub-Saharan Africa (SSA) nations in most cases did not get access to bank accounts and are challenged with high costs for pursuing basic financial transactions. Stable banks are profitable and can engage in financial inclusion by reaching out to new clients (Hannig & Jansen, 2010; Kipesha & Zhang, 2013). It can be argued that financial inclusion leads to increased banks' activities and in turn increased profitability through entrance of new customers and reduced transaction costs due to economies of scale (Hanning & Jensen, 2010; Allen et.al, 2012, Delfiner & Perón, 2007).

Financial inclusion can on the contrary be considered a risky venture and can erode bank profitability as revealed by Nthambi (2015) and Oyugi, (2015) in studies conducted in Kenya. It was highlighted that offering financial products in rural parts of Kenya sustainably is challenging caused by poor infrastructure, low population, minimal degrees of literacy, undiversified economies, reduced profitability, and high exposures of moat of economic undertakings that is attributed to rural environment. It is therefore imperative to bring into perspective the effect of financial inclusion and bank stability especially for banks that hailed from Kenya.

There are authors who have looked into this area such as Simboley (2017) who scrutinized commercial banking firms' financial performance and how it is impacted by Agency Banking in the context of Kenya. Kipngetich (2013) undertook an assessment on

banking through agencies and its efficacy on financial inclusion in the county of Kisumu. Kithaka (2014) scrutinized efficacy of banking through mobile on the financial performance of banks domiciled in Kenya. The study investigated one variable while the current study sought to undertake a comprehensive study of financial inclusion variables.

Citing to Vives, (2016), the study will employ Z-score as a composite risk measure of banks' stability. This score will be deployed to scrutinize individual bank exposure by considering banks' closeness to insolvency and relating individual's bank's variability in returns to its equity base (Vives, 2016). The Z-score of individual banks will be taken to equal the return on assets (ROA) added to the equity-to-assets ratio and divided by the standard deviation of return on assets ratio. A bigger Z-score means lower exposure of the bank and basically this means that the bank is more stable. A high Z-score henceforth insinuates that standard deviations number beneath the mean by which return on assets can drop and still be absorbed by capital base of banking institutions, is bigger.

2.6 Conceptual Framework

Independent Variables   **Dependent Variables**

```
┌─────────────────────────────┐
│ Agents and Representatives  │
│                             │──────────┐
│   • Number of agents        │          │
└─────────────────────────────┘          │
                                          │
┌─────────────────────────────┐          ▼        ┌──────────────────────────┐
│ Branches and ATMs           │                   │ Financial Stability      │
│                             │─────────►         │                          │
│   • Number of branches and  │                   │ Z score=Equity to Asset  │
│     ATMs                    │          ────────►│ ratio+ ROA/σROA          │
└─────────────────────────────┘                   │                          │
                                                   └──────────────────────────┘
┌─────────────────────────────┐
│ Loan and Deposits Accounts  │
│                             │─────────►
│   • No. of loan and Deposit │
│     accounts                │
└─────────────────────────────┘

┌─────────────────────────────┐
│ Mobile and Internet Banking │
│                             │─────────►
│   • No. of transactions     │
└─────────────────────────────┘
```
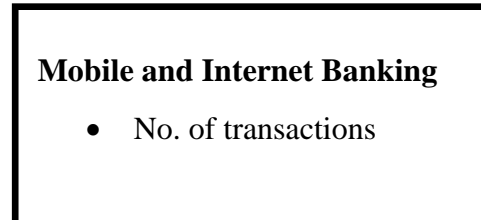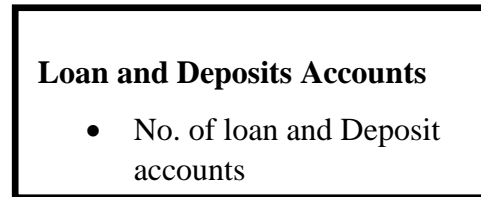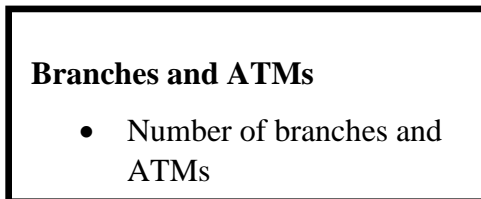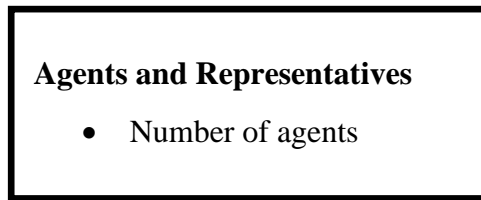
Control Variable
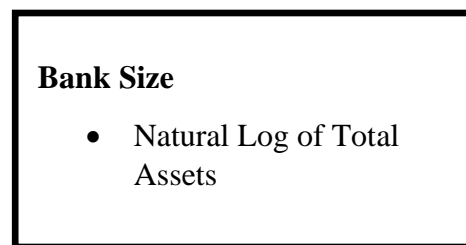
```
┌─────────────────────────────┐
│ Bank Size                   │
│                             │
│   • Natural Log of Total    │
│     Assets                  │
└─────────────────────────────┘
```
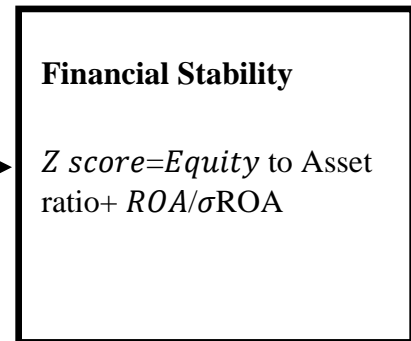
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter explored the methodology of the study. It outlined the research philosophy, design of the research, population targeted, instruments used in the research, procedures for collecting the data, methods to be used in analyzing the data, research variable definition and data measurement and the models of statistical analysis to be used in making inferences as well as ethical considerations.

3.2 Research Design

The study adopted descriptive correlated research design as it involved gathering and analyzing study units at a time in time to assess strength of relationship among variables. Descriptive survey can be termed as the exercise in which data is collected to facilitate testing of hypothesis or to provide answers to inquiries pertaining the present status of the subject that is being studied. Descriptive study according to Cooper and Schindler (2011), involves a deep scrutiny of the circumstances around an affair explaining, inferring and reporting surrounding environment that exist or that existed. The aim of the study will be to ascertain whether an association does exist between financial inclusion and financial stability, thus the descriptive survey is an appropriate design for the study. The study was cross-sectional where data is assembled on the full population of the study at a specific point in time to assess the correlation amidst the elements that are of interest to the study (Greener, 2008). Descriptive correlated research design was thus suitable because the

study involved obtaining data and analyzing the study units at a specific time with a view to evaluate the impact within the variables (Saunders, Lewis & Thornhill, 2009).

3.3 Target Population

Mugenda and Mugenda, (2013) defined population as a well-outlined or set of services, people, events and things grouped or households undergoing an investigation. The population targeted should exhibit some behavior that are observable that the researcher seeks to make inference from the results of the study. The current study adopted a census method which involved exhaustive enumeration of the targeted population. The population of the study was all the 43 registered banks in Kenya in the year 2019, as laid on appendix 1. The choice of banks was guided by the fact that Kenya is a bank based and not a market-based economy and thus the banking industry intermediates most of the funds in the economy.

3.4 Sampling Procedure

Sampling refers to selection of the units to be studied from the entire population being studied. The focus of this study was all banks that were in operation in the period of the seven-year being scrutinized. The banks to be studied from the entire population included banks in Kenya that surpassed the following underlying criteria: The bank that had complete data set with yearly reports from 2013-2019. The banks had not been subjected to a merger or acquisition in the period of study.

3.5 Data Collection Instrument

About the role of financial inclusion on the financial stability of banks in Kenya, the study used data collection sheet. Data for this study was obtained from three main sources namely, banks annual financial statements which were deposited in the banks' official websites, bank supervision reports prepared by the CBK and the various banking surveys. The aim was to assist in reducing some of the limitations encountered in data collection and to ensure correctness of the information collected. The information collected was guided by data collection data sheets as indicated in appendix 1.

3.6 Operationalization of Research Variables

To comprehend a construct, it is paramount take into consideration the way other similar studies operationalized and measured related constructs in their scholarly works as indicated in Table 3.1. The operationalization of the constructs in this study was adopted from previous similar studies. Financial inclusion was categorized as explaining variable and used indicators adapted from Sarma and Pias (2011). Bank stability indicators were adapted from Beck et. al. (2009). Financial stability indicators were obtained from Morgan and Pontines (2014) Z-score values.

Table 3.1 Summary of the Research Variable Data Measurement

Variables	Category	Measurement	Authoritative Sources
Financial Stability	Dependent	$Z\ score = Equity$ to Asset ratio+ $ROA/\sigma ROA$	Berger, Klapper et al. (2009)
Branches and ATMs network accessibility	Independent	Number of branches and ATMS	(Mostak & Sushanta, 2015; Mwai, 2020).
Deposit accounts	Independent	Number of deposit accounts (Millions)	(Musau, Muathe & Mwangi, 2018).
Loan accounts	Independent	Number of loan accounts (Millions)	(Musau, Muathe & Mwangi, 2018).
Internet and mobile banking availability	Independent	Number of transactions (Millions)	Kithaka (2014
Bank Size	Independent	Natural Log of Total Assets	Onuonga (2014)

3.7 Data Analysis and Presentation

Descriptive statistics including means, standard deviations, minimum and maximum values will be used to compare and analyze the level of financial inclusion measurements and the stability measures, Panel data regression models was deployed to test statistically the significance of the various variables. Inferences were made after testing and confirming that the CRLM assumptions was met or taken care of in the data that was being analyzed. The assumptions comprise; the coefficients must be found to be linear in nature, the errors should not be abnormal distributed, assumption of homoscedasticity and independence of errors. Pearson's product moment correlation analyses were deployed to assess the nature and magnitude on the linkage between the variables under study and to test the hypothesized linkages. multiple linear regression analysis was adopted. The model was explained as outlined below:

$$Y = \beta0 + \beta1X2_{i,t} + \beta2X2_{i,t} + \beta3X3_{i,t} + \beta4X4_{i,t} + \beta5X5_{i,t} + \varepsilon_{it}$$

Where;

Y= Financial stability of banks

B_0 -   intercept coefficient

ε_{it} – error term (extraneous variables)

X1 – Branches and ATM Network accessibility for Bank i at time t

X2– Deposit accounts usage for Bank i at time t

X3– Loan account usage for Bank i at time t

X4– Internet and mobile banking for Bank i at time t

X5– Bank Size for Bank i at time t

β1, β2, and β3 and β4=regression coefficients

3.8 Diagnostic Tests

Data gathered was subjected to diagnostic tests to determine their suitability for analysis using chosen multiple linear regression models. Diagnostic test for normality, collinearity/multicollinearity, heteroscedasticity, panel unit root was carried out to establish the nature of panel data. To determine between FEM and REM model, Hausman test was conducted.

CHAPTER FOUR

FINDINGS AND DISCUSSIONS

4.1 Introduction

In this chapter findings and discussions of the study were presented as per the study objectives. The main aim of this study was to ascertain the association between financial inclusion and financial stability of banks in Kenya. Data was gathered for 36 banking institutions in secondary form from yearly banking supervision reports for a span of six years. Natural logarithms of agents and representatives, ATMs and Branches, loans and deposits, online banking were adopted as indices measuring financial inclusion. Financial stability was calculated using $Z\ score$ which was operationalized as $Equity$ to Asset ratio+ ROA/σROA. Descriptive and inferential statistics were adopted for data analysis.

4.2 Descriptive Statistics for Financial Inclusion and Financial Stability

Overall descriptive measures applied in the study were measures of central tendency and dispersion. Study results as highlighted in Table 4.1 insinuated that average financial stability operationalized by Zscore was 12.85, with a mean deviation of 13.50. Observations of wider variation in mean financial stability for banking institutions were accounted by minimum of -28.58 and maximum of 60. Asymmetry in distribution was inferred indicating non normality since p value representing Jarque Berra value was lower than 0.05, which gave enough confirmation to support rejection of the null hypothesis at critical value of 5 percent.

On average, agency banking indicated 16.93 points with the minimum being 1.17 and maximum being 40.58. A minimal deviation was highlighted on agency banking cutting across entire banking firms as was accounted for by 7.25 points. This may be attributable to enhanced penetration of agents hence supports it to be incorporated as mechanism for financial inclusion in the banking sector in Kenya. On average, ATMs and branch outlets had 17.42 points, with a standard deviation of 5.98 confirming a comprehensive spread of branches and ATMs. The mean of mobile banking was found to be 17.58, with the minimum being 1.54 and maximum being 34.45. Additionally, mobile banking pointed to a non-normal distribution inferred by by Jarque Berra p-value which was under critical value of 0.05. Loans and deposits averaged 13.79 bearing a maximum of 30.30 and the minimum being 1.24. Taking into consideration all the financial inclusion aspects, agency banking dimension had greatest standard deviation, which was 7.25, and consequently manifested lack of uniformity of agency banking activities by banking firms in Kenya.

Findings derived from analysis confirmed those findings of Han and Malecky (2013); Amatus and Alireza (2015) who insinuated that outstanding deposits and loans can be utilized to measure inclusion. As concluded by Hannig & Jansen, (2010); Kipesha & Zhang, (2013), descriptive statistics findings conformed by indicating that various aspects of financial inclusion such as ATMs and agents supported reaching to majority who fall under low-income cadre and are vulnerable in Sub-Saharan Africa (SSA) nations. Institutions that are stable become more profitable and are able to divulge on financial inclusion by reaching new clienteles through utilization of aspects of financial inclusion discussed in this study. It can be elaborated that financial inclusion results into increased

undertakings by the banks consequently increasing profitability due to entry of new

consumers and lower costs of conducting transaction due to economies of scale benefits.

Table 4.1 Overall Descriptive Statistics

	Number of Agency_B anking	Number of Atm_and_ Branches	Log of Bank_Size in Kes	Number of Loan_and _Deposits _Accoun	Number of Mobile_and _Online_Ba nking	Z_Score
Mean	16.93	17.42	17.48	13.79	17.58	12.85
Median	19.32	18.56	17.27	13.11	21.15	12.25
Maximum	40.58	31.16	36.96	30.30	34.45	60.00
Minimum	1.17	2.17	9.77	1.24	1.54	-28.58
Std. Dev.	7.25	5.98	3.78	5.18	6.85	13.50
Skewness	-0.26	-0.51	1.80	0.40	-0.81	0.53
Kurtosis	3.69	3.57	10.16	4.10	2.83	4.74
Jarque-Bera	7.87	14.41	673.75	19.60	27.78	43.50
Probability	0.02	0.00	0.00	0.00	0.00	0.00
Sum	4266.47	4389.65	4404.42	3474.31	4429.30	3239.00
Sum Sq. Dev.	13189.07	8964.83	3584.70	6745.85	11768.70	45763.47
Observations	252	252	252	252	252	252

4.3 Panel Data Diagnostic Tests

Prior to fitting a regression model, it was important to carry out diagnostic tests to lower

the possibility of coming up with a spurious regression model. Testing of Unit root by

employing inverse chi squared, inverse normal, inverse logit and modified inverse chi

squared was conducted initially. Testing multicollinearity was done by employing

variance inflation factors and tolerance limits, testing heteroskedasticity was done by

applying Breusch-Pagan test. Serial correlation was tested by applying Woodridge test

and Hausman test was adopted to select the appropriate model between random and fixed effects.

4.3.1 Panel Unit Root Test

Absence of unit root was highlighted as the null hypothesis which assumed that at all panel levels the data was not stationary. Outcome depicted in Table 4.6 confirmed that there existed substantial evidence to support non acceptance of the H0 at critical level of 5 percent significance since all p values<0.05. It was thus concluded that that financial stability, agency banking, ATM and Branches, loans and deposits, mobile banking and bank size of commercial banking institutions in Kenya were observed to be stationary at levels. Subsequently, regression modelling that was not lagged was fitted with guarantee of absence of the probability of fitting spurious model. The results concurred with outcomes of Githira, Muturi & Nasieku, (2019b) and Muchiri, (2016) who depicted stationarity at levels while scrutinizing efficacy of institutional financial attributes and financial structure in EASE.

Table 4.2 Panel Unit Root Test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-27.24	0.00	6.00	1503
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-22.89	0.00	6.00	1503
ADF - Fisher Chi-square	410.23	0.00	6.00	1503
PP - Fisher Chi-square	559.08	0.00	6.00	1506

4.3.2 Multicollinearity Test

Results shown in Table 4.3 revealed that there was no collinearity since the highest VIF was 3.42 and minimum 1.26. This implied that joint significant relationship between ATMs and branches, agency banking, loans and deposits accounts, internet and mobile banking, could be fitted amongst listed banks in Kenya. It was concluded that financial inclusion in Kenyan banks can be jointly evaluated on their influence on financial stability since VIF and tolerance were within acceptable limits (Baltagi, 2005).

Table 4.3 Multicollinearity

| | Collinearity Statistics | |
	VIF	Tolerance
ATM and branches	1.26	0.79
Agency banking	2.52	0.40
Loans and Deposits Accounts	2.11	0.47
Internet and mobile banking	3.42	0.29

4.3.3 Correlation Analysis

In the study, correlation coefficient was undertaken to assess the strength of association subsisting between financial inclusions and financial stability. Outcome as depicted in Table 4.4, had indications of strong positive and significant linkage between agency banking and financial stability in Kenya (rho = 0.86). Secondly, there was strong positive and significant relationship between ATM and Branches and financial stability of banks in Kenya (rho = 0.75). Thirdly, there was strong positive significant relationship between mobile and online banking with financial stability (rho = 0.89). Fourthly, there was strong positive significant relationship between loans and deposits accounts with financial stability (rho = 0.75). Fifthly, there was strong positive significant relationship

between bank size and financial stability of banks (rho = 0.74). the findings are consistent with what was found by Simboley (2017); Kipngetich (2013); Kithaka (2014); who found strong associations between financial inclusion dimensions and financial performance and consequently financial stability of banks.

Table 4.4 Correlation Analysis

	Agency_ Banking	Atm_And _Branches	Bank _Size	Loan_and_Dep osits_Accounts	Mobile &_Online _Bankin	Z_Scor e
Agency_Banki ng	1.00					
Atm_And_Bra nches	0.86	1.00				
Bank_Size	0.74	0.66	1.00			
Loan_And_De posits_Accoun	0.75	0.74	0.69	1.00		
Mobile_And_ Online_Bankin	0.89	0.78	0.61	0.63	1.00	
Z_Score	0.86	0.80	0.78	0.78	0.79	1.00

4.3.4 Panel Hausman Test

The result reveals p=0.0030 which was under 5 percent level of significance. The study henceforth failed to accept the H_o in preference of H_1 that coefficients difference was observed to be systematic. To conclude, the test inferred presence of heterogeneity problem meaning FEM was adopted and dropped the REM for unmoderated variables. Therefore, adequate reason to support non acceptance of H_0 existed and conclusion made that most probable model to scrutinize the association subsisting between banking financial inclusion variables and financial stability of banks in Kenya was model of REM. These indications dissented with Githira and Nasieku (2015) who adopted model

41

of FEM on institutions listed in East Africa securities exchanges and they confirmed

results by Ndili and Muturi (2015) who deployed model of FEM on their examination on

role of financing decision on financial performance of listed companies in NSE.

Table 4.5 Panel Hausman Test

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	Fixed	Random.	Difference	S.E.
Agency banking	-0.0122	0.0146	-0.0267	0.0151
ATM and Branches	-0.0033	-0.0017	-0.0016	0.0015
Bank Size	-0.7169	-0.7198	0.0029	0.2547
Loan and Deposits	-0.6743	-0.0034	0.4356	0.8734
Mobile and Internet	0.5125	0.3561	0.1565	0.6864

chi2(4) = 16.03   Prob>chi2 = 0.0030

Ho: difference in coefficients not systematic

4.4 Effect of Financial Inclusion and Financial Stability

The main objective of the study examined the relationship between financial inclusion

and financial stability of banks in Kenya. It was examined through panel data regression.

Study findings in Table 4.46 depicted positive significant relationship between ATMs

and branches and financial stability of commercial banks in Kenya (p= 0.08, p value <

0.05, β= 0.3294142). there was positive significant relationship between agency banking

and financial stability of (p= 0.025, p value < 0.05, β= 0.3467304). there was positive

significant relationship between loans and deposits accounts with financial stability (p=

0.000, p value < 0.05, β= 0.5496515). There was positive significant relationship between

mobile and internet banking with financial (p= 0.04, p value < 0.05, β= 0.3551056). there

was positive significant relationship between mobile and internet banking with financial stability (p= 0.00, p value < 0.05, β

Financial Stability = -30.82357 + 0.3294142*ATM and Branches + 0.3467304*agency banking + 0.5496515*loans and deposits+ 0.3551056*mobile and internet banking + 1.044107*Bank size …………..………………….4.1

While holding other variables constant, a unit increment of ATM and branches causes an increase of 0.3294142 of financial stability of banks. Increasing agency banking by one unit causes an upward increase of financial stability by 0.3467304. holding other factors constant and adding a unit of loans and deposits, it results in 0.5496515 rise of financial stability. Consequently, adding a unit of mobile and internet banking while holding other factors constant cause 0.3551056 positive increase of financial stability measure. Finally, adding a unit of bank size causes 1.044107 positive increase of financial stability. Since all the p-values were less than the critical value of 0.05, effects were deemed significant.

Table 4.6 Effect of Financial Inclusion and Financial Stability

Fixed-Effects (Within) regressions			Number of obs		=	252
Group variable: id			Number of groups		=	7
Time variable: year						

			Obs per group	min	=	36
				avg	=	36
				max	=	36

Corr (u_i, xb)			F (5,240)		=	219.11
			Prob > F		=	0.0000

	Coef.	Std.Err.	t	P>|t|	[95% Conf. Interval]	
atmandbran~s	0.3294142	0.122615	2.69	0.008	0.0878752	0.5709532
agencyban~g	0.3467304	0.1536355	2.26	0.025	0.0440543	0.6493766
loananddepo~s	0.5496515	0.1155015	4.76	0.000	0.3221253	0.7771778
mobileando~g	0.3551056	0.1209088	2.94	0.004	0.1169276	0.5932936
bank_size	1.044107	0.1525106	6.85	0.000	0.7436769	1.344537
_cons	-30.82357	2.003748	-15.38	0.000	-34.77075	-26.87639
sigma_u	1.4068415					
sigma_e	5.7116448					
Rho	0.05719895		(Fraction of variance due to u_i)			
F test that all u_i=0:	F (6,240)	=	2.13		Prob > F =	0.051

The study positive and significant results were in concurrence with the statements that stable banks are considered to be profitable and can engage in financial inclusion by reaching out to new clients (Hannig & Jansen, 2010; Kipesha & Zhang, 2013). It also agreed with the argument that financial inclusion leads to increased banks' activities and in turn increased profitability through entrance of new customers and reduced transaction costs due to economies of scale (Hanning & Jensen, 2010; Allen et.al, 2012, Delfiner & Perón, 2007).

The outcome agreed with Bowa (2015) whose results inferred that asset size and asset quality do significantly influence ratios of banks liquidity and hence stability of banks. Entire earning assets of the banks in Kenya has a huge contribution on banking performance and in their services provision by signifying a positive and as well

significant effect. Furthermore, controlling efficacy of bank size agreed with financial intermediation theory which highlighted that banks which tend to be competitive, encounter growth at high degrees of inclusion. Financial services distribution across firms impacts positively the growth of the organizations. The key aim of financial inclusion is bringing closer the "unbanked" populace into the formal financial system to get the opportunity for accessing financial services among them savings, transfers to credit, payments, and insurance. The conclusion was also in line with an assessment undertaken by Ndili and Muturi (2015) who alluded on the fact that earning capability of listed companies was anchored on their capability of acquisition and investment of their finances to increase their profitability and henceforth stability.

The study supported outcome of Mwai (2020) who suggested that adoption of the measures of financial inclusion enhanced the chances of widening virtual opened accounts which bear minimal cost to significant unbanked people who aren't in a position to acquire physical bank account due to lack of physical presence of banks outlets. Phones, therefore, enhance the innovativeness in bringing solutions of electronic banking and offering clients better services from these platforms with minimal efforts. Banking infrastructure subsequently offers real time banking, with improved accessibility without moving long distances to physical locations, thereby becoming more effective in increasing banks' deposit, financial base and consequently, their earning capability.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The section presented summarized the outcome of the study, identified conclusions, additional recommendations, and suggestions for additional studies. The section was outlined following specified research objectives elucidated in chapter one. Highlighted conclusions together with recommendations emanating from the analysis done in chapter four. The chapter deeply acknowledged the contribution of the study to existing body of knowledge.

5.2 Summary

Studies that were done previously pertaining financial inclusion and financial stability acknowledged lack of clarity in findings concerning efficacy of variables operationalizing stability of financial organizations. Several studies confirmed an outcome concluding financial inclusion-stability synergy and others underpinned an outcome concluding financial inclusion-instability trade-off. The economic blueprint referred to as Kenya's Vision 2030 sought to propel Kenya into a middle-income nation providing high quality of living to the residents. It can be attained by improving financial accessibility of products though financial deepening.

Commercial banking institutions take a greater part in the growth of any nation's economy. Normally they are recognized due to their contribution to the monetary undertakings, creation of employment, innovativeness and wealth building of a nation.

The Government of Kenya, via the apex bank renders an enabling environment by supporting legal and regulatory structures like Banking Amendment Act (2015). The motive of the act was to introduce capping of rates of lending by commercial bank to not exceeding 4% above the CBR. It thus ensured that commercial banking firms continued in the provision of financial accessibility and take part in realizing Vision 2030. This assessment, therefore, underlined to investigate financial inclusion effect on stabilizing commercial banks that were in operation in Kenya. Specifically, the study aimed at establishing the effect of ATM and branches, Agency banking, loans and deposits accounts, mobile and internet banking on stability of commercial banking institutions in Kenya.

ATM and branches, Agency banking, loans and deposits accounts, mobile and internet banking were found to have a statistically significant influence on stability of commercial banks measured by Z- score. Bank size operationalized as entire earning assets of bank was found to have a significant controlling effect of the relationship between financial inclusion and financial stability of commercial banking institutions in Kenya

5.3 Conclusions

For commercial banking institutions to undertake their intermediation role of liquidity provision, there is dire need for them to be financially stable, be accessible and available to the market share they serve. Accessibility to loans from banks and additional banking offerings is absolutely needed by any nation to grow. This reason in itself justifies the essence of making banking offerings endearing, accessible, and available to everyone

47

with the absence of any form of discrimination, and this can be achieved through financial inclusion. The study highlighted that commercial banking firms had upsurge financial inclusion in the course of the period under study which directed the stability of commercial banking institutions. The major driving force of financial inclusion among them included availability, accessibility and usage of varying banking channels. Rise in penetration was associated to increased branch networks, ATMs and banking Agents. The study outcome indicated that commercial banks have ventured into increasing their networks through ATMs, branches and agents and strategically enhanced bank availability and service delivery. Consequently, it translated to stability of commercial banking institutions in reference to reduced default risk, liquidity exposure and risk of insolvency.

Based on findings, it can be underscored that a dire need for commercial banking firms do exist to take advantage of mobile phone dig dive to advent their offerings in terms of products and services. A need also arises to innovate on mobile banking products and increase usage in alternative services in favour of current lending, withdrawals and deposits. Mobile, internet and phone banking diversification would lower instances of financial exclusion and more so amongst unbanked population found in rural and remote areas in Kenya.

Through the number of loan and deposits accounts, this study noted that bank service channels accessibility upsurge during the study period, and as a consequence affected commercial banks' stability. This enhanced access was a result of increased number of

accounts for deposits, loan accounts and mobile accounts through digital finance. Therefore, basing conclusions from these findings, banks that have ease of access are more likely to exhibit stability. Bank ought not only to put a lot of their attention to access only but rather, they ought to reflect also with usage dimension of the channels of delivery since the number of account ownership does not amount to inclusion. Lastly, expanded bank size entrenched financial deepening of mobile banking, ATM banking, loan and deposit accounts, online banking and agency banking effect on financial stability. Hence, there is an importance for commercial banks to put more resources in tangible and intangible assets that would act as a catalyst in adoption of banking financial innovativeness to enhance financial stability.

5.5 Recommendations for Policy and Practice

From the outcome, this study recommends that there is need for banks in Kenya to adopt diverse aspects of financial inclusion as this will impact their financial performance positively. The recommendations drawn from the results of this study indicates significant implication to regulators, policy makers, shareholders of commercial banks and academicians. It is pertinent for regulators to do a revision of the existing regulatory structure and come up with clear regulations to existing and future prospective mobile innovations, for example on transaction volumes, usage of services by businesses, and information technology risks. Absence of clarity and presence of uncertainty is unhealthy for any business and more so for the confidence boosting of the financial systems. By

introducing clarity in rules governing financial system, the environment will be more predictable which in turn promotes additional investments and competitiveness.

From the observed inferences, it was recommended that institutions of governance ought to streamline polices that are geared towards adoption of measures relating to financial inclusion to amplify accessibility and continuous usage of financial products. A need also arises to divest in banking internal controls and management of security gaps to cushion customers against risk exposure that may arise from usage of alternative service provision channels such as mobile, internet and agency banking.

Based on the outcome, the study recommends the management of commercial banks in Kenya need to inculcate reforms in the financial system with the main aim of increasing financial inclusion by continuous improvement of service channels such as internet and mobile banking, ATMs and branches, and agents. Improvement of the channels will propel financial inclusivity indicated by loans and deposits accounts.

Internet banking is an innovation that is digital driven and is a significant cost cutting instrument. This aspect of inclusion has been inferred to contribute banks penetration and presence to a country's population. Notably, it is likely to anchor stability and synergy because of increased frequency in mobilization of deposit through various channels.

Commercial bank's upper management ought to consider pursuing financial inclusivity with the objective of raising the numbers of their consumers base. As a result, they would enhance deposits accounts, loans accounts and mobile related accounts, hence broadening

accessibility dimension and become more stable. The apex bank in their regulations should relax requirements put in place for opening and holding an account with commercial banks in Kenya with the aim of facilitating low-income cadre to access banking services and products. This in consequence, reduces the unbanked population and bring closer affordable and accessible banking offerings. Lastly, based on findings, the study recommends that a need arises to increase bank size in Kenyan banking system to boast the Z-score index for banking firms' financial stability.

5.6 Limitations of the Study

The study was subject to limitations inherent to secondary data. The analysis was conducted on this data that was gathered from various auxiliary sources such as CBK and Commercial banks yearly financial reports. These reports are subject to reinstatements. However, this did not affect the robustness of the outcome inferred from the statistics.

The study was also limited in scope as it sought to assess only the commercial banks. The study omitted microfinance banks and other financial institutions such as insurance and investment banks. However, this served as a recommendation for further study which future scholars can focus on.

5.7 Suggestions for Further Study

There is need for conducting further comparative analysis while putting into perspective various changes in regulatory framework that has been brought forth by BASEL. It could further shed more light on financial inclusion measures and how they affect stability.

Other measures like increasing regulatory framework, varying economic conditions that customers are operating in, or changing levels of household income should be taken into perspective for future researches. An additional suggestion for further research is scrutinizing the direct role of bank size on financial inclusion in the commercial banks of Kenya.

Additional research focus should be directed to broadening the scope of the current study by inclusion of pertinent contextual variables like competitiveness and portfolio diversification to the research concepts, which may add value in explaining some of the outcome of this study.

REFERENCES

Allen, F., Carletti, E., Cull, R., Qian, J., Senbet, L.W., & Valenzuela, P. (2013). *Improving Access to Banking: Evidence from Kenya.* World Bank Policy Research Working Paper No. 6593.

Amatus, H. & Alireza, N. (2015) Financial inclusion and financial stability in Sub-Sahara Africa (SSA) *International Journal of Social Sciences, 36*(1), 2305 – 4557.

Bansal, R. (2015). A Comparative Analysis of the Financial Ratios of Selected Banks in the India for the period of 2011-2014. *Research Journal of Finance and Accountin.g 5*(19) 153-167

Beck, T., Hesse, H., Kick, T. & Westernhagen, N. (2009). Bank Ownership and Stability: Evidence from Germany. Working Paper No. 22. Deutsche Bundesbank, Germany: Bonn.

Bhattacharya, S., & Thakor, A. V. (1993). Contemporary banking theory. *Journal of Financial Intermediation, 3*(1), 2-50.

Camara, N., & Tuesta, A. D. (2017). Measuring financial inclusion: a multidimensional index. *Latin American and Caribbean Economic Association, 3*(1), 33-50.

Carneiro, F.L. (2011). Is There Evidence of a Trade-off Between Financial Stability and Efficiency of Financial Intermediation? Preliminary insights from the global financial crisis of 2007-2009. *Weatherhead Center for International Affairs.* Harvard University.

Central Bank of Kenya (2015). Kenya Financial Sector Stability Report 2014. Government Printers, Nairobi Kenya

CBK (2019). Bank Supervision Annual Report Central Bank of Kenya. Government Printers, Nairobi Kenya

CGAP (2018). What is Financial Inclusion and Why is it Important? CGAP

Chauvet, L., & Jacolin, L. (2017). Financial Inclusion, Bank Concentration, and Firm Performance. *World Development*, 97, 1-13.

Cooper, D.R., & Schindler, P.S. (2011). *Business research methods*, (11th ed.). New Delhi: McGraw-Hill Publishing, Co. Ltd.

Cull, Robert, Asli Demirguc-Kunt and Timothy Lyman. 2012. *Financial Inclusion and Stability: What Does Research Show?* CGAP Brief 71305, CGAP, Washington,

Delfiner, M, and Perón, S. (2007). Commercial Banks and Microfinance, Research gate Publishers. MPRA Paper. http://mpra.ub.uni-muenchen.de/10229/.

Demirgüç-Kunt, A. and H. Huizinga (2013). "Are banks too big to fail or too big to save? International evidence from equity prices and CDS spreads." *Journal of Banking & Finance 37*(3): 875-894.

Financial Sector Deepening Kenya (FSDK) (2013), *Fin Access National Survey   2013*. Kenya (2013) Kenya Vision 2030.   The popular version, Nairobi www.vision2030.go.ke

FSD Kenya, Central Bank of Kenya (CBK), *Kenya National Bureau of Statistics (KNBS), 2015, "FinAccess Retail 2015",*

Ghosh, S. (2008). *Financial Inclusion and Financial Fragility: An Empirical Note*. Munich   Personal   RePEc   Archive.   Online   at   http://mpra.ub.uni-muenchen.de/24252/. Accessed on 5.06.2012.

Githemo, M., (2014). An Evaluation of the effect of Agency Banking on the Performance of small and medium enterprises In Kenya. MBA project, University of Nairobi.

Goldsmith, R. W. (1969). *Financial structure and development* (No. HG174 G57).

Hannig, A. & Jansen, S. (2010). Financial Inclusion and Financial Stability: Current Policy Issues. *Asian Development Bank Institute, Tokyo*. Working Paper 259.

Ishengoma, A.R. (2011). *Analysis of Mobile Banking for Financial Inclusion in Tanzania: Case of Kibaha District Council*. Retrieved from https://www.econrsa.org

Kalunda, E.N. (2015). *Financial Inclusion, Bank Stability, Bank Ownership and Financial Performance of Commercial Banks in Kenya*. Unpublished phD in Business Administration Thesis. Nairobi: University of Nairobi.

Kamau, A. and M. Were (2013). "What drives banking sector performance in Kenya?" *Global Business and Economics Research Journal 2*(4): 45-59.

Kendall, S. (2012). *Bank-led or Mobile-led Financial Inclusion*? CGAP

Kerata, B. (2007). *Outreach and Financial Performance Analysis of Microfinance Institutions in Ethiopia*. African Economic Conference, Addis Ababa, Ethiopia.

Kiburi, M. M. (2016). *Assessment of factors determining the performance of bank-led agent bank businesses in Kenya: case of Kiambu County* (Doctoral dissertation, Strathmore University).

Kipesha, E.F., & Zhang, X. (2013). Sustainability, Profitability and Outreach Tradeoffs: Evidences from Microfinance Institutions in East Africa. *European Journal of Business and Management. 5*(8), 136-148.

Kipngetich, L. W. (2013). *Agency Banking and Financial Inclusion in Kisumu, Kenya* (MBA Project, School of Business, University of Nairobi).

Kitali, M.C. (2015). Impact of Agency Banking on Customer Satisfaction: A Survey on Agent Banks in Kenya. *International journal of Economics, Commerce and Management* 3(6), 24-36.

Kithaka, E. (2014). *The Effect of Mobile Banking on the Financial Performance of Commercial Banks in Kenya*. Unpublished MBA Project.

Korir C, William S, Shishia A & Mutungu C. (2015). Financial innovation and performance of commercial banks in Kenya: A Review of Literature. *International Journal of Economics, Commerce and Management, 3* (5), May 2015.

Laeven. L, Ratnovski. L, & Tong. H, (2014) "Bank Size, Capital Requirements, and Systemic Risk: Some International Evidence". *IMF Staff working paper*

Lyman, T. R., Ivatury, G. & Staschen, S. (2006). *Use of agents in branchless banking for the poor: Rewards, risks, and regulation*. FocusNote, October,38, 1.

Mandell, R. (2008). *Financial Literacy. President Creates Financial Literacy Advisory Council*. MarketWatch (Washington). The Wall Street.

Matete, J. K. (2014). Factors Affecting Pricing of Loanable Funds by Commercial Banks in Kenya. *International Journal for Business and Social Science* ,244-245.

Morgan, P., & Pontines, V. (2014). *Financial Stability and Financial Inclusion*. Asian Development Bank Institute. ADBI Working Paper No. 488.

Mostak, M; Sushanta, M. (2015). Is financial inclusion good for bank stability? *International evidence*, University of London, U.K.

Mugenda, A. G., & Mugenda, O. M. (2013). *Researching Methodology*. Data Collection, Preparation and Analysis. Applied Research and Training Services: Nairobi.

Musau, S., Muathe S., Mwangi, L. (2018). Financial Inclusion, GDP and Credit Risk of Commercial Banks in Kenya, *International Journal of Economics and Finance, 10* (3), 181-195.

Mwando S (2013). Contribution of agency banking on Financial performance of commercial banks in Kenya. *International Journal of Economics, and sustainable development, 4*(26), 155-169.

Mwai, A. (2020). *Financial Innovation Adoption and Financial Deepening of Commercial banks in Kenya*. Unpublished PhD in Business Administration Thesis, Juja: JKUAT>

Ndili, W. M., & Muturi, W., (2015). Does financing policy decision influence firm performance a Kenyan perspective? *International Journal of Education and Research, 3*(10), 337-354.

Ndung'u, A. J., Okibo, W. &Nyang'au, A. (2015). Factors Affecting Performance of Banking Agents in Kenya: A Survey of Kisii County. *International Journal of Economics, Commerce and Management, 3*(10), 559 – 573

Nyaga, Joseph K (2014). Mobile Banking Services in the East African Community (EAC): Challenges to the Existing Legislative and Regulatory Frameworks. *Journal of Information Policy, 4* (2014), 270-295. Penn State University Press

Nthambi, E. K. (2015). *Financial Inclusion, Bank Stability, Bank Ownership and Financial Performance of Commercial Banks in Kenya*. Unpublished MBA Project, University of Nairobi.

Obamuyi, T. M. (2013). "Determinants of banks' profitability in a developing economy: Evidence from Nigeria." *Organizations and markets in emerging economies (2)* 97-111.

Ongore, O., & Kusa, B. (2013). Determinants of Financial Performance of Commercial Banks in Kenya. *International Journal of Economics and Financial Issues*. 3(1), 237-238.

Onuonga, S. M. (2014). "The Analysis of Profitability of Kenyas Top Six Commercial Banks: Internal Factor Analysis." *American International Journal of Social Sciences,* 3(5): 94-103.

Owens, J. (2006). R*BAP Text-A-Payment And G-Cash Cash-In/Cash-Out Services: Innovative Banking Services At Your Fingertips.* Retrieved June 20, 2011, Http://Www.Bwtp.Org/Asiamicrofinance/Documents/Johnowensrbap.Pdf.

Saira, J., A. Jamil, Z. Khalid G. & Abdul (2011). "Determinants of Bank Profitability in Pakistan: Internal Factor Analysis." *Mediterranean Journal of Social Sciences* 59-78.

Sarma, M. & Pias, J. (2013) Financial Inclusion and Development. A cross country Analysis, *Journal of International Development, 23*(5), 613-628.

Scholtens, B., & Van Wensveen, D. (2003). *The Theory of Financial Intermediation.* SUERF Studies. Vienna.

Sufian, F. (2011). "Profitability of the Korean banking sector: Panel evidence on bank-specific and macroeconomic determinants." *Journal of Economics and Management 7*(1): 43-72.

Simboley, B. C. (2017). *Effects of Agency Banking on the Financial Performance of Commercial Banks in Kenya* (Doctoral dissertation, United States International University-Africa).

Turk-Ariss, R. (2010). On the Implications of Market Power in Banking: Evidence from Developing Countries. *Journal of banking & Finance 34*(4): 765-775.

Vives, X. (2016). *Competition and Stability in Banking - The role of regulation and competition policy.* Princeton: Princeton University Press.

APPENDICES

Appendix i: Secondary Data Collection Templates

Table 1: Independent variables

Year	No. of ATMs and Branches	Number of Agents	Number of deposit accounts	Number of Loan Accounts	Number of transactions through internet and mobile
2013					
2014					
2015					
2016					
2017					
2018					
2019					

Table 2: Dependent Variables

Year	ROA	*Equity* to Asset ratio
2013		
2014		
2015		
2016		
2017		
2018		
2019		

Table 3: Control Variable

Year	Total Assets
2013	
2014	
2015	
2016	
2017	
2018	
2019	

Appendix ii: List of Commercial Banks in Kenya

ABC Bank (Kenya)	Bank of Africa Kenya Ltd
Bank of Baroda (k) Ltd	Bank of India
Barclays Bank (Kenya)	Charterhouse Bank Ltd
Chase Bank (K) Ltd	Citibank NA
Commercial Bank of Africa	Consolidated Bank of Kenya
Co-operative Bank of Kenya	Credit Bank Ltd
Development Bank of Kenya Ltd	Diamond Trust Bank Kenya Ltd
Ecobank (K) Ltd	Equity Bank Ltd
Family Bank Ltd	SMB Bank
First Community Bank	Giro Commercial Bank
Guaranty Trust Bank (K) Ltd	Guardian Bank Ltd
Gulf Africa Bank Ltd	DIB Bank
Habib Bank A.G Zurich	I&M Bank Ltd
Imperial Bank Kenya	Jamii Bora Bank Ltd
Kenya Commercial Bank Ltd	Middle East Bank (K) Ltd
M-Oriental Commercial Bank	National Bank of Kenya Ltd
NIC Bank Ltd	Paramount Bank Ltd
Prime Bank Ltd	Sidian Bank Ltd
Spire Bank Ltd	Stanbic Bank (K) Ltd
Standard Chartered Bank (K) Ltd	Transnational Bank Ltd
United Bank for Africa Kenya Ltd	Victoria Commercial Bank
Mayfair Bank Ltd	

(Central Bank of Kenya, 2019)