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Effects of prudential regulations on the financial stability of commercial banks in Kenya.

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EFFECTS OF PRUDENTIAL REGULATIONS ON THE FINANCIAL STABILITY OF COMMERCIAL BANKS IN KENYA

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DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

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Signature

Date 14/07/22

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ABBREVIATION AND ACRONYMS

ANOVA	Analysis of Variance
APRA	Australian Prudential Regulation Authority
CA	Capital Adequacy
CAPM	Capital Asset Pricing Model
CBK	Central Bank of Kenya
DMBs	Deposit Money Banks
NPLR	Nonperforming Loans Ratio
NPLs	Nonperforming Loans
RWA	Risk Weighted Assets
SPSS	Statistical Packages for Social Sciences
TRWA	Total Risk Weighted Assets

DEFINITION OF KEY TERMS

Asset quality: it refers as the quantity of potential and existing credit risk that are related with investment portfolio and loans.

Capital adequacy ratio: it refers as the bank's capital ratio relative to the firm's current liability and risk-weighted assets.

Financial stability: the condition in which the financial intermediation process by banks function smoothly thereby building confidence among stakeholders

Liquidity: the bank's ability to meet its financial obligation to depositors, has been found to have a positive relationship with the bank's growth

Prudential regulation: the general principles on asset quality, capital adequacy, and liquidity aimed at ensuring that financial sectors are stable and efficient

DEDICATION

This thesis is dedicated to my family for their love, support, patience, encouragement and understanding. They gave me the will and determination to complete my postgraduate studies.

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ABSTRACT

Prudential regulation helps commercial banks to operate within a given framework so that their financial stability is not compromised through exposure to certain risks during operation. The goals of prudential regulation are thus considered as validation for financial system. Therefore, the current study sets to investigate the effects of prudential regulation on banking stability of commercial banks in Kenya. The specific objectives include; to determine how capital adequacy requirements, asset quality requirement ratio, and liquidity requirements ratio affect the stability of commercial banks in Kenya. The study used descriptive research design and the target population was all the 43 commercial banks in Kenya. The study used stratified random sampling technique to sample manageable commercial banks. Secondary data was collected from the websites of all the sampled banks. The secondary data covered a period of 21 (2000-2020). Data was analyzed using descriptive statistics and linear regression analysis. The study also used diagnostic tests to determine the reliability of the regression model. This study contributes to the literature knowledge gap in the same field. Thus, it will be a point of reference for future researches and academics hence they will be able to refer to the findings of this study and bridge the possible literature gaps that could have emanated from this research. The study found that, asset quality, capital adequacy, and liquidity requirements had positive relationship with financial stability of banks in Kenya. The study concluded that an increase in capital adequacy, asset quality and liquidity requirement regulations increased financial stability of the commercial banks. The study recommends that commercial banks' management should increase their capacity in loan administration and that they should also establish clear lending guidelines. Additionally, the banks should ensure that the loan terms and conditions are conformed to during approval to reduce the chances of nonperforming loans that could subsequently affect conformity to asset quality requirement. The research also recommended that it is important for the commercial banks to be conscious of its liquidity position in different product and service segments.

CHAPTER ONE: INTRODUCTION

The chapter presents the background of the study that entails global, regional, and local approaches. The statement of the problem indicating the gaps in literature, and the research objectives (both general and specific objectives) are also highlighted. The chapter also consist of research questions, scope of the study, and the significance of the study to various groups.

1.1 Background of the Study

Prudential regulation is an important legal framework for commercial banks' operations. It is a significant contributor to preventing or minimizing financial sector problems (Calomiris & Carlson, 2017). Evidence shows that the absence of prudential regulations in some key areas can lead to bank failures and systemic instability, while establishing sound, clear and easily monitored rules for financial activities both encourages commercial bank managers to run their institutions better and facilitates the work of supervisors (Cerutti et al., 2017). According to Kirkpatrick (2020), commercial banks' prudential regulation is a form of government regulation which subject them to certain requirements restrictions and guidelines.

According to Gudmundsson, Kisinguh, and Odongo (2013), there are myriad of ways in which financial institutions could benefit from prudential regulations. Prudential regulation can increase competition and also the overall efficiency of the sector. Prudential regulation can also increase the welfare of the consumer and also enhance good financial risk management by the relevant authorities. Nevertheless, prudential regulation also incurs costs that are faced by the financial institutions, the regulators and the overall financial market (Christen et al, 2013).

Across the globe, several economies have had to prudentially regulate banking industry to ensure that they meet the required threshold whenever they provide monetary services to their respective customers. For example, in Australia, financial regulatory authorities regulate all financial activities, but in some cases, there are specific authorities to regulate each sector of the finance industry, mainly banking, securities, insurance and pensions markets (Lartey, Antwi, & Boadi, 2013). To be specific, the Australian Prudential Regulation Authority (APRA) is the body mandated to regulate commercial banks in conjunction with the central bank. However, despite the introduced prudential regulations, some banks still face difficulties in fully embracing the standards set by various regulatory bodies.

Further, in the USA, the Federal Reserve System, the Office of Thrift Supervision, the National Credit Union Administration, and the Office of the Controller of the Currency are mandated to regulate the banking industry (Trandafir, 2009). In the USA, the structure of financial regulation has changed significantly in the past two decades, as the legal and geographic boundaries between markets in banking have become increasingly globalized, all with the intention of improving the delivery of monetary services to the people. For instance, prior to 2007, the USA had been deregulating their financial sector, however, the whole industry crushed during the 2008 economic recession.

Additionally, the financial institutions in most Western countries had been going through the process of deregulation in the 1980's. For example, in UK, the governments either removed or reduced state regulations that were governing financial institutions (Kumbhakar, Lozano-Vivas, KnoxLovell, & Hassan, 2015). This is because policy makers were convinced that deregulation is the only way they can increase the efficiency and performance of these institutions. The policies aimed at increasing banks competition on prices, products, and territorial rivalry. This process of deregulation has however led to mixed consequences insofar as financial stability of financial institutions is concerned.

Furthermore, in Norway, the prudential deregulation of the banks gave them the permission to set their own lending rates as well as the amount of money they could lend out (Morone & Testa, 2018). The results have been very favorable for them. However, in India this has not been the case. Commercial banks have performed poorly despite the subjection of commercial banks to prudential regulations. Some commercial banks have experienced financial stability while a good number have had to contend with poor performance. Clearly, prudential regulation or otherwise have had mixed results, hence it is in the interest of the current study to determine the effects of prudential regulation on the financial stability of commercial banks in Kenya.

As argued by Kuttner and Shim (2016), the prudential reforms in developing countries are usually based on upgrading banking laws in accordance with international best practice such as bringing minimum capital requirements in line with Basel Capital Accord and strengthening the supervisory capacities of regulatory agencies. For instance, in Africa, since the financial crisis most countries such as South Africa, Nigeria among others have introduced prudential regulations to bring about financial stability. Despite the introduction of prudential regulation, some commercial banks have experienced unstable financial results (KPMG, 2014). The KPMG report indicates that, most African states have embraced regulations albeit with mixed results; some banks have reported financial stability and vice versa.

In Kenya, many critics have argued that prudential regulations initiated by Central Bank of Kenya (CBK) interfere with the efficiency of the market while those advocating for regulation like Sinha et al (2011), have argued that if prudential regulations are well designed and managed, then they can make markets more efficient and equitable in terms of their outcomes. For instance, upon assessment of history of the banking sector in Kenya, it appears that government interference has been present (Kahuthu, 2016). According to Mwega (2014), prudential regulation is costly and may impede the rapid development of the financial institutions. However, in the Kenyan market the CBK ensures that there are strict prudential regulations on commercial banks to guarantee efficient delivery of services to customers.

1.2.1 Prudential Regulation and Banking Stability

Prudential regulation can be defined as the general principles on asset quality, capital adequacy, and liquidity aimed at ensuring that financial sectors are stable and efficient (Maddaloni & Scopelliti, 2019). Therefore, prudential regulation helps commercial banks to operate within a given framework so that their financial stability is not compromised through exposure to certain risks during operation. The goals of prudential regulation are thus considered as validation for financial system (Hu & Gong, 2019). That is, cushioning small depositors and at the same time preserving the stability and the soundness of the financial systems.

On the other hand, the banking stability can be referred as, the condition in which the financial intermediation process by banks function smoothly thereby building confidence among stakeholders (Mansour, Salem, & Salem, 2020). Simply put, banking stability refers to the smooth condition in which the financial institutions ably facilitate real economic activities and unraveling of financial imbalances arising from shocks (Vives, 2019). Banking stability has increasingly received attention from researchers, especially after the 2007–2009 global financial crisis. The crisis demonstrated that commercial banking stability is important for the real economy, as banks influence the economic opportunities and ultimately, economic growth (Demirguç-Kunt & Zhu, 2020). A stable financial system plays important roles in an economy which include increasing access to credit, intermediating financial activity and payments' facilitation (Maddaloni & Scopelliti, 2019). Thus, banking stability among commercial banks is an integral policy objective for smooth functioning of an economy (Elnahass, Trinh, & Li, 2021).

Past experiences in emerging economies have shown that financial crises can be highly damaging to economies, as well as the living standards and this realization has reinforced growing interest in improving financial sector regulation with specific attention to the commercial banks. Therefore, the objective of prudential regulation is to protect the stability of the banking institutions. According to Biondi and Graeff (2020), the prudential regulation's main focus is on the safety and soundness of the banking systems aimed at improving their financial stability.

Notably, it has been established that prudential regulations do have impact on the banking stability of commercial banks. For example, the G-20 sought for global commitment towards the advancement of financial regulations (Basel III Implementation, and other regulatory reforms) to enhance financial stability among financial institutions. According to Gao (2020), to promote commercial banks' stability, there is need for tighter prudential regulations because such measures enable commercial banks to build stronger buffers to meet any financial difficulties. On the contrary, strict prudential regulations can also destabilize the financial system hence may hinder the banks' ability to offer financial resources to the customers (Hakenes & Schnabel, 2017). Franch, Nocciola, and Żochowski (2021) observe that, the unregulated banking institutions may also impair the stability of the regulated financial intermediaries thus affecting the stability of the financial sector, in this case, the commercial banks. The aforementioned scenarios show that the presence of diverse interlinkages between prudential regulation and banking stability as either negative or positive. Therefore, prudential regulations may enhance or impede stability of commercial banks.

To achieve banking stability in the banking sector, many countries have endured to strengthen financial regulation (Mansour & Zouari, 2018). Without sound and effective prudential regulation, commercial banks can become unstable, triggering crises that can devastate the real economy as evidenced by the global financial crisis that began in 2007 (Marín, Gras, & Ortiz, 2019).

Essentially, finances are meant to facilitate productive economic activity in a country; therefore, the aim of prudential regulation is to maintain stability among the commercial banks so as to promote economic growth.

Traditionally, financial institutions have always waited for reviews by financial regulators to help them pin point risks and problems and thereby act based on external regulators' recommendations. Conversely, in the current rapidly evolving financial environment, financial regulators are more often than not left with assessment of damages only after financial crises have cropped in (Ferri & Pesic, 2020). Such actions subject financial institutions to jeopardy thereby inhibiting their stability. As observed by Dooley (2019), there is need for regulators to frequently supervise operation of financial institutions by making sure they fully implement prudential regulation guidelines to promote their stability.

In a rejoinder, a study by Hu and Gong (2019) observed that prudential regulations help in the maintenance of order in the markets, licensing of financial services providers, enforcement of applicable laws, and prosecution of market misconduct cases as well as offering protection to stakeholders to promote commercial banks' stability. According to the study, through effective prudential regulations, improved stability of the commercial banks in Kenya can be ascertained. Thus, the current study joined the debate by investigating the effects of prudential regulation in the banking stability of commercial banks in Kenya.

In this study, prudential regulation requirements such as, liquidity, adequate capital, asset quality will be used as independent variables (Kimeu, 2020). Capital adequacy (CA) is integral in cushioning banks from vulnerabilities associated with credit risks, operational risks, and market risks (Yaaba & Sanusi, 2020). Also, a study by Floquet and Biekpe (2018) pointed out that the relationship between CA ratios and risk exposure ratios of commercial banks is statistically and significantly meaningful in explaining the stability of the banking institutions. Commercial banks with high CA ratios are also able to withstand economic shocks hence, financially stable. However, a study by Hu and Gong (2019) revealed that there are four minimum capital adequacy requirements that commercial banks must meet and these include; core capital to total risk weighted assets ratio of eight percent, core capital to total deposit liabilities ratio of eight percent, a total capital to total risk weighted assets of 12 percent and a least core capital of Ksh 1 billion.

However, all the mentioned studies did not use banking stability as dependent variable hence the need for the current study that uses banking stability as dependent variable to bridge the research gap.

Further, in Kenya, the monthly economic review by the CBK of November 2015 observed that, despite the prudential regulation's introduction, the asset quality in the form of balance sheet for the banking sector grew from Ksh 3,168.7 billion to Ksh 3,626.9 billion between November 2014 and November 2015 hence, an increase of 14.5% was reported. The NPL to assets ratio as measure of asset quality depreciated from 22.6% in 2001 to 4.3% in 2007. As at December 2013 the ratio averaged to 5%. This shows that the banks' asset quality had improved in the wake of prudential regulations (Mwega, 2017). As observed by Mwega (2017), asset quality requirements include; fixed and current assets, credit portfolio among others. Loans generate most incomes for the commercial banks. Therefore, banks should endeavor to keep Nonperforming loans (NPLs) as low as possible because the smaller the ratio of NPLs to total loans, the higher the growth. However, the study by Mwega (2017) failed to use financial stability of commercial banks as the dependent variable. Again, the study did not test for the reliability of the regression model using diagnostic tests hence a research gap.

On the other hand, liquidity requirement ratio which is the bank's ability to meet its financial obligation to depositors, has been found to have a positive relationship with the bank's growth by Gao's (2020) study. Liquidity requirements of a commercial bank is indicated by the customer deposits to assets ratio and total loans to customer deposits ratio (Biondi & Graeff, 2020). Further, a study by Perotti and Suarez (2017), found that liquidity requirement for commercial banks have negative relationship with their performance hence desirable in decreasing the probability of systemic risks without affecting consumption growth. Further, Marín et al. (2019) revealed that liquidity requirement regulations could prevent moral hazard problems because commercial banks are anticipated to deposit money with the central bank as a last resort lender. Nevertheless, the study did not use panel data while this study used panel data for 21 years (2000-2021) to bridge the gaps.

1.2.2 Banking sector in Kenya

Kenya is the source of cross-border banking in East and Central Africa region that exposes the entire continent to a potential systemic risk effect in the event of a financial stability (Cerutti & Zhou, 2018). Further, relative to other economies in Africa, the country has made considerable strides in the financial sector reforms especially in the banking regulations to cope with the unpredictable regional and global financial stability. However, relationship between prudential regulations in ensuring commercial banks' financial stability is still not clear. Additionally, the country's economy is bank dominated with a thin illiquid capital market (Ochenge et al., 2020). Thus, any economic shock in this sector could affect the whole financial system.

The Kenya's banking sector is usually the most developed and by far the largest in East Africa. The stability of the banking sector in the country has significantly improved over the previous years, however many challenges still remain (Okello, Kirori, & Ndiao, 2019). For example, the commercial banks' asset quality has improved whereas the banks' liquidity positions have remained shaky, and the interest rate spreads have also declined (Mugo, 2021).

Additionally, despite the impact of the corona virus pandemic, the banking sector remained stable because of strong capital and liquidity buffers. The Core Capital and Total Capital to Total Risk Weighted Assets (TRWA) ratios averaged 16.5% and 18.9% in June 2021, compared to an average of 16.4% and 18.4%, respectively, against the minimum statutory core and total capital requirement of 10.5% and 14.5%, respectively (The Kenya Financial Stability Reports, 2021). Further, banks' liquidity remains high, averaging to over 20% minimum regulatory requirement, hence no immediate liquidity risk. Again, liquid assets increased from KSh 1,746 billion in December 2019, to KSh 2,131 billion in December 2020, and KSh 2,326 billion in June 2021, with liquidity ratio averaging 56.8% in June 2021 (The Kenya Financial Stability Reports, 2021). Banks' asset quality measured by Gross NPLs to Gross Loans ratio deteriorated in 2020, as COVID–19 pandemic disrupted and firms' incomes and households' livelihoods (Kimunio, 2021). Further, Opala (2014) observed that, liquidity had positive relationship with financial stability of SACCOs. However, the study was limited to SACCOs as opposed to the current study that focused on commercial banks in Kenya.

The licensed commercial banks in Kenya have reduced from 43 banks to 38 in a span of 5-years. The Central Bank promotes financial stability in the country through financial institutions' regulation (Kiplagat, 2020). The CBK is thus mandated to enforce regulations in line with the Banking Act (cap 488) to safeguard the depositors (CBK Prudential Guidelines, 2013).

In Kenya, CBK issued prudential regulations for commercial banks that was adopted on 1st January 2013 (CBK Prudential Guidelines, 2013). The regulations were meant to help bring positive impact on the operation of the banking sector. However, as indicated by Odawo, Makokha, Namusonge, (2019), some recent challenges in the banking sector have been largely due to poor liquidity, inadequate capital, lack of asset quality, poor credit risk management, as well as inefficient management. For example, in 2015 CBK placed Dubai Bank-Kenya under receivership as a result of adverse liquidity concerns and inadequate capital requirements. Again, in April 2016, Chase Bank was put under statutory management due to what CBK referred as difficulties in liquidity requirements (Kiplagat, 2020). These are indeed isolated cases but the situation point to the possibility of such concerns getting aggravated hence the need for the current study.

1.3 Statement of the Problem

Banks play a pivotal role in facilitating economic development as such the government through CBK has introduced various prudential regulations key among them, the monetary policy guidelines (CBK Act, 1998) to regulate the industry. Despite all these steps, Dubai Bank-Kenya was put under receivership as a result of adverse liquidity concerns and inadequate capital. Also, in April 2016, Chase Bank was put under statutory management due to what CBK referred as difficulties in liquidity management. Most recently, in the month of December 2021, Imperial bank was put under liquidation by CBK. Basically, instability in the banking sector in 2015 and 2016 led to collapse of Dubai bank, Imperial bank Limited, and Chase Bank Limited. Further, Spire bank was also flagged due to having not met CBK prudential requirements (Kiplagat, 2020).

Studies on financial stability and regulation across the world have showed mixed results. Diaconua and Oanea (2014) found that GDP growth and interbank offering rate had positive effect on financial stability of banks while Acharya (2019) found that capital adequacy requirements affected performance of banks. Again, KPMG report in 2013 observed that financial institutions were finding it cumbersome to adhere to regulations put in place after the 2008 USA financial crisis (Hu & Gong, 2019). Further, Vianney (2013) found that there was lack of association between regulations and performance of banks while Chiarella, Harle, Poppensieker and Raufuss (2019) found that new regulation on corporate banking firms in Europe led to significant reductions in profits and credit costs. Mwega (2017) found that regulation strengthened banking sector's financial stability whereas Mureithi (2012) found that regulations led to the improvement in financial performance of Deposit-Taking MFIs and Kiplagat (2020) found that capital adequacy, liquidity management, asset quality had significant relationship with banks' financial performance. Lugaliki's (2009) study did also not use capital adequacy, asset quality, and liquidity requirements as prudential regulation measures.

Based on the studies, the effect of prudential regulation on stability of the banks remains inconclusive. The studies revealed that there is insufficient clarity on the true effect of prudential regulations on banking stability. Moreover, some studies were done in developed economies or in different sectors hence their findings may not be applied to the local banks hence a contextual knowledge gap. Further, most studies used financial performance as dependent variable while this study uses banking stability.

The above studies also ignored the importance of prudential regulation in ensuring stability of the commercial banks. Ignoring prudential regulation could be disastrous to the stability of the commercial banks and could consequently scare away investors thus a concern for overall economic development. This imply that a study of this magnitude is timely as it will provide recommendations that can be borrowed to improve financial stability in the country. Further, evidence on studies on effect of prudential regulation on banking stability in the country is scanty thus a cause for concern that necessitate the need for this study. Therefore, the direct or otherwise prudential regulation's effect on banking stability which is integral in policy formulation is thus not well understood hence the need for this study.

1.4 Research Objectives

1.4.1 General Objective

The general objective of the study is to investigate the effects of prudential regulation on banking stability of commercial banks in Kenya.

1.4.2 Specific Objectives

The following were the specific objectives:

i. To determine how capital adequacy requirement regulation affects stability of commercial banks in Kenya.
ii. To establish the effect of asset quality requirement regulation on the stability of commercial banks in Kenya.
iii. To ascertain the effect of liquidity requirement regulation on the stability of commercial banks in Kenya.

1.5 Research Questions

i. What is the effect of capital adequacy requirement regulation on the stability of commercial banks in Kenya?
ii. To what extent does asset quality requirement regulation affect stability of commercial banks in Kenya?
iii. What is the effect of liquidity requirement regulation on the stability of commercial banks in Kenya?

1.6 Scope of the Study

The aim of the study was to investigate the effects of prudential regulation on stability of commercial banks in Kenya. So as to achieve this, three variables were chosen; capital adequacy, liquidity requirement, and asset quality. The study was limited to secondary data that was collected from the published financial reports on the website of the commercial banks. The secondary data was gathered for a period of 21 years (2000-2020).

1.7 Significance of the Study

1.7.1. To the Ministry of Finance

The findings of this study may benefit the Ministry of Finance as they may act as a pointer on the extent prudential regulation affects stability of commercial banks in the financial sector. Specifically, the ministry through CBK will be able to make necessary financial policy adjustments or improvements based on the study's recommendations to ensure all commercial banks thrives in the presence of business-friendly prudential regulations.

1.7.2 To the government of Kenya

The study findings and recommendations may help the government to put in place strategic measures aimed at addressing the regulation challenges facing the financial sectors with respect to the regulation policies with the aim of increasing their inputs to the country's economic indicators. Further, based on the recommendations, the government of Kenya through various stakeholders in the financial sector will be able to introduce micro-prudential policies that will provide level playing ground for all commercial banks in the country.

1.7.3 Commercial banks

The study findings and recommendations shall also benefit the management of commercial banks in that it will help in laying down strategies necessary for banking stability as they embrace the financial regulation practices that are in place. Based on the findings, the banks will be able to engage various stakeholders in the financial sector such as the CBK, the treasury among others to come up with regulations policies supportive to their stability.

1.7.4 Academicians and researchers

The recommendations and findings of this study will act as a point of reference for future researches and academics similar to the current study or in a related field. Future researchers and academicians will also be able to refer to the findings of this study and bridge the possible literature gaps that could have emanated from this research. Again, academicians will also use the results of the study to enrich their future researches not only in Kenya but also beyond the borders.

1.7.5 Policy makers

The study findings and recommendations will be utilized to influence the banking policy makers during the revision of prudential regulations for the commercial banks in the country so as to have friendly regulation policies that will improve stability of the commercial banks. Moreover, policy makers in the financial sector will also be able to introduce fresh prudential policies, if need be, to promote the stability of commercial banks in the country.

1.8 Organization of the Study

The first chapter consisted of the background of the study, statement of the problem, research objectives, research questions, significance of the study, and scope of the study. Chapter two included review of literature that includes theories, research gaps and conceptual framework. Meanwhile, chapter three consisted of research methodologies while chapter four presented data analysis and interpretation. Finally, chapter five entails summary, discussions, conclusions, and recommendations.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviews related literature to the effect of prudential regulations on the financial stability of commercial banks. The review is done as per the study objectives that is the effect of capital adequacy requirement, asset quality requirements and liquidity requirements on the financial stability of commercial banks. The chapter also presents both the theoretical and conceptual frameworks.

2.2 Theoretical Framework

This study is grounded on two theories namely the buffer theory of capital adequacy and the shift ability theory of liquidity. The theories are discussed hereafter and their relevance to the study indicated. The use of more than one theory is driven by the fact that a single theory could have certain weaknesses to the study hence the use more than one theory to bridge the theoretical gap that could emanate from using one theory. Again, the use of more than one theory is as a result of certain variables used in the study that as specific theory addressing them. These variables include; capital adequacy that is informed by capital buffer theory and the liquidity requirement variable as informed by liquidity management preference theory.

2.2.1 The Capital Buffer Theory

The capital buffer theory was advanced by Marcus (1984). The theory asserts that banks may prefer to hold a buffer of excess capital to reduce the probability of falling under the legal capital requirements. Capital buffer is the excess capital a bank holds above the minimum capital required. The theory explains that banks with low capital buffers attempt to rebuild an appropriate capital buffer by raising capital and banks with high capital buffers attempt to maintain their capital buffer. A breach of the capital requirements is considered a major infringement of banking legislation and is not tolerated by the CBK. Banks that remains undercapitalized for prolonged duration are liable to closure (Kipruto et al., 2017).

The theory contends that the banks' ability to mobilize adequate deposits prevents the capital base from being eroded. According to the theory, more capital tends to absorb adverse shocks and thus reduces the likelihood of failure and therefore increases banking stability (Calem & Rob, 1996).

In line with this theory, banks tend to hold more capital above the regulatory minimum as insurance against breach of the regulatory minimum capital requirement. Consequently, capital adequacy regulations are assumed to be positively related to financial stability (Sentero, 2013). Therefore, the theory is applied in this study to determine the effects of capital adequacy requirement on the stability of commercial banks in Kenya.

The theory informs the current study because it requires commercial banks to hold the recommended capital so as to remain financially stable. Therefore, by creating prudential regulations that targets the need to create adequate capital, capital buffers are designed to increase the banking stability hence the use of this theory to inform the current study (Von Thadden, 2004). Again, the fact that the theory holds that commercial banks with low capital buffers often attempt to rebuild appropriate capital buffer by way of raising capital and those with high capital buffers usually attempt to maintain their relevant capital buffers to promote their financial stability hence the applicability of this theory to the current study. Therefore, commercial banks tend to raise capital whenever the portfolio risk rises so as to keep up their capital buffer as sighted by Laeven and Levine (2019) and this appears to relate with the capital adequacy as independent variable and the banking stability.

The theory is applicable to the current study because it requires banking institutions to mobilize for adequate cash deposits to improve capital base so that they can be financially stable and consequently improve on their Z-score. The fact that the theory requires banking institution to initiate measures or buffers that can lead to capital adequacy thus implies the theory's relevance to the current study, especially with regard to the first research objective; capital adequacy requirements.

However, the theory is not without weaknesses. It ignores the fact that even if commercial banks hold excess capital to prevent falling into recession, to some extent this hypothetical approach may not hold due to the fact that, extreme economic recession can still plunge such banks into financial crises. This implies that even if commercial banks hold capital buffers they can still fall into a serious financial crises. Coupled with the fact that CBK regulates the maximum capital commercial banks can possess, they are limited to hold excess funds against the threshold provided by the regulatory body thus the theory ignores this important aspect.

2.2.2 Liquidity Management Preference Theory

The theory was put forward by John M. Keynes (1939). The theory asserts that financial institutions hold funds to meet financial obligations as they arise without incurring unnecessary losses. According to the theory, banks face several risks such as liquidity risks that may affect their banking stability. Therefore, the aim of managing liquidity is to ensure, that commercial banks have adequate liquidity to dully meet their liabilities when due. As such, commercial banks are obligated to maintain a portfolio of short-term liquid assets that are largely made up of short-term liquid investment securities and loans as well as, advances to banks and other inter-bank facilities. All these are done with the aim of ensuring that sufficient liquidity is maintained to increase its banking stability (Njeule, 2013).

The theory also state that an investor should always demand a higher interest rate on securities that has long-term maturities because, all other factors being constant, an investor prefer cash or other highly liquid holdings. Therefore, the higher the ability of an organization to possess highly liquid holdings the higher the traction to more investors hence financial stability (Mawardi, Wahyudi, & Safitri, 2021). The fact that the theory states that the demand for money is not to borrow rather to remain liquid to attract more investors. Therefore, the theory informs the current study because it provides for the need for commercial banks to have adequate liquid cash to meet their financial obligation so as to remain financially stable.

This theory postulates that, assets should not only be anchored on self-liquidating bills but also government securities to improve financial stability of banks. Therefore, according to the theory, it would be alright for banks to grasp short-term open markets investment in its portfolio assets to improve banking stability. Therefore, the theory is applied in the current study to determine the effects of liquidity requirements on stability of commercial banks in Kenya. The linkage of the theory to the current study is based on the fact that it tends to offer measures that can be used by banks to ensure that commercial banks have adequate liquidity requirements (third objective) to dully meet their financial obligations when due to improve their banking stability.

The theory has also been criticized for ignoring the fact that other external factors such as inflation rates or internal factors such as, loan and deposit can equally cause financial stability among banks. This means that even if commercial banks have adequate liquid cash they can still fall into financial crises. The theory thus assumes that financial instability is only as a result of holding inadequate liquidity by banks to dully meet their liabilities when due.

2.2.3 Capital Asset Pricing Model (CAPM)

It was introduced by Sharpe in 1964. It explains the risk of a particular asset using the excess return on the market portfolio (Black, 1971). It suggests that investors should hold diversified portfolios, and predicts that investors will hold some fraction of the market portfolio. Furthermore, an important implication of the CAPM is that investors lacking special investment knowledge would be well advised to buy and hold diversified portfolios to improve asset quality (Black, 1971). The CAPM shows that investors require high levels of expected returns to compensate them for high expected risk.

However, it is now widely recognized that in the presence of informational asymmetries and contract enforcement problems, it is not necessarily true that the banking system will allocate resources to projects or firms with the highest returns. Empirical evidence based on mean-variance portfolio selection, simulation analysis, and out of sample performance portfolio suggests that correcting for estimation error, particularly in the means, can substantially improve investment performance due to improved asset quality ratio (Diaconua & Oanea, 2014; Kiplagat, 2020). This theory is used in this study to capture the effect of asset quality requirement on banking stability.

Despite attempts to verify or refute the CAPM, there is no consensus on its legitimacy insofar as asset quality is concerned. Therefore, this research assumed that quality assets are one of the items in a bank's portfolio that should be regulated to improve financial stability. A banks portfolio consists of both assets and its liabilities thus the relevance of this theory to this study.

2.3 Empirical Review

In this section, the study reviews various empirical studies that relates with how capital adequacy requirements affects banking stability of commercial banks in Kenya, the effect of asset quality requirement ratio on the stability of commercial banks in Kenya, and the effect of liquidity requirements ratio on the stability of commercial banks in Kenya are presented. The studies are based on global, regional, and local perspectives. The research gaps are also identified to justify the need for the current study.

2.3.1 Effect of Capital Adequacy Requirements on Banking Stability

In order to explore the effect of capital adequacy requirements on banking stability, several globally, regionally, and locally identified studies were employed. Specifically, the studies presented focused on the various topics that were closely related to the current study. Further, research methodologies used by the past studies were also identified together with key findings. The studies were presented as follows;

A study was done by Yahaya, Mansor and Okazaki (2016) to investigate the influence of capital adequacy requirements on the performance of firms in Nigeria. The study used descriptive research design and the target population was all listed commercial banks. Data was analyzed using both descriptive and inferential statistics (simple regression). The study found the capital adequacy had positive relationship with firm performance hence, they are closely related. However, the study used simple regression while the current study will utilize multiple regression together with descriptive statistics. In the contrary, Olalekan and Adeyinka (2013) investigated the effect of financial regulations on the financial soundness of financial institutions in Ghana. However, the authors used mixed research design and primary and secondary data were collected. Further, data was analyzed using factor analysis and Pearson product correlations. The study found that capital adequacy ratio was positively related to financial soundness but statistically insignificant. Despite that the study is beneficial to the current study, it however, used Pearson correlation which may not sufficiently detect outliers hence the current study will use the multiple regression analysis. This study will purely use secondary data that is reliable, easy to access and authenticated.

Further, Mwai (2017) investigated the relationship between capital requirement and financial performance of commercial banks in Kenya. The target population was a total of forty-three (43) commercial banks operating in Kenya. Data was analyzed using descriptive statistics and regression analysis. The findings of the study were that there was a significant positive relationship between minimum core capital and financial performance, a significant positive relationship between total capital and financial performance. However, the study used financial performance as dependent variable while the current study uses banking stability as dependent variable. Meanwhile, Gudmundsson, Ngoka and Odongo (2013) examined the role played by capital adequacy in determining competition and stability of thirty-six commercial banks in Kenya for the period between 2001 to 2011. In this study, Lerner Index and Panzer and Rosse H-statistics were utilized. The study used primary data. The study found that as core capital increased, it resulted into less competition up to a given point from which competition increases hence a positive relationship was identified. Nevertheless, the study was done several years ago hence the need for a current study to determine the effect of capital adequacy requirement on stability of commercial banks in Kenya.

In yet another research, Mwenda (2018) studied the effect of prudential regulations on financial performance of microfinance banks in Kenya. The researcher's data was secondary in nature and covered a 5 years' time period covering 2013 to 2017. Analysis of the secondary data gathered was done by use of inferential and descriptive statistics. The results established that there was a positive and statistically significant relationship between capital adequacy and financial performance. The study was however, on microfinance institutions while the current study focused on commercial banks using banking stability as dependent variable to bridge the research gap. Meanwhile, Suka (2011) did a study on the impact of capital adequacy on the financial performance of commercial banks trading at the NSE. The study found that capital adequacy contributes positively to the profitability of commercial banks. The study was however, focused on the financial performance of commercial banks and not on the stability of commercial banks hence a knowledge gap.

In yet another study, Kimeu (2020) investigated the effect of capital adequacy on the performance of listed commercial banks in Kenya. The target population was 11 listed commercial banks in NSE for the period, 2014-2018. Descriptive and inferential statistics were used to analyze the data. Through regression analysis, the study established that capital adequacy has significant effect on financial performance among the commercial banks listed on NSE. The study was also done on the financial performance of the listed banks and not banking stability of the banks. In the other hand, Kamande, Evusa and Ariemba (2016) investigated the effect of bank specific factors on the financial performance of commercial banks in Kenya. The study adopted explanatory approach using panel data research design. Regression analysis was used and it established that there has been a significant decrease in capital adequacy during the five-year period. However, the study focused on bank specific factors while the current study looks at the effect of prudential regulation on stability of commercial banks in Kenya.

Furthermore, Mananda (2017) sought to determine the effect of internal factors on financial performance of banks listed at NSE. The target population was all the 11 banks listed at NSE. The data was collected for the periods 2009 to 2016. The study established that capital adequacy, asset quality and liquidity had insignificant and negatively related to return on assets. The study was limited to banks listed at the NSE whereas the current study focusses on all registered commercial banks in the country. However, Abonyo (2020) examined the monetary policy instruments and financial performance of commercial banks in Kenya. Data analysis was done using descriptive and inferential statistical techniques such as mean, standard deviation, correlation, coefficient of determinant, and tables. The study found a very strong positive correlation between capital adequacy ratio and ROA. However, the study used monetary policy instruments as independent variable and financial performance as dependent variable. To bridge the literature gap, the present study uses prudential regulations and banking stability as independent and dependent variables, respectively.

2.3.2 Effect of Asset Quality Requirements on Banking Stability

In this sub section, various empirical studies were presented. Specifically, the studies presented were either nearly or closely related to the effect of asset quality on banking stability of commercial banks. The studies used had methodology employed, findings, as well as research gaps that were to be bridged by the current study.

Vighneswara (2015) examined the determinants of bank asset quality and profitability in Indian banks using panel data techniques from the period from 1997 – 2009. It was established that, asset quality significantly affects the profitability of commercial banks while assets size had no significant impact on profitability. The study was done in a developed economy hence the need for the current study with a focus on developing economy such as Kenya. The study only used statistics and cross tabulation that can only provide basic data analysis while the current study uses multiple regression analysis that can show the relationship between variables. On the reverse, Hanadi and Suradhaygham (2020) examined the effect of asset quality on the value of the bank listed in Iraq Stock Exchange. Quarterly data were used for the period (2011- 2018). The research found that there is a discrepancy in the effect of asset quality ratios on the value of the selected banks. The study only used descriptive statistics that cannot determine the relationship or association among the variables hence the need for the current study that will use a linear regression model together with various diagnostic tests.

Moreover, Kaddumi (2015) investigated assets quality management and its impact on profitability and shareholders' value of listed commercial banks in Jordan. Multiple and simple regression analysis were used for data analysis. The results showed that bank`s asset quality indicators have a positive impact on the profitability and shareholders value. However, the findings cannot be used to as inference to the local situation on the effects of prudential regulation on banking stability thus the call for the current study. In comparison, Lucky and Nwosi (2015) did a study on the influence of asset quality and profitability of commercial banks in Nigeria. Multiple regression was used as data analysis method. It was observed that percentage of NPLs to total loans and percentage of NPLs to total customers' deposit had positive relationship with ROI. The study was however based in Nigerian banks, a country with varied geographical scope thus the need for the current study with a local presence.

In another study, Adeolu, (2014) studied the effect of asset quality on bank performance of commercial banks in Nigeria. Data was then analyzed using Pearson correlation and regression and tool for analysis was the SPSS. The study established that asset quality had a statistically strong positive relationship and influence on bank performance. However, he also shows that there exists no relationship between NPLs and its profitability. However, the study was conducted in Nigeria, a country with different geographical scope hence the need for current study that focusses on the Kenyan banks. Contrarily, Lawal, Oluoch and Muturi (2018) studied the effect of asset quality on the operational efficiency of deposit money banks in Nigeria. The panel data was collected for 10 years from 2007-2016 for all the 15 deposit money banks (DMBs). Further, both descriptive and inferential statistics in the form of Panel least square regression was used and it was observed that asset quality had a positive but significant effect on the banks' operational efficiency ratio. The study however used operational efficiency as dependent variable while the current study uses stability of commercial banks in Kenya.

In another study, Nzioka (2015) did a study on the effect of asset quality on the financial performance of commercial banks. The study adopted a descriptive design in its methodology and the researcher chose to study commercial banks due to availability of needed data and convenience. The t-test with a 5% level of significance was used in the study and the correlation coefficient (r), coefficient of determination and analysis of variance (ANOVA) were calculated. The analysis showed that all the asset quality factors had a fairly statistically significant impact on financial performance. However, the study did not use diagnostic tests which help in determining the reliability of data as well as, the regression model. The current used heteroscedasticity, multicollinearity and normality to test the reliability of the model. Similarly, Cheruiyot (2016) investigated the effect of asset quality on the performance of commercial banks in Kenya. Descriptive statistics was used to quantitatively describe the important features of the variables. Regression was used in determining the effect of asset quality on profitability of banks. The study found that there is a great positive relationship between asset quality and profitability of commercial banks in Kenya. The study however used asset quality as independent variable while the current study uses it as one of the measures of prudential regulations.

Kitaka, Kiragu and Marwa (2020) sought to determine the influence of asset quality on sustainability of Kenya's Insurance companies. The study adopted a positivist research philosophy and employed a descriptive research design. The target population was the 51 insurance companies registered by IRA. The study proportionately chose 30 companies. The secondary raw data was collected, cleaned, edited, coded and analyzed using SPSS analytical tool. Data was analyzed using descriptive and inferential statistics. The multiple regression analysis helped in determining between asset quality and sustainability. The study found that asset quality had a positive and significant effect on sustainability of insurance companies in Kenya. The study focused on insurance companies hence a research gap that the current study intends to bridge the gap by studying the effect of prudential regulations on the stability of commercial banks in Kenya.

2.3.3 Effect of Liquidity Requirement on Banking Stability

In this section, global, regional and local studies were presented regarding the effect of liquidity requirements on the banking stability. Based on the presented studies, possible gaps were then identified. The empirical studies are presented hereafter.

Berríos (2013) studied the impact of liquidity requirement on firm performance of banks in Brazil. The study utilized descriptive research design while the target population was all the 123 commercial banks in the country. The collected data was analyzed using descriptive statistics and linear regression analysis. The study found that, current ratio was negatively related to firm performance as measured by ROI. Further, quick ratio was positively and significantly related with ROI while firm size that was used as control variable had positive relationship with ROI but statistically insignificant to each other. The study added value to this literature review but was conducted in a developed economy hence cannot be used to generalize the local situation. Further, firm performance was used as dependent variable as opposed to the current research. However, a study by Machauer and Schiereck (2014) was on the effect of regulations on the financial management of church based SACCOs in Germany. Questionnaire was used to collected data that was analyzed using linear regression model. The study found that, liquidity requirement had positive relationship with the management of churches in the country. However, the study was done in developed country as such the findings cannot be used to generalize the local situation. The study also used financial management as dependent variable contrary to the current study that uses financial stability. Again, the study was limited to SACCOs while the current study focuses on all commercial banks in the country. Further, questionnaire that was used has the disadvantage of manipulation as opposed to the secondary that will be used in the current study.

Further, Khan and Ali (2016) examined the impact of liquidity on profitability of commercial banks in Pakistan. Using correlation and regression analysis, the results of the study revealed that a positive and significant relationship between liquidity and profitability of commercial banks. The study however cautioned that the small sample size meant that the results cannot be generalized for the entire banking sector in Pakistan hence a research gap that the current study intend to fill by carrying out a local study. In the contrary, Das, Chowdhury, Rahma, and Dey (2015) examined the association between management of liquidity and financial returns of commercial banks in Bangladesh. Both cross tabulation and Spearman rank correlation were used for data analysis. Liquidity and profitability ratios were used to find out the link between management of liquidity risk and profitability of commercial banks. The study found that liquidity ratio had positive significant relationship with financial returns (profitability). However, the study only used correlations as an advanced analysis method. The method can only show associations among variables but cannot show the relationships. Thus, the study will use linear regression together with diagnostic tests.

Shukla and Muchem (2017) studied the nexus between management of liquidity and financial performance of commercial banks in Rwanda. Multiple regression technique was adopted to establish the nexus between management of liquidity and financial returns of commercial banks in Rwanda. The study found that holding more liquid assets as compared to total assets would lead to lower returns to commercial banks in Rwanda and the effect is significant at 5%. Similarly, Nyanga (2012) studied the relationship between internal financial factors and the profitability (ROE and ROA) of commercial banks in Kenya. Data was analyzed descriptively and through correlation analysis as well as, linear regression analysis. The study established that, there was a negative correlation between liquidity ratio and ROE. On the other hand, operating cost efficiency and firm size had a positive relationship with ROE. Furthermore, liquidity ratio, firm size, and operating cost efficiency had positive relationship with ROA. The study is beneficial to the current study, however it focused on internal factors and profitability while the current study intends to specifically find out the effect of liquidity requirements as a measure of prudential regulation on stability of commercial banks.

Furthermore, Kahuthu (2016) studied the impact of prudential regulation on financial performance of deposit taking SACCOs in Kenya. The primary data was gathered using questionnaire. The study found that core capital, liquidity, and credit management did not strongly predict financial performance before regulations but after prudential regulations, all the variables were strong predictors of firm performance. Firm age was also found to be positively correlated with the financial performance. Despite that the study used prudential regulation as independent variables, it did not use banking stability as dependent variable hence a research gap. Further, the study was on SACCOs hence a contextual knowledge gap. Thus, the current study will look at all commercial banks in Kenya. The results contradicted a study by Mohamed, Mutegi, and Muriuki (2018) on the influence of CBK prudential regulations on the performance of commercial banks in Kenya. Data collected was analyzed using both the regression analysis and correlations. All the variables (liquidity requirements and corporate governance) had positive relationship with performance. However, the study used performance as dependent variable while the current study will use financial stability to bridge the knowledge gap. The current study will rather use secondary data that is readily available on firm websites and can be validated.

Again, Kusewa (2017) evaluated the impact of regulation of the retirement benefits sector on the financial performance of occupational pension schemes in Kenya. Further, both descriptive statistics and multiple regression analysis were employed. The study revealed that, core capital had negative significant relationship with financial performance while liquidity ratio had statistical positive relationship with financial performance (ROCE). However, the study used financial performance as dependent variable while the current study will use financial stability as dependent variable. Again, the study's independent variable was broadened to regulation whereas the current study will specifically use prudential regulation as independent variable. In the contrary a study by Nyabateh (2013) explored the link between management of liquidity and financial returns of financial institutions at the NSE for the period 2010 – 2014. The study used descriptive statistics while regression analysis model was adopted to enhance understanding of the link between the response and predictor variables. The study indicated that there was a weak positive link between financial returns and liquidity of the financial institutions that were studied. The results contravened the findings of Kusewa (2017). However, the study used a mix of financial establishments while the current study specifically looks at all commercial banks in Kenya.

2.4 Summary of Literature and Research Gap

In the following sub section, Table 1, the summary of the reviewed literature was presented based on author, tittle, the country, methodologies and findings. The identified gaps were also presented.

Table 1: Summary of Literature and Research Gap

Author	Study	Country	Methodology	Findings	Gaps	How the study fills the gap
Mwenda (2018)	The effect of prudential regulations on financial performance of microfinance banks in Kenya	Kenya	Used descriptive research design. Population was all thirteen microfinance banks in Kenya. Data was secondary and analysis done by inferential and	The study established that there was a positive and statistically significant relationship between capital adequacy and financial performance	This study focused on microfinance banks and secondly, it looked at the effect prudential regulations have on financial performance and not stability of the banks hence knowledge gap.	To bridge the gap, the study will use banking stability (measured by Z SCORE) as independent variable. The current study will also use linear regression to show the relationship between variables.

Author	Study	Country	Methodology	Findings	Gaps	How the study fills the gap
			descriptive statistics.		Further, only correlation (only shows association) analysis was used	
Suka (2011)	Impact of capital adequacy on the financial performance of commercial banks trading at the NSE	Kenya	Secondary data gathered from the annual reports of commercial banks. Regression analysis was used to determine relationship	The study found that capital adequacy contributes positively to the profitability of commercial banks.	The study was however, focused on the financial performance of commercial banks and not on the banking stability.	Further, to bridge the gap, this study will also use three independent variables; capital adequacy, liquidity requirements, and asset quality.
Mckillop & Wilson (2011)	The relationship between prudential regulation and firm performance	UK	Secondary data, 2002-2010	The study found that prudential regulation as measured by liquidity and asset quality requirements had no relationship with financial performance	However, the study was done in a developed country, therefore, the finding cannot be used to contextualize the Kenyan case	The current study will be done in a developing economy such as Kenya to bridge the research gap.
Kahuthu (2016)	Impact of Prudential Regulation on Financial Performance of Deposit Taking Savings and Credit Cooperative Societies	Kenya	Used secondary data. Analysis tool was SPSS. Comparative design and a linear regression model were used	The study found core capital, liquidity, and credit management to be strong predictors of financial performance after prudential regulations	This study tested the effect of prudential regulation on financial performance and not on banking stability. Further, the study was on SACCOs and	To bridge the gap, study will specifically focus on commercial banks and will also use banking stability as measured by Z SCORE as dependent variable

Author	Study	Country	Methodology	Findings	Gaps	How the study fills the gap
					not commercial banks hence contextual gap.	
Adeolu (2014)	Asset quality and bank performance on commercial banks in Nigeria	Nigeria	Pearson correlation and regression were used for data analysis	Asset quality had a statistically strong positive relationship and influence on bank performance	Study focused on financial performance of the banks and not the banking stability, thus a gap.	Therefore, the current study will strive to bridge the gap by using banking stability as dependent variable while asset quality, liquidity requirement and capital adequacy will be used as independent variable as opposed to Adeolu (2014) study that only used asset quality as independent variable
Khalid (2012)	Effects of asset quality to profitability of private banks	India	Various models of regression and correlation were used to determine the relation between banks asset quality and operating performance	According to the study a negative relationship exists between banking operating performance after control bad asset ratio and idle fund ratio	The study sought to establish the effect on profitability of the banks and not the banking stability, thus a gap that this study will bridge by also using various diagnostic tests to measure the reliability of the regression model	This study will bridge the gap by using various diagnostic tests to measure the reliability of the regression model
Bougatef &	Effects of regulation	MENA countries	Secondary data was	The study established	Given that the study was done	The study will bridge the gap by

Author	Study	Country	Methodology	Findings	Gaps	How the study fills the gap
Mugadmi (2018)	on behavior risks' taking among 24 banks		collected for 2004-2012. Panel data methodology was used and analyzed using correlation and descriptive statistics	that prudential regulations (an independent variable) reduces incentives of risk taking by the commercial banks. Prudential regulations also increased capital of the banks.	across several countries the findings cannot be used to inform the effect of prudential regulation on the stability of Kenyan banks thus the need for the present study.	using normality, heteroscedasticity and multicollinearity tests as diagnostic tests to determine the reliability of the model
Kale, Eken, & Selimler (2017)	Investigated the impact of regulation on the efficiency of Turkish banks	Turkey	Data was collected for 1997-2013. Both factor analysis and inferential statistics were used	The study found that tight regulations and serious supervisions that promoted conformity to capital requirements resulted to improved bank efficiency	The study, however, used Turkish banks as case study while the current study will use local commercial banks hence the findings will vary because the present study will focus on a developing economy. Further, their study only used factor analysis and correlation analysis that lacks the ability to determine the relationship	Thus, the current study will bridge the methodology gap by using linear regression model

Author	Study	Country	Methodology	Findings	Gaps	How the study fills the gap
					between variables.	
Deng, Ferrari, & Casu (2014)	Effects of re-regulation and de-regulation on commercial Banks efficiency	Asia	Covered a period of 10 years, 2001 to 2010. The study used quantitative research design. Data was analyzed through multiple regression	The study found that prudential regulations negatively influenced efficiency of banks hence many posted poor financial results.	Nevertheless, the study used bank efficiency as dependent variable that led to a knowledge gap that the current study endeavors to bridge by using prudential regulation and banking stability as independent and dependent variables, respectively.	The current study endeavors to bridge the knowledge gap by using prudential regulation and banking stability as independent and dependent variables, respectively.
Ganioglu (2018)	The influence of prudential regulations and supervision on banking entities' supervision	USA	The target population was 145 commercial banks. Constructed questionnaires were used The study sample size was the top management of banks. Data was analyzed descriptively	It was found that prudential regulation on capital ensured compliance to higher capital requirements by the banks. Advanced analysis found that tighter regulations did not reduce the moral hazard concerns.	The study used questionnaire that tend to be biased hence a research methodological gap	The current study will use secondary data instead of questionnaire to bridge the data bias gap. Again, the study will use multiple regression together with various diagnostic tests such as normality, heteroscedasticity among others to bridge the research methodological gap
Mohamed, Mutegi, &	Influence of CBK	Kenya	Descriptive research	The study reveal capital	The study was focused on	The study will use a different

Author	Study	Country	Methodology	Findings	Gaps	How the study fills the gap
Muriuki (2018)	prudential regulations on the performance of commercial banks		design was used. Data was gathered using questionnaire. Data was analyzed using regression analysis and correlations	requirements, credit risk management, liquidity requirements, and corporate governance positively influenced bank performance.	bank's performance while the current study is on banking stability, thus knowledge gap that will be bridge using a different dependent variable (banking stability).	dependent variable (banking stability). The current will also use secondary data which is readily available and reliable

2.5 Conceptual Framework

The relationship between dependent and independent variables are diagrammatically presented in Figure 1. The dependent variable is bank stability as measured by the z-score according to Demirgüç-Kunt, Levine (2007) and Čihák and Hesse (2010). The z-score is a useful measure of bank stability as it compares the buffer (capitalization and returns) alongside risk (in terms of volatility of returns). This way, the banks solvency risk is taken care of. The independent variables for the study are designed to consider capital threshold of the banks (as measured by capital adequacy regulations), quality of asset portfolio (as measured by the non-performing loan ratio) and the liquidity thresholds banks hold (as measured by the customer deposit ratio). The study controls for other factors that may affect bank stability namely, firm-level factors such as bank size as measured by total assets, the age of the bank from date of incorporation, and asset growth. The study also incorporates a number of macro-level factors such as inflation and the covid-19 pandemic. The interrelationship among the variables is depicted in Figure 2.1.

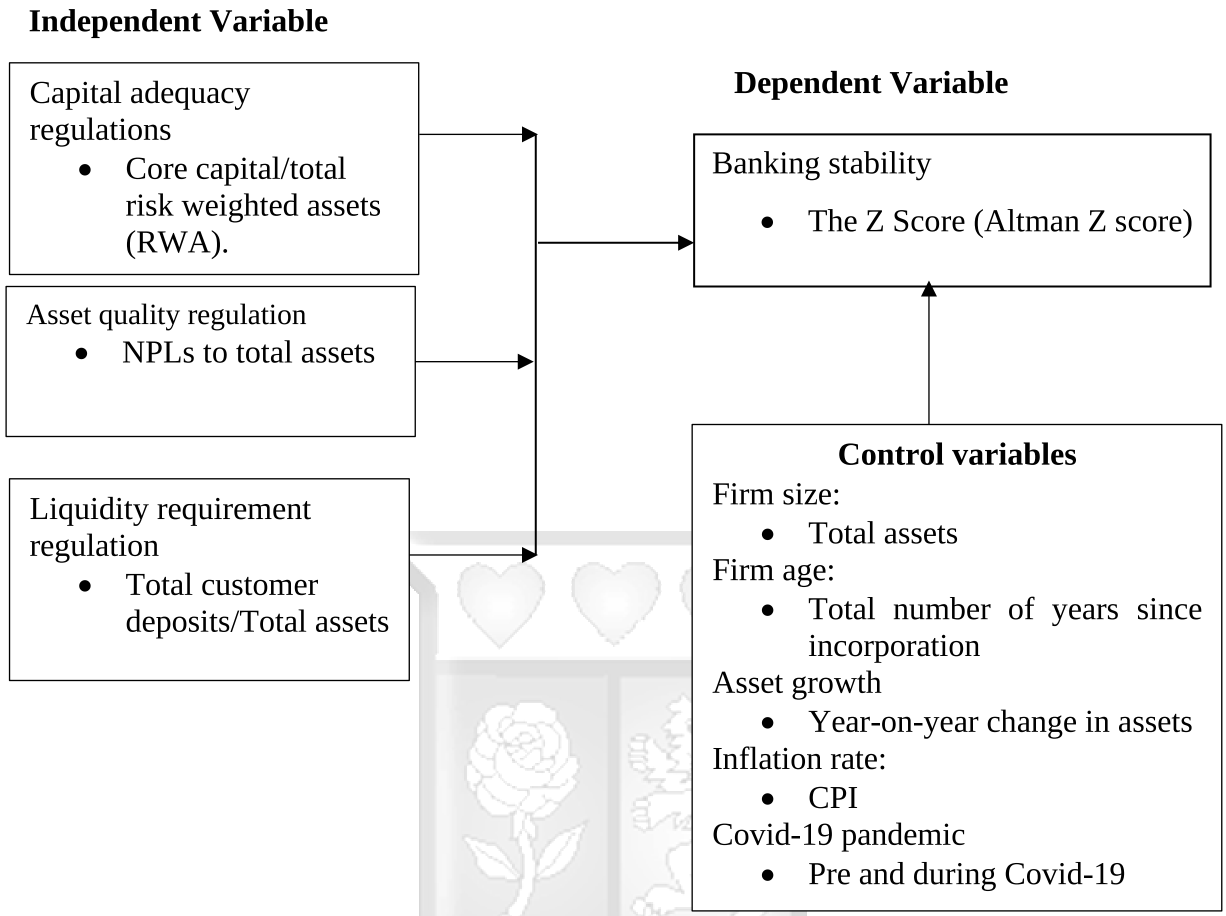

Figure 2.1: Conceptual Framework

2.5.1 Operationalization of Variables

The variables include; liquidity requirements, capital adequacy requirements, and asset quality requirements as independent variables and financial stability as the dependent variable. Meanwhile, firm size, firm age, and inflation was used as control variable.

Capital adequacy requirements was measured by dividing the core capital by risk weighted assets (RWA). Thus, adequate capital level is anticipated to positively influence the financial stability of commercial banks. Research by Gudmundsson, Kisinguh, and Odongo (2013) used shareholder’s capital as divided by RWA to measure capital adequacy.

Asset quality was measured by Nonperforming Loans Ratio (NPLR) that was computed taking nonperforming loans and dividing by total assets. Similar measures were used by Anjili (2014) and

Wanjiru, (2016) in their respective studies. Therefore, an increased asset quality positively affect financial stability of commercial banks.

Further, liquidity requirements ratio will be measured by current ratio that was computed by dividing total customer deposits by total assets as supported by Eneyew (2020) who also used similar measures. A higher liquidity ratio implied a given bank is able to handle short-term financial obligations hence increased financial stability.

The study used firm size as control variable. It was measured by total assets owned by a given bank which was computed by natural logarithm of total firm value. A study by Dong and Su (2010) also used natural logarithm of total assets to measure firm size. Further, age was also used as a control variable and it was measured using the duration a given bank has been in operation since incorporation. Again, inflation rate was used control variable and CPI was used as its measure while Covid-19 and asset growth were also used as control variables. Finally, banking stability was measured using Z score of every commercial bank in Kenya (Mugo, 2021).

Table 2.1: Variable definitions

Variables	Measures	Scales	Sources	Theories
Capital adequacy requirement regulation	Core capital/ risk weighted assets (RWA)	Ratio	Gudmundsson, Kisinguh, and Odongo (2013)	The Capital Buffer Theory
Asset quality requirement	Nonperforming Loans Ratio (NPLR) that was computed taking nonperforming loans and dividing by total assets.	Ratio	Anjili (2014) and Wanjiru, (2016)	The Capital Buffer Theory

Variables	Measures	Scales	Sources	Theories
Liquidity requirement regulation	Current ratio that was computed by dividing total customer deposits by total assets	Ratio	Eneyew (2020)	Liquidity management preference theory
Firm size	Total assets owned by a given bank which was computed by natural logarithm of total firm value	Ratio	Dong and Su (2010)	The Capital Buffer Theory
Asset growth	Year-on-year change in assets	Ratio	Deng, Ferrari and Casu (2014)	Liquidity management preference theory
Inflation rate	CPI	Ratio	Ganioglu (2018)	Liquidity management preference theory
Age	Number of corporations		Mohamed, Mutegi, and Muriuki (2018)	The Capital Buffer Theory
Banking stability	Z score (Altman for commercial banks)	Ratio	Mugo, 2021	Liquidity management preference theory and The Capital Buffer Theory

Variables	Measures	Scales	Sources	Theories
Covid-19 pandemic	Pre and during Covid-19	Ratio		

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter consist of research methodologies that will be employed. Specifically, the section highlights research design, population and sampling, and data collection methods. Further, data analysis and diagnostic tests were also included. The final section consists of the ethical considerations.

3.2 Research Philosophy

The current study employed the positivism research philosophy (Bryman & Bell, 2018). A positivism is a research philosophy that upholds the view that only factual knowledge obtained through observations that includes measurement, is trustworthy (Collins, 2010). This research preferred positivism's applications because the researcher's mandate was limited to data gathering and interpretations of the data using objective approach and also the study findings was quantifiable and observable that resulted to statistical data analysis and presentation for ease of interpretation.

The positivism research philosophy provides ways by which data can be collected and analyzed to give relevant meaning to the finding. For instance, in this study, data was collected from secondary sources from the websites of commercial banks. The positivist philosophy thus allows for retrieval of data based on the published reports and the retrieved information can then be analyzed without altering the data to give meaning and interpretation to research findings.

The study specifically used positivist research due to the fact that it investigated the effects of prudential regulation on banking stability of commercial banks in Kenya. Thus, this philosophy is applicable to the current study because it was able to help the researcher to present, interpret and discuss quantitative data for the sampled banks.

3.3 Research Design

This study will adopt a descriptive research design. Descriptive correlational research design was embraced because it enabled the researcher to retrieve information on the current status of the phenomena and explain its relationship with the study variables (Bell, Bryman, & Harley, 2018). The research design was also appropriate because it assisted in investigating the effects of prudential regulation on the financial stability of commercial banks in Kenya (Green & Salkind, 2016). Specifically, by using secondary data that was collected, the design helped in analyzing how adequate capital requirements, asset quality requirements, and liquidity requirements affects the banking stability of commercial banks in Kenya. The design is applicable to the current study because it sought to describe an element in detail, in context and holistically. The design is also applicable to the current study because it enabled this study to correlate at least two or more variables at one point in time and is equally valuable when it comes to description of a relationship among several variables like in the present study. The fact that the current study used secondary data gathered from banks' websites, descriptive correlational research design was suitable research design because it describes the actual findings based on the secondary data collected.

3.4 Population

The target population was all the registered 43 commercial banks in Kenya (Appendix I). Due to the manageability of the target population, the study used census study. Meaning all commercial banks were selected for the study. Thus, secondary data collection was limited to 43 commercial banks.

Table 3.1: Target Population

Large tier banks	Medium tier banks	Small tier banks	Total
6	15	22	43

Source: CBK Website (2022)

3.5 Data Collection Methods

This research utilized secondary data. The secondary data was retrieved from the published financial reports of each bank. The secondary data was gathered for a period of 21 years (2000-2020). Therefore, secondary data was gathered for all variables. The variables include; liquidity requirements, capital adequacy requirements, and asset quality requirements as independent variables while firm size, age, inflation rate of the firms, asset growth, and Covid-19 pandemic as control variables. The study also gathered secondary data for the dependent variable, the banking stability. The dependent variable was measured using Z score variable. Generally, data collection spreadsheets was used during data gathering to ensure that all variables including their measures are captured.

3.6 Data Analysis

After data collection, the study resorted to data analysis using a statistical software referred as Statistical Packages for Social Sciences (SPSS) version 20.0 (George & Mallery, 2013). The secondary data for all the banks was fed into the software based on each variables' quantifiable values. Data was then analyzed using descriptive statistics together with the regression analysis. The fitness test for the regression model was achieved by running various diagnostic tests.

3.6.1 Descriptive Statistics

To present descriptive statistics results, mean, minimum, maximum, standard deviation were employed and results availed in table formats. The descriptive statistics was used due to the fact that it is easily understandable and also simple to interpret.

3.6.2 Regression Model

Multiple regression was used as the analytical model. In this model, the stability of commercial banks (Z score) was the responsive variable and the predictor variables included; liquidity requirement regulation, capital adequacy requirement regulation, and asset quality requirement regulation. Control variables were asset growth, Covid-19 pandemic, inflation rate, firm size (total assets), and age. The model was homogeneous (pooled) panel data model.

The regression model took the following form;

$$\mathbf{Y_{it} = \beta_0 + \beta_1 LRR_{it} + \beta_2 AQR_{it} + \beta_3 CAR_{it} + \beta_4 FS_{it} + \beta_5 AGR_{it} + \beta_6 FAGE_{it} + \beta_7 IFR_{it} + \beta_8 COVID_t + \varepsilon}$$

Where:

$\mathbf{Y_{it}}$ = Banking stability (Altman Z score) of firm i at time t

$\boldsymbol{\beta_0}$= A constant

$\boldsymbol{\beta_1}$, $\boldsymbol{\beta_2}$, $\boldsymbol{\beta_3}$, $\boldsymbol{\beta_4}$ & $\boldsymbol{\beta_5}$ = Beta coefficients of the independent variables

$\mathbf{LRR_{it}}$ = Liquidity requirement of firm i at time t

$\mathbf{AQR_{it}}$ = Asset quality requirement of firm i at time t

$\mathbf{CAR_{it}}$ = Capital adequacy requirement of firm i at time t

$\mathbf{FS_{it}}$ = Firm size of firm i at time t

$\mathbf{AGR_{it}}$ = Asset growth

$\mathbf{FAGE_{it}}$ = Firm age of firm i at time t

$\mathbf{IFR_{it}}$ = Inflation rate of firm i at time t

$\mathbf{COVID_{t}}$ = covid pandemic control

ε = Error term

i = Firm 1 up to firm 38

t = = Year 2000 up to year 2020.

3.7 Diagnostic Tests

The research also utilized diagnostic tests such as, multicollinearity test, the normality test, and heteroscedasticity. These tests helped in measuring the regression model's goodness fit.

i. Normality Test

Normality test was adopted to help finding out the data's normal distribution based on the study population. Essentially, the test assisted in obtaining the reliability of data and its practical accuracy (Mishra, Pandey, Singh, Gupta, Sahu, & Keshri, 2019). To achieve this, the Shapiro Wilk test was preferred.

ii. Multicollinearity Test

Multicollinearity test ensured that the collected data gathered was not biased (Disatnik & Sivan, 2016). Simply put, multicollinearity can occur in nearly exact linear correlation or in the presence of exact linear correlation between several variables (independent). To ascertain presence of multicollinearity or otherwise, the study made use of the Variance of Inflation Factor (VIF). The threshold of this test is that; a VIF that is ≤ 1 or ≥ 10, shows a multicollinearity's presence and vice versa.

iii. Heteroscedasticity

The presence of heteroscedasticity in any study can cause inefficient regression predictions hence, it requires solution (Imbens & Kolesar, 2016). The thumb rule for determining the presence of heteroscedasticity is instances when the constant variance' requirement is violated. To be precise, if the variance fails to change in a range of observations, it is referred as same scatter (homoscedasticity) whereas, the opposite is known as heteroscedasticity; different scatter. To determine whether data was heteroscedastic or not, the study employed the Breusch–Pagan test. The null hypothesis of presence of heteroscedasticity was rejected.

v. Autocorrelation test

Autocorrelation can happen when observations are dependent in aspects instead of time (Vanhatalo & Kulahci, 2016). Therefore, autocorrelation can cause problems in conventional analyses such as ordinary least squares (OLS) that assume observations' independence. An autocorrelation will help in measuring the similarity between a certain time series and lagged value over successive time periods. To resolve autocorrelation concern, the study used Breusch-Godfrey LM test (1980). The null hypothesis for BG test is that the error variances are all equal and vice versa. In particular, as Y increases, the variances decreases or increases. The test reports a statistic with values between 0 and 4 whereby, 2 is no autocorrelation.

vi. Test for Stationarity

Non-stationary test leads to false results where the test statistics exhibit a significant relationship between variables even when no such relationship exists. Therefore, performing a stationarity test is important to amend anomaly that is usually assumed to be present in panel data (Bandyopadhyay & Rao, 2017). In order to solve the problem of non-stationarity, the unit root test using Levin-Lin-chu test to find out if a unit root is present was used. The test assumes a common autoregressive parameter for all panels. If the established p-value is less than the significant level alpha, then the null hypothesis will be rejected and the alternative hypothesis accepted. The solution for non-stationary data is to transform the panel data so that it is stationary. For instance, a non-stationary process that is without a drift or random walk can be transformed into stationary by differencing (Castle, Doornik, & Hendry, 2020).

vii. Hausman test

Since the data gathered will be panel, a Hausman test was performed to inform the application and choice of fixed effects or random effects approach.

3.7 Ethical Considerations

The researcher ensured that all materials used in the study are dully cited. Further, all in text citations were referenced to avoid plagiarism. Again, the researcher ensured that no materials was directly quoted from the original authors. Secondary data will was collected from the sampled banks published websites to avoid data manipulation. The researcher ensured that the document is fully owned by paraphrasing previous researches to avoid plagiarism.

CHAPTER FOUR: PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

The current chapter presents the results for the analyzed data. The chapter begins with the results for the descriptive statistics followed by results for the diagnostic statistics. The third sections entail the presentation of results for the linear regression model.

4.2 Sample Description

The study collected data for the period between 2000 and 2020. This period was chosen because most commercial banks were registered during this time. The study could also not go below year 2000 because most commercial banks had not been registered while some of those that had been registered before the year 2000 had no reliable published financial reports. Still, some commercial banks, particularly the small tier banks lacked some data especially in most part of 2000s. However, this did not affect results since the banks that were subsequently selected as having full data from 2000 to 2020 provided reliable and valid results that led to successful completion of the study.

4.3 Descriptive Statistics

The results presented in Table 4.1 shows the descriptive statistics for all the variables included in the study. The study sought to establish the minimum, maximum, mean, and standard deviation for all the variables used in the study. The results are shown in Table 4.1.

Table 4.1: Descriptive Statistics

Variable	n	Mean	Median	StDev	Min	Max
Dependent variable						
z_score	525	1.912	1.760	1.112	0.010	7.230
Independent variables (test)						
Car	525	8.997	8.120	3.896	0.010	22.990
Aqr	525	1.480	1.330	0.867	0.004	7.947
Lrr	525	1.329	1.330	0.796	0.010	2.990
Independent variables (control)						
ln_assets	525	7.653	7.771	0.869	4.828	14.172
inflation_percent	525	0.088	0.080	0.050	0.020	0.262
Age	525	46.560	42.000	24.640	7.000	124.000
asset_growth	525	0.165	0.096	0.321	-0.377	4.763
covid-19	525	0.048	0.000	0.213	0.000	1.000
Bank assets_Kshs. millions		681,878	59,043	3,495,175	67	25,859,493

Key: car – capital adequacy requirement, aqr – asset quality requirement, lrr – liquidity requirement, ln_assets – bank size measured as log of assets

Z-Score thresholds:

Z>3.75- Financially safe zone

1.75<Z<3.75-Grey zone

Z<1.75 – Financially unstable zone

According to the results in Table 4.1, the minimum Z score for all the commercial banks was 0.01 with a standard deviation of 1.112439. This means that some of the commercial banks were financially unstable (Z score of 0.01) for the period 2000-2020. A maximum Z score of 7.23 was also reported by some banks, an indication that some of the commercial banks performed better financially (financially stable) than others for the same period. A mean of 1.912 was also reported, an indication that most of the banks were in grey zone (heading to financial instability) and this could be attributed to the fact that, majority of the commercial banks in the country during the study period were small tier banks that usually faces challenges insofar as business environment is concerned hence the low mean (grey zone) score depicted.

Further, the results show that the capital adequacy requirement ratio (CAR) had a minimum and a maximum score of 0.01 and 22.99, respectively with a standard deviation of 3.895813 with a mean score of 8.996952. From the results, it can be said that, most of the commercial banks failed to meet the capital adequacy requirement threshold set by CBK which currently stands at 18.9%. It was also found that, asset quality requirement (AQR) had a minimum score of 0.004 and a maximum of 7.947 for the study period varying at 0.866874 with a mean score of 1.48. The results imply that, most of the commercial banks failed to meet the asset quality requirement ratio set by the CBK that is currently at the 2% level.

The study also found that, the minimum score for the liquidity requirement was 0.010 while the minimum was 2.99 with a standard deviation varying at 0.795517. The results could be interpreted to mean that some commercial banks failed to meet liquidity requirement threshold of 2%.However, some banks met the liquidity threshold as shown by a maximum value of 2.99%. A liquidity requirement with a mean score of 1.328703 is an indication that most of the commercial banks did not meet the liquidity requirement threshold.

Regarding inflation rate, the study found that, the banks had a minimum inflation rate of 0.020 and a maximum of 0.262 over the years varying at 0.050 with a mean score of 0.088. On the firm size (total assets) of the commercial banks, the minimum score was 4.828 while the maximum was 14.17185 with a variation of 0.869 and an average score of 7.653. Further, it was established that some of the commercial banks had been incorporated in the industry in the last seven years while some had been in business for 124 years. This could be the reason some of the banks, especially the small tier banks had no published financial reports.

Asset growth was found to have a minimum of -0.377 and a maximum of 4.76 with a mean of 0.165 a standard deviation of 0.321. The results could be interpreted to imply that some banks had a decline in asset growth over the years while others had improvement in growth. Further, Covid-19 was found to have a minimum score of 0.000 and a maximum score of 1.00 with a mean score of 0.048 varying at 0.213. Further, the minimum and maximum bank asset was 67 million and 25,859,493 million, respectively with a mean value of 681,878 million and a standard deviation of 3,495,175.

4.4 Diagnostic Tests

In this section, the study sought to test the reliability of the regression model. The study used the normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test. The results are presented in the subsequent sections.

4.4.1 Normality test

The study used Shapiro-Wilk test to determine the reliability of data. The Shapiro-Wilk Test's thumb rule is that a value that is more than 0.05 indicate a normal distribution of data and vice versa. The results is explained in Table 4.2

Table 4.2: Normality Test

Variables	**Sig.**
Car	0.449
Aqr	0.623

Variables	**Sig.**
Lrr	0.526
firm size (ln)	0.894
infr percent	0.272
Age	0.455
z score	0.234
asset_growth	0.278
covid-19	0.123

Results in Table 4.2 shows that, capital adequacy requirement had a significant score of 0.449. Asset quality requirement had a significant score of 0.623. It also found that, liquidity requirement ratio had a significant score of 0.526 while firm size (total assets) as computed by natural log (ln) had a significant score of 0.894. Inflation rate and age of the banks also had significant values of 0.455 and 0.234 respectively. Further, asset growth and Covid-19 pandemic had significant values of 0.278 and 0.123, respectively. Based on the results, it is clear that, null hypothesis of abnormal data is rejected. This means that data is normally distributed because all the p-values for the variables are greater than 0.05.

4.4.2 Multicollinearity

The study used Variance of Inflation Factor (VIF) to test presence of multicollinearity or otherwise. A VIF that is ≥ 1 or ≤ 10 indicates absence of multicollinearity and vice versa. The results are shown in Table 4.3.

Table 4.3: Collinearity statistics

Variable	VIF	Tolerance (1/VIF)
car	1.67	0.598
covid	1.35	0.742
ln_assets	1.24	0.808
age	1.18	0.851
inflation_~t	1.17	0.854
lrr	1.15	0.870
aqr	1.09	0.917
asset_growth	1.02	0.984
Mean VIF	1.23	

In Table 4.3, results show that, capital adequacy requirement had a VIF of 1.67, asset quality requirement had a VIF of 1.09, liquidity requirement ratio had a VIF of 1.15, firm size (ln asset) had a VIF of 1.24, and inflation rate had a VIF of 1.17 while age of the firms was found to have a VIF 1.18. Further, Covid-19, had a VIF of 1.35 and asset growth had a VIF of 1.02. The average mean value is 1.23. From these results, the null hypothesis is rejected; there is no multicollinearity because the values for the VIF are more than one and less than 10.

4.4.3 Heteroscedasticity

The study employed the Breusch–Pagan test to determine whether data was heteroscedastic or homoscedastic. The thumb rule for determining the presence of heteroscedasticity is instances when the constant variance' requirement is violated. To be precise, if the variance fails to change in a range of observations, it is referred as same scatter (homoscedasticity) whereas, the opposite is known as heteroscedasticity; different scatter. The results are presented in Table 4.4.

Table 6: Heteroscedasticity

	Heteroscedasticity	
Variables	T	Sig
Constant	0.951	0.610
CAR	0.772	0.345
AQR	0.471	0.115
LRR	0.644	0.285
Total assets	0.804	0.501
INFR percent	0.943	0.746
AGE	0.567	0.243
asset_growth	0.344	0.211
Covid-19	0.543	0.312

From the results in Table 4.4, capital adequacy requirement, asset quality requirement, liquidity requirement ratio, total assets (ln), inflation rate percent, firm age, asset_growth, and Covid-19 pandemic had significant values of 0.345, 0.115, 0.285, 0.501, 0.746, 0.243, 0.211, and 0.312, respectively. Given that all the variables had significance levels >0.05, heteroscedasticity is not present. This means that, the constant variance' requirement is not violated thus the null hypothesis is rejected and the alternate one accepted.

The scatter plot test for absence of heteroscedasticity is also shown in Figure 4.1. The results in Figure 4.1 shows that null hypothesis of presence of heteroscedasticity is rejected because the scatter dots scatters are observed at one point and decreases marginally along the diagonal line hence no heteroscedasticity.

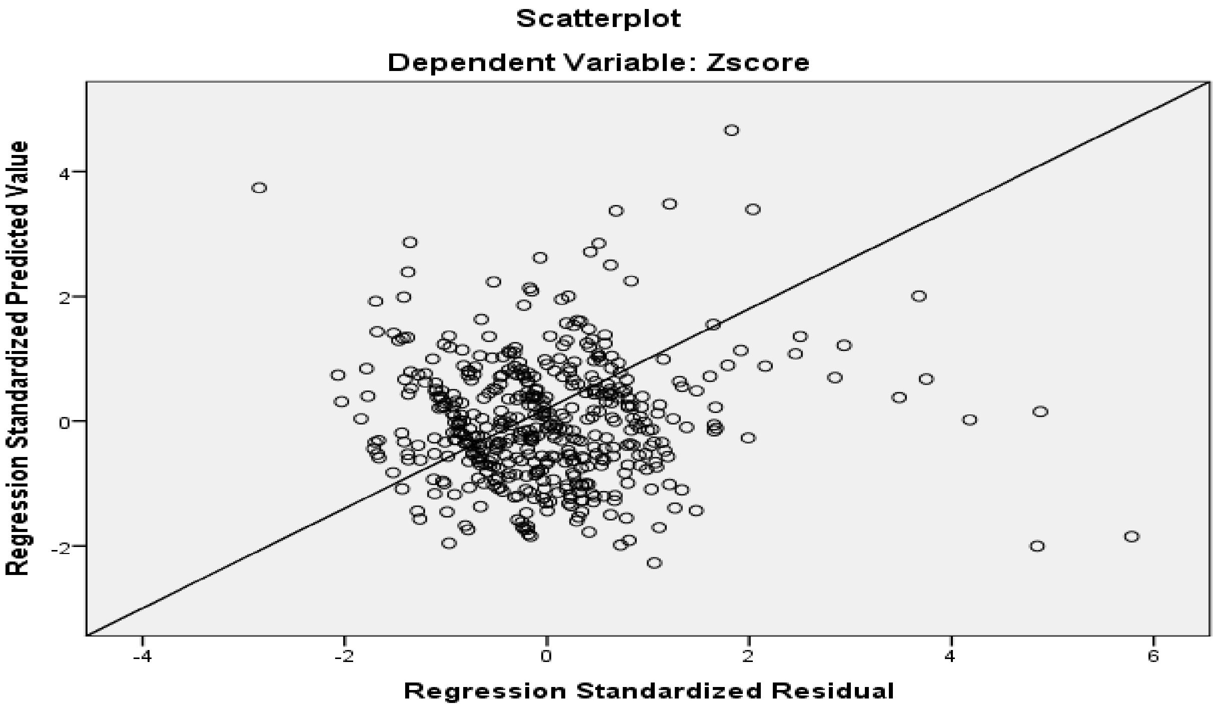

Figure 4.1: Scatter plots

4.4.4 Autocorrelation

The study used Durbin Watson test to determine autocorrelation. The test reports a statistic with values between 0 and 4 whereby, 2 is no autocorrelation. This means that where the statistic is less than 2 there is presence of a positive autocorrelation. On the contrary, values that is greater than 2 implies presence of a negative autocorrelation; absence of autocorrelation. The results are shown in Table 4.5

Table 4.5: Autocorrelation

	Durbin-Watson
Statistic value	2.031

The result in Table 4.5 shows that the autocorrelation statistic value is >2. This means that the autocorrelation was negative e and subsequently, the null hypothesis is rejected because there is no autocorrelation hence, the need to conduct regression analysis as a form of inferential statistics.

4.4.5 Tests for Stationarity

In this section, the study conducted diagnostic tests for stationarity. The results were analyzed, presented, and interpreted in table 6 below.

Table 4.6: Tests for Stationarity

Variables	Sig.
CAR	0.031
AQR	0.042
LRR	0.022
Firm size (TA)	0.018
INFR percent	0.037
AGE	0.029
asset_growth	0.041
Covid-19	0.019

Test for stationarity was also conducted using the Levin-Lin-chu test to find out whether a unit root was present. As indicated, CAR, AQR, LRR, firm size, INFR percent, firm age, asset_growth, and Covid-19 had p-values of 0.042, 0.003, 0.022, 0.018, 0.037, 0.029, 0.041, and 0.019, respectively. All the p-values were <0.05. Therefore, data are stationary at 5% level of significance, meaning there was absence of unit root tests (the null hypothesis of non-stationarity is rejected).

4.4.6 Hausman Test

The hausman tests require selecting between the random effect (RE) and fixed effect (FE) models. The null hypothesis is that the required model is the FE while the alternative hypothesis is that the best model is RE. In essence, the hausman tests attempts to determine the correlation between the model regressors and the unique errors. Therefore, the null hypothesis is; there was lack of correlation between the (FE and RE). Results are shown in Table 4.6 below.

Table 4.7: Hausman Test results

	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b Std. err.
car	0.034	0.043	-0.009	0.005
aqr	0.196	0.215	-0.018	0.008
lrr	0.236	0.228	0.008	0.011
ln_assets	-0.021	0.075	-0.095	0.069
inflation_~t	0.558	0.517	0.041	.
age	0.025	0.011	0.014	0.009
asset_growth	0.095	0.056	0.039	0.020
covid	-0.891	-0.881	-0.010	0.027

```
                 b = Consistent under H0 and Ha; obtained from xtreg.
      B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

   chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)
           =   6.63
Prob > chi2 = 0.5765
(V_b-V_B is not positive definite)
```

Given that the *p-value* >0.05, actually it is 0.5765, the null hypothesis that the RE is the most suitable model is accepted. This implies that RE is the most appropriate method that can be used for model estimation.

4.4.7: Correlation analysis

The study used Spearman correlation method to establish the association between the variables. The results are shown in Table 4.7.

Table 4.8: Spearman's correlations

	z_score	car	aqr	lrr	ln_ass~s	inflat~t	age	asset_~h	covid
z_score	1.000								

car	0.242	1.000							
p-value	*0.00*								
aqr	*0.244*	*0.186*	*1.000*						
p-value	*0.00*	*0.00*							
lrr	0.319	0.264	0.251	1.000					
p-value	*0.00*	*0.00*	*0.00*						
ln_assets	*0.241*	*0.448*	*0.189*	*0.215*	*1.000*				
p-value	*0.00*	*0.00*	*0.00*	*0.00*					
inflation_~t	-0.025	-0.318	-0.171	-0.171	-0.247	1.000			
p-value	*0.57*	*0.00*	*0.00*	*0.00*	*0.00*				
age	0.238	0.282	0.071	0.131	0.088	-0.126	1.000		
p-value	*0.00*	*0.00*	*0.11*	*0.00*	*0.04*	*0.00*			
asset_growth	-0.130	-0.141	-0.213	-0.051	-0.313	0.098	-0.060	1.000	
p-value	*0.00*	*0.00*	*0.00*	*0.25*	*0.00*	*0.03*	*0.17*		
covid	-0.076	0.335	0.033	-0.072	0.244	-0.222	0.113	-0.072	1.000
p-value	*0.08*	*0.00*	*0.45*	*0.10*	*0.00*	*0.00*	*0.01*	*0.10*	

In Table 4.8, capital adequacy requirement was found to have to a significant relationship with financial stability (Z-score) as shown by a p-value of 0.00. Asset adequacy requirement also had a statistical significant relationship with financial stability (Z-score) as indicated by a p-value of 0.00. Further, liquidity requirement was also found to have a significant relationship with financial stability as supported by a p-value of 0.000. All the correlation coefficients of the independent variables are positive. From the results, it can be said that an increase in the capital adequacy requirement, asset adequacy requirement, and liquidity requirement could lead to an increase in the financial stability of the commercial banks in the country.

Regarding control variables, total assets (*ln_assets*) was established to have a significant positive relationship with financial stability as shown by a p-value of 0.000. However, inflation rate had insignificant relationship with financial stability with a p-value of 0.57. Firm age also had a significant relationship with financial stability (p-value = 0.00). Asset growth had a p-value of 0.00, an indication of a significant relationship between the variables. Lastly, Covid-19 also had insignificant relationship with financial stability (p-value = 0.08).

4.5 Multiple linear regression

The study tested the linear regression model. The model was meant to determine the relationship between the independent, dependent and control variables. The results for the model are shown in the subsequent sections.

Table 4.9: Random effects regression results

z_score	Coefficient	Std. err.	Coefficient	Std. err.	Coefficient	Std. err.	Coefficient	Std. err.
car	0.058*** (4.11)	0.014					0.043*** (3.14)	0.014
aqr			0.247*** (4.83)	0.051			0.215*** (4.28)	0.050
lrr					0.277*** (4.78)	0.058	0.228*** (3.97)	0.057
ln_assets	0.131* (1.68)	0.078	0.175** (2.37)	0.074	0.153** (1.99)	0.077	0.075 (1.00)	0.075
inflation_percent	-0.654 (-0.79)	0.830	-0.869 (-1.07)	0.811	-0.656 (-0.80)	0.816	0.517 (0.62)	0.831
age	0.015*** (3.40)	0.004	0.017*** (4.24)	0.004	0.018*** (4.06)	0.004	0.011*** (2.85)	0.004
asset_growth	0.045 (0.35)	0.127	0.060 (0.47)	0.127	0.055 (0.43)	0.126	0.056 (0.45)	0.124
covid	-1.186*** (-5.56)	0.213	-0.769*** (-3.90)	0.197	-0.663*** (-3.32)	0.200	-0.881*** (-4.10)	0.215
_cons	-0.208 (-0.35)	0.597	-0.477 (-0.82)	0.582	-0.382 (-0.64)	0.594	-0.217 (-0.38)	0.570
R-squared:	0.129		0.152		0.117		0.189	
Wald chi^2	67.45		74.28		74.05		108.46	
Observations	525		525				525	
No. of banks	25		25				25	

Note: *, ** and *** represents significance at the 10, 5 and 1 percent, respectively. z-values are in brackets.

In Table 4.9, capital adequacy requirement was revealed to have a positive relationship with financial stability (Z-score) with a coefficient of 0.058. This could be interpreted to mean that an increase in capital adequacy by any unit can improve financial stability of the commercial banks. The study also revealed that, asset adequacy requirement had a positive relationship with financial stability as shown by a coefficient of 0.247. This mean that an increase in the variable by a single unit can lead to an increase in the financial stability of the commercial banks in the country. Further, liquidity requirement was also found to have a positive relationship with financial stability as indicated by a positive coefficient of 0.277. From the results, it can be said that any improvement in the liquidity requirement will certainly lead to an increase in the financial stability among the commercial banks. The adjusted R square was 0.129 and this could be interpreted to mean that all the independent variables had a positive change in financial stability of the commercial banks in the country.

Regarding control variables, the study found that ln_assets had a positive relationship with financial stability as indicated by Z-score (coef. = 0.131). Again, inflation was found to have a negative relationship with financial stability (coef.= -0.654). Further, firm age had a positive relationship with financial stability (coef. = 0.015). Asset_growth also had a positive relationship with financial stability (codf. = 0.045). Lastly, Covid-19 was also established to have a negative relationship with the financial stability of the commercial banks (coef. = -1.186).

Table 4.10: Fixed effects regression results

z_score	Coefficient	Std. err.	Coefficient	Std. err.	Coefficient	Std. err.	Coefficient	Std. err.
car	0.046***	0.015					0.034**	0.015
	(3.08)						(2.33)	
aqr			0.220***	0.052			0.196***	0.051
			(4.25)				(3.86)	
lrr					0.266***	0.059	0.236***	0.059
					(4.49)		(4.03)	
ln_assets	0.022	0.104	-0.010	0.104	-0.001	0.103	-0.021	0.102
	(0.21)		(-0.10)		(-0.01)		(-0.21)	
inflation_percent	-0.556	0.832	-0.546	0.815	-0.355	0.820	0.558	0.830
	(-0.67)		(-0.67)		(-0.43)		(0.67)	
age	0.033***	0.010	0.041***	0.009	0.038***	0.009	0.025**	0.010
	(3.33)		(4.64)		(4.26)		(2.66)	
asset_growth	0.093	0.129	0.119	0.128	0.109	0.128	0.095	0.125
	(0.72)		(0.93)		(0.85)		(0.76)	
covid	-1.209***	0.215	-0.899***	0.201	-0.774***	0.205	-0.891***	0.216
	(-5.63)		(-4.47)		(-3.78)		(-4.12)	
_cons	-0.096	0.638	-0.172	0.631	-0.153	0.630	-0.049	0.619
	(-0.15)		(-0.27)		(-0.24)		(-0.08)	
R-squared:	0.095		0.096		0.089		0.141	
Adjusted r-squared	0.066		0.082		0.085		0.121	
F-statistic	11.18		12.77		13.16		13.01	
Observations	525.00		525.00		525.00		525.00	
No. of banks	25.00		25.00		25.00		25.00	

Note: *, ** and *** represents significance at the 10, 5 and 1 percent, respectively. t-values are in brackets.

In Table 4.10, capital adequacy requirement had a positive relationship with financial stability as shown by a coefficient of 0.046. The results can be interpreted to imply that an increase in capital adequacy requirement could results to increased financial stability among the studied firms. It was also observed that asset quality requirement had a positive relationship with financial stability as indicated by Z-score. From the results, it is evident that an increase in asset quality requirement can lead to improvement in the financial stability among the commercial banks in Kenya. Further, liquidity requirement was found to have a positive relationship with financial stability (coef. = 0.266) and this could be interpreted to imply that an increase in the variable by any unit can lead to an increase in the financial stability of the commercial banks in the country. The R and adjusted R square were 0.095 and 0.066 respectively. The R square are positive hence an indication that the variables had a positive change in the financial stability of the commercial banks.

On the control variables, ln_assets had a positive relationship with financial stability with a coefficient value of 0.022 while inflation percent had a negative relationship with financial stability as shown by a coefficient of -0.556. Meanwhile, age was revealed to have a positive relationship with financial stability with a coefficient of 0.033 while asset_growth had a positive coefficient of 0.093 and Covid-19 was found to have a negative relationship with financial stability (coef. = -1.209.

4.6 Summary of the Chapter

Data that was collected was analyzed and interpreted in this chapter. Data was presented descriptively and using multiple regression. Various diagnostic tests were also used to determine the reliability of the regression model. The results revealed that asset quality, capital adequacy ratio, and liquidity requirement had positive impact on the stability of commercial banks in Kenya.

CHAPTER FIVE: DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

In this chapter, the research presented the discussion of the results. The discussion is based on the findings presented in the previous chapter. Conclusion and recommendations also provided. Limitations of the study also included in the study.

5.2 Discussions

5.2.1 Capital Adequacy Requirement Regulation and Financial Stability of Commercial Banks

Regarding capital adequacy requirement, the study established that capital adequacy had a positive relationship with financial stability. The results can be interpreted to mean that an increase in capital adequacy by any unit could lead to improved financial stability (increased Altman Z score) among banks. The results are in agreement with another study by Olalekan and Adeyinka (2013) that found that capital adequacy ratio as determined by percentage ratio of capital to its assets shows that both the variables were positively related to each other thus, an indication that capital adequacy is an indication of the financial soundness of the financial institutions. The results are also supported by capital buffer theory that requires banking institutions to mobilize adequate cash deposits to improve capital base so that they can be financially stable. The positivism philosophy also supports the finings because the approach point out to the relationship between the two variables. The results for the current study and the previous research is an indication that capital adequacy requirement as enshrined in the CBK regulations is good for the realization of the financial stability of the commercial banks in the country and their subsequent growths. Therefore, attaining the regulation threshold set by CBK that presently stands at the 18.9% is required for the realization of improved financial stability. In the contrary, the results contradicts another study by Mananda (2017) that established that capital adequacy had insignificant and negative relationship with financial performance as measured by return on assets. The fact that previous study supported the current findings, Mananda (2017) findings seem to disagree with the current results but this does not mean that capital adequacy requirement is not a significant effect on financial stability.

5.2.2 Asset Quality Requirement Regulation and Financial Stability of Commercial Banks

Concerning asset quality requirement regulation, the results show that, asset quality requirement had positive impact on the financial stability. This could be interpreted to imply that, an increase in the asset quality by any unit could lead to a positive change in the Altman Z score (increased financial stability) among the banks. The results resonate with the The results are in congruence with another study by Kaddumi (2015) that found that, bank`s asset quality indicators have a positive impact on the profitability and shareholders value. This means that an increase in asset quality results to increased profitability. Therefore, when profitability increases, banks become financially stable. From the results, it can be said that, for commercial banks to be financially stable, there is need for them to conform to the prudential regulation requirements, in this case, the asset quality requirement set aside by the CBK that currently stands at the 2%. The results also agrees with another study by Nzioka (2015) that found that there is a great positive relationship between asset quality and profitability of commercial banks in Kenya. The results are also supported by CAPM model that argues that, quality assets are one of the items in a bank’s portfolio that should be regulated to improve financial stability because bank portfolio consists of both assets and its liabilities. The findings are also in tandem with positivist theory that calls for presentation of quantitative to give informative meaning to the study and this was achieved by the current study.

5.2.3 Liquidity Requirement Regulation and Financial Stability of Commercial Banks

In regard to liquidity requirement regulation, it was revealed that the variable had positive relationship with financial stability as measured by Z score and also significantly related with each other. The results was interpreted to mean that a positive change in the liquidity requirements could equally lead to a positive change in the financial stability among the commercial banks in Kenya. The results could also mean that some commercial banks failed to meet liquidity requirement threshold of 2% as stipulated by the CBK. The results contradicts another study by Berríos (2013) that established that liquidity requirement was negatively related to firm performance an indication that when the financial performance increases, the firms becomes financially stable. The variation in the results could also be attributed to geographical differences and the time data was collected. Further, the methodology applied by the previous study by Berríos (2013) could have also contributed to the variation in the results. However, despite that the findings of the current research is contradicted by study by Berríos (2013), this does not necessarily imply that liquidity has not any significant effect on the financial stability of commercial banks. Shukla and Muchem (2017) established that, there was a negative correlation between liquidity requirements and ROE. This means that, a decrease in liquidity led to a decrease in ROE and this subsequently affected the financial stability of the companies. The results are also in agreement with liquidity management preference theory that tends to offer measures that can be used by banks to ensure that commercial banks have adequate liquidity requirements (third objective) to dully meet their financial obligations when due to improve their banking stability. The results are in support of positivism theory that predicted a positive relationship between the two variables.

5.3 Conclusion

The study concluded that capital adequacy had a positive relationship with financial stability thus its increase by any unit could improve financial stability among the studied commercial banks in Kenya.

The study also concluded that, both the asset quality and liquidity requirement regulations had positive significant relationship with financial stability of the studied commercial banks. Thus increased asset quality and liquidity requirement regulations by any unit could lead to a positive change in the Z score among the banks.

In regard to the control variables, the study concluded that both the firm size computed by natural logarithm (ln) and rate of inflation had a positive statistical relationship with financial stability as measured by Z-score. However, firm age had positive significant relationship with financial stability. Meanwhile, asset_growth had a positive relationship whilst Covid-19 was found to have a negative relationship with financial stability.

5.4 Recommendation

From findings the following recommendations are drawn;

5.4.1 Managerial recommendations:

The study recommends that commercial banks' management should increase their capacity in loan administration and that they should also establish clear lending guidelines. Additionally, the banks should ensure that the loan terms and conditions are conformed to during approval to reduce the chances of nonperforming that could subsequently affect conformity to asset quality requirement. Such measures will thus decrease nonperforming loans' losses thereby improving the asset quality requirement which will ultimately raise the expenses of commercial banks consequently increasing financial stability.

Further, the research also recommended that it is important for the commercial banks in Kenya to be conscious of its liquidity position in various product and service segments. Such awareness will increase their respective investment portfolio thereby offering them a competitive advantage in the financial market. This step is rightly so because it is the critical priority of any management to pay keen attention to the problems of liquidity to improve financial stability. Any liquidity problems especially among small and medium tier banks in the country should be effectively addressed, and instant remedial measures taken to prevent the consequences of commercial bank becoming illiquid.

5.4.2 Recommendations for policy

The study also recommend that the commercial banks in the country should fully comply with the set out regulations and that Central Bank of Kenya must ensure that all commercial banks must comply with their stipulated regulations. Such measures can have a positive effect thereby ensuring a financially stable banking industry that plays a critical role in the overall economic growth. As a matter of fact, as long as the financial sector is stable, the economy of the country will thrive and financial stability of commercial banks will be ascertained. Through implementation of strict regulations through newly introduced policies, the CBK will likely discover commercial banks that are struggling in the market and provide thereof remedial mechanisms before any bank collapse and depositors lose their money as the case of Chase and Imperial banks.

It is also recommended that the Treasury through CBK should formulate and subsequently ensure implementation of sound financial policies that regulates the inflation rates, interest rates spread and economic growth rates as these measures will ensure the financial stability of all commercial banks in the country.

5.5 Areas of further research

The general objective of the study was to investigate the effects of prudential regulation on banking stability of commercial banks in Kenya. The study suggest that, another study focusing on the effect of macroeconomic factors on the financial stability of the commercial banks in the country should be conducted. This is because, myriad of studies have highlighted the influence of various macroeconomic factors on the growth and subsequently the financial stability of commercial albeit with no recent studies on the same.

5.6 Limitation of the Study

The study encountered various limitations. First, some banks lacked published data for certain years and this was a challenge as such the researcher had to personally visit the affected banks for data collection. Further, some banks had not been incorporated into the market in the early and mid 2000s hence published data was lacking. To resolve these limitations, the researcher used a large sample size so that the missing data did not have to affect the outcome of the study.

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APPENDICES

APPENDIX I: LIST OF TARGETED COMMERCIAL BANKS

NO:.	NAMES	NO:	NAMES
1	ABC Bank (Kenya)	23	Gulf African Bank
2	Absa Bank Kenya	24	Housing Finance Company of Kenya
3	Access Bank Kenya	25	Habib Bank AG Zurich
4	Bank of Africa	26	I&M Bank
5	Bank of Baroda	27	Kingdom Bank Limited
6	Bank of India	28	Kenya Commercial Bank
7	Citibank	29	Middle East Bank Kenya
8	Consolidated Bank of Kenya	30	M Oriental Bank
9	Cooperative Bank of Kenya	31	National Bank of Kenya
10	Credit Bank	32	NCBA Bank Kenya
11	Development Bank of Kenya	33	Paramount Universal Bank
12	Diamond Trust Bank	34	Prime Bank (Kenya)
13	Dubai Islamic Bank	35	SBM Bank Kenya
14	Ecobank Kenya	36	Sidian Bank

15	Equity Bank Kenya	37	Stanbic Holdings Plc
16	Family Bank	38	Victoria Commercial Bank
17	First Community Bank	39	Stanbic Holdings Plc
18	Guaranty Trust Bank Kenya	40	Standard Chartered Kenya
19	Guardian Bank	41	United Bank for Africa
20	Spire bank	42	Dubai bank
21	Imperial bank	43	Suntra Investment Bank Ltd.
22	Chase bank		

Source: CBK Website (2022)

APPENDIX II: LIST OF SAMPLED BANKS

Cooperative bank of Kenya	Kenya Commercial Bank
Equity Bank Kenya	Stanbic Holdings Plc
Standard Chartered Kenya	Dubai Islamic Bank
Family Bank	ABC Bank (Kenya)
Diamond Trust Bank	Access Bank Kenya 1984
NCBA Bank Kenya	Absa Bank Kenya 1925
Housing Finance Company of Kenya	Bank of Africa1962
Bank of India 1953	Bank of Baroda 1953
I&M Bank	National Bank of Kenya
Consolidated Bank of Kenya	Development Bank of Kenya
Citibank	Habib Bank AG Zurich
Paramount Universal Bank	SBM Bank Kenya
Victoria Commercial Bank	

Source: CBK (2022)

APPENDIX III: RESEARCH PERMIT

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NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

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Date of Issue: 22/June/2022

RESEARCH LICENSE

This is to Certify that Mr.. James Otieno Osolo of Strathmore University, has been licensed to conduct research in Nairobi on the topic: EFFECTS OF PRUDENTIAL REGULATIONS ON THE FINANCIAL STABILITY OF COMMERCIAL BANKS IN KENYA for the period ending : 22/June/2023.

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APPENDIX IV: UNIVERSITY AUTHORIZATION LETTER

Strathmore UNIVERSITY

13th July 2022

Mr Osolo, James
james.osolo@strathmore.edu

Dear Mr Osolo,

RE: Effects of Prudential Regulations on The Financial Stability of Commercial Banks in Kenya.

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU Masters'** research proposal. Your application reference number is **SU-ISERC1413/22.** The approval period is **13th July 2022 to 12th July 2023.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, MTA) will be used
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 48 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 48 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to SU-ISERC.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) https://research-portal.nacosti.go.ke/ and obtain other clearances needed.

Yours sincerely,

for: **Dr Ben Ngoye,**
Secretary; SU-ISERC

Cc: Prof Fred Were,
Chairperson; SU-ISERC

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