

**FINANCIAL RISKS ANALYSIS AND PERFORMANCE OF COMMERCIAL  
BANKS IN KENYA**

**ANDREW MURIAYI JUMA**

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## DECLARATION

This thesis is my original work and has not been presented for the award of degree in any other university or for any other award.

Signature.....Date.....

Andrew Muriayi Juma

D58/CTY/PT/28128/2014

Department of Accounting & Finance

We confirm that the work reported in this thesis was carried out by the candidate under our supervision as the appointed university supervisors.

Signature.....Date.....

**Mr. Gerald Atheru**

Department of Accounting and Finance

Signature .....Date.....

**Dr. Charles Nzai**

School of Economics

Department of Applied Economics

## **DEDICATION**

I dedicate this thesis to my wife Veronica and our son Enoch and Nathan for their love, patience, understanding and moral support they have accorded me during the time I have been studying. I also dedicate this work to my parents for the good seed of education they planted in my life.

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## OPERATIONAL DEFINITION OF TERMS

- Credit Risk:** This is current or prospective risk to earnings and capital arising from Obligor's failure to meet the terms of any contract with the banking institution. When the obligor otherwise fails to perform as agreed. The most obvious are loans, acceptances, interbank transactions, trade financing, financial futures and equities
- Financial Performance:** Financial performance is the use of financial measurement for determination and comparison of the outcome of the entities function as planned and the actual outcome.
- Financial Risk Management:** This is the economic practice which the bank performs using financial instruments to manage exposure of financial risks on the firm.
- Financial Risk:** This risk involves financial loss to firms. This risk arises due to instability and losses in the financial market caused by movements in stock prices, currencies and interest rates. The financial risk for banking sector is composed of Credit risk, liquidity risk, interest rate risk and foreign exchange risk.
- Foreign Exchange Risks:** This current or prospective risk to earnings or and capital arising from adverse movement in currency exchange rates. Commercial bank loses arise from the process of valuation of foreign currency positions on both on and off balance sheet items.
- Interest rate risks:** This is the current or prospective risk to earnings and capital arising from adverse movements in interest rates. Excessive interest risk poses a significant threat to

banking institutions net income and level of interest sensitive income.

**Liquidity Risks:**

This is the tendency of the assets to be easily converted in to cash. Liquidity of the bank means that it can easily convert their assets any time to cash when it needs. The major tool for any bank is the availability of cash when demanded either in demand deposits notes and coins. The CBK regulates this by ensuring that every bank has sufficient liquid all the time.

**Risk Management:**

This is the process of identifying, analyzing and either accommodating or alleviating of uncertainty in investment decision making. It is made up of determining the existence of risks and handling the risks in the best way possible.

## ABBREVIATIONS AND ACRONYMS

<b>AMFI:</b>	Association of Microfinance Institution
<b>ANOVA:</b>	Analysis of Variance
<b>BIS:</b>	Bank of International Settlements.
<b>CAR:</b>	Capital adequacy Return
<b>CBK:</b>	Central bank of Kenya.
<b>CBK:</b>	Central bank.
<b>CEO:</b>	Chief Executive Officer
<b>COSO:</b>	Committee of Sponsoring Organizations
<b>CRB:</b>	Credit Reference Bureau
<b>EBIT:</b>	Earnings Before Interest and Taxes
<b>ERM:</b>	Enterprise Risk Management
<b>FRM:</b>	Financial Risk Management
<b>GDP:</b>	Gross Domestic Product.
<b>HPR:</b>	Holding Period
<b>KCB:</b>	Kenya Commercial banks
<b>MFIS:</b>	Micro Finance Institutions
<b>NIM:</b>	Net Interest Margin
<b>NPLR:</b>	Non-performing loans Ratio
<b>NSE:</b>	Nairobi security Exchange
<b>RAROC:</b>	Risk adjusted return on capital
<b>ROA:</b>	Return on Assets
<b>ROE:</b>	Return on Equity
<b>SACCOS:</b>	Savings and credit cooperatives societies

**SPSS:** Statistical package for social sciences  
**SQRT:** Square root of time  
**STD:** Standard deviation  
**USD:** United States dollars  
**VAR:** Value at Risk

## ABSTRACT

Commercial banks in Kenya often record inconsistent financial performance with some ending up under statutory receivership due to inability to meet their commitments to the stakeholders. Central Bank of Kenya usually put sound risk management guidelines to be followed by all the commercial banks yet losses are experienced in the banking sector. This study sought to investigate the effects of financial risks on performance of Commercial banks in Kenya. Specifically, the study sought to determine the effect of Liquidity risk, credit risks, interest rate risks and foreign exchange risks on return of assets of commercial banks in the country. The study was anchored within, enterprise risk management theory and adopted explanatory research design. Financial performance of commercial banks was assessed in terms of return on assets where secondary data of the 42 commercial banks was collected for six years from 2010 to 2015. The source data collected was annual reports and financial statements of the commercial banks and Central Bank of Kenya and was analyzed by use of statistical panel data model. Diagnostics tests such as multicollinearity, autocorrelation and heteroscedasticity tests were performed to eliminate unbiasedness. The study found out that liquidity risk and return on assets are positively and significantly related ( $\beta=0.039$ ,  $p=0.000$ ). Credit risk and return on assets were negatively and significantly related ( $\beta=-0.014$ ,  $p=0.041$ ); interest rate and return on assets were positively and significantly related ( $\beta=0.002$ ,  $p=0.000$ ) while foreign exchange risk and return on assets were negatively and significantly related ( $\beta=-0.003$ ,  $p=0.000$ ). The study concluded that liquidity risk and interest rate have a positive and significant effect on performance while credit risk and exchange risk have a negative and significant on performance of Commercial banks in Kenya. Based on the findings and conclusion, the study recommended that commercial banks to have a sound process for measuring, identifying, controlling and liquidity risk. It is essential that banking corporations have a comprehensive risk management process in place and that is subject to appropriate board and Senior Management oversight. Commercial banks should also determine the risk appetite of its key stakeholders such as directors. The study also recommends that commercial banks should explore avenues to enhance capacities within banks for managing interest rate risks. Lastly, the study recommends the use of Forward exchange contract. Forward exchange contract helps businesses to cushion from the adverse shifts in exchange rates by fixing an exchange rate until future date.

# CHAPTER ONE

## INTRODUCTION

### **1.1 Background of the Study**

Commercial Banks are the key contributors of economic growth globally (Cavusgil, Knight, Riesenberger, Rammal & Rose, 2014). They play a vital role of economic development by collecting savings from entities that have idle surplus funds and mobilize savings of investment in industrial projects. Commercial banks provide capital needed for development to entrepreneurs starting businesses, they give direct loans to the government, provide managerial advice to small scale businessmen and also provide payment services to its clients. Economic development of any country is determined by the activities of the commercial banks. Banking sector globally serves both surplus and deficit units by channelizing a variety of services.

The Global Financial crisis impacted banking systems worldwide. Various markets reported a fall in growth of Bank credit. Return on Assets (ROA) of Banks (indicator of Banking system's profitability and soundness) showed variation during the period 2006, initially reducing and thereafter improving by the year 2010 on account of recovery post crisis. In 2016, the global commercial bank performance measured in terms of ROA showed that the average in France was 0.4, Germany 0.3, Greece 1.0, Italy 0.7, Japan 0.7, United Kingdom 0.4 and United States 1.2. Under emerging economies, financial performance measured as ROA was 3 in Russia, 0.9 in China, 0.9 in India, 1.5 in Malaysia and 3.4 in Brazil (Shukla, 2016).

Bank plays a very key role when it comes to allocating limited savings in the society in the most investments that are most productive, and facilitate the allocating of the risks efficiently among the investments (Diamond & Dybvig, 1983). Financial crisis depicted that changes in the process can lead to disrupted economies worldwide. The financial crises also revealed bank regulations importance in hedging against higher risks attributed to bank's financial position imbalance.

Mishkin, (2000) asserts that every nation should have Central bank whose major responsibility is to ensure that inflation is controlled to avoid devaluation of Kenyan currency hence stabilizing the economy. Central Bank (CB) ensures that the commercial banks are well governed to protect the loss of funds from its citizens. CB is the body that is obligated to licensing and to regulating banks thereafter meeting all the requirements and has the power to withdraw license from any bank that does not comply with its regulation. The efficient management of the bank determines its stability. One of the regulations is that all commercial banks should adhere to sound financial risk management.

Reinhart and Rogoff (2008b) contents that the defaults in emerging market economies tend to rise sharply when many countries simultaneously experience domestic banking crises. In addition there are evident symptoms of chronic failings such as high inflation and currency debasement despite the mandate of fiduciary banks controls. According to the Ninth Edition Global Risk management survey by Delloite University Press risk data and technology systems continue to pose challenges (Sumner 2000). This study intended to shows that besides many banks worldwide embedding risk management practices , a lot needs to be done to iron out the inefficiency so as to improve profitability. The effect of inadequate practice is manifested in the non-performing loans, frauds, money laundry, and cybercrimes among other vices caused by lack of risk management culture

Ara, Bakaeva and Sun (2009) portends that Basel II standard is about how much capital commercial banks need to put aside against the numerous risks facing them. Basel II seeks to achieve this by setting up meticulous risk and capital management requirements aimed at ensuring that a bank holds capital reserves that is appropriate to the risks that commercial banks are exposed to. This implies that the greater the risk the greater the amount of capital required especially when commercial banks are competing with each other in the market.

Prior to the 2007-2008 financial crisis many countries banking sector had excessive on- and off balance sheet leverage built up together with gradual erosion of banks' capital base level (Bank of International Settlements (BIS), (2009)). Consequently the banking industry did not absorb the credit losses, trading systematically nor deal with the off-

balance sheet large intermediation exposures that occurred in the banking system. To address the financial crisis problems, bank regulatory authorities worldwide embarked on important reforms of the prudential framework internationally in the banking industry in order to ensure global capital strengthening and regulations on liquidity to create a banking sector that is resilient and ensure financial stability (BIS, 2009; Naceur and Kandil, 2009; Financial Service Authority, 2009).

The global financial crisis showed bank regulations importance in hedging against higher risks due to banks 'imbalance. Stulz (2008) suggested that there exists five methods that systems in financial risk management breaks down, as learnt from the major global crisis and other minor ones: risks miss-measurement, use of inappropriate risk metrics; not taking risks already known into account; not communicating risks to the management; failure to monitor and manage risks. Central Bank Supervision Report, 2008 indicates that many banks that collapsed in Kenya in the late 1990's were as a result of the poor management of credit risks which was portrayed in the high levels of nonperforming loans. It is important therefore to study how banks are managing the broader financial risk.

As at 31 December 2015 the financial performance aspects of commercial banks as well as financial risks management in Kenya was guided by the CBK prudential guidelines issued in January 2015. Commercial banks in Kenya were required by CBK to submit audited annual reports which include their financial performance and in addition disclose various financial risks in the reports including credit risk, interest rate risk, foreign exchange risk, liquidity risk as well as capital management risk on a yearly basis by 31 March of every year. The Kenyan banking sector registered improved performance in 2015 by registering a 15.9 percent growth in total net assets from Kshs.2.33 trillion in December 2014 to Ksh.2.70 trillion in December 2015. (Source: Central Bank of Kenya).

The Central Bank of Kenya (CBK) said that more than 90% of banks in the country reported loss reduction due to increase in risk management and most reported that there was increased risk awareness in the institutions. In a survey of banks and mortgage institutions in Kenya, the CBK contacted 43 significant institutions to "assess the adequacy and impact of risk management guidelines" the central bank had issued in

2005. The development of risk management as an autonomous function in particular has been rapid, with 95% of institutions surveyed saying they had created “independent and well-funded risk management functions”.

### **1.1.1 Financial Risks**

According to Bessis and O'Kelly, (2015) risk is an uncertainty measure of the future payoff of an investment, measured for some time horizon relative to a certain benchmark. This implies that risk is a measure that can be quantified especially when comparing two potential investments one would want to identify and desire the less risky investment. Commercial banks are usually faced with financial risks which if not mitigated will result into heavy losses that will eventually spread to other banks culminating into a bank run. Kenya commercial banks are full of diversified business activities that operate in a highly volatile and also competition intensified market environment. Volatility of interest rates has triggered interest rate war which puts the banks earning at risk thus inherit interest rate risk exposure hence there is a need to put interest rate within acceptable parameters (Charumathi, 2008). This risk involves financial loss to firms. The financial risk for banking sector is composed of Credit risk, liquidity risk, interest rate risk and foreign exchange risk.

Financial risk management is the process of identifying, analyzing and either accommodating or alleviating uncertainty in investment decision making. It is made up of determining the existence of risks and handling the risks in the best way possible. Risk management can be done when one buys government bonds which are risky free as opposed to one buying government debt and pay interest or the fund manager hedging currency exposure using currency derivatives (Cassard & Landau, 1997). This practice is usually done by firms in order to maximize the profit of an organization. Every organization should have its own measures put in place to control risk such as business and financial risks. Insurance firms usually compensate its clients back to the financial position before the losses occurred. Some of the risks are usually natural and may never be controlled like fire, accident and even life assurance. In the event of any occurrence one is compensated (Brouwers & Ekenberg, 2002).

Commercial banks perform financial risk management using financial instruments to manage exposure of financial risks on the firm. The effective management of these risks exposure will maximize the profit of the bank. Stulz,(1984) portends that lack of financial risk management will result to variability in the amount of money raised externally, amount of investments which will lead to diminishing marginal returns of investment which may in turn make them to loss trust in management. The above effect will imply that the shareholder of the firm will not be able to get dividend. It is the responsibility of every bank to come up with a program of financial risk management function that can be able to identify risk, develop risk assessment tool, establish policies, practice and other control mechanism that can monitor risky areas and immediately report the results of every risk.

Financial risks management have been developing to match the different risks characteristics and for assessment. Financial Risk Instruments are said to be derived from the asset underlying, like commodities, metals and oil or financial assets, they are all regarded as derivatives, (Chisholm, 2011). Forwards, Futures, swaps and options are the derivatives first generation (Berk, 2009). The four major categories form the basis of other derivatives. The financial risk derivatives depicts the performance contract is shifted to a date in future while the specifications are made in the present time (Berk, 2009). Risks can be partly or fully be transferred to a third party who has the capability for particular kind of risk or faces an opposite risk exposure so as to neutralize the risk (Triantis, 2000). A company may decide to hedge risk position partly or in full, it requires to be studied to determine which instrument fits the company purpose. Forwards, swaps and swaps form the linear instruments. When the cash flow development is a linear function they are used to develop the risk factor, e.gto secure export and import transactions and exposures in interest rate (Bartram, 2004). All the instruments are binding for contract parties. When the contract is made, all parties know what they will receive when (Chisholm, 2011).

The Study will concentrate on the four main types of financial risks which are credit risk, liquidity risk, interest rate risk and foreign exchange rate risk. Price risk will not be discussed in this study due it its effect on the entire countries economy as opposed to

commercial banks in the commercial banks. Financial crisis has been the outcome of unsound financial risk management implemented by the financial and non-financial institutions. In commercial banks financial misadventures is not a new phenomenon, but the speediness in which financial institution can be troubled. The closure of some commercial banks by CBK is not a drop of water in the commercial banks of Kenya circles but a wakeup call towards embedment of the financial risk management by the said institutions. Various studies similar to this study have been done and continue to be done till the commercial banks heed and accept to change for the betterment of our economy.

Interest rate risk is based on variation of interest rates and is viewed in various ways. One way is through variation in interest rates while combining with various short-term funding and loans. A rise in the rate of interest leads to high interest variable payments loan rate and funding follow up is more expensive. This leads to decreased earnings which can lead to financial distress. The other case refers to cash positions of the company with interest rate that is variable (Bessis 2015). According to Alessandri and Drehmann (2010) interest is the prospective or current risk of capital and earnings arising from adverse interest rates movements. Excessive interest risk poses a significant threat to banking institutions net income and level of interest sensitive income. Putnam (1984) contends that due to high and uncertain inflation which occurs in 1960s the long run cost of debt become uncertain due to strong correlation that is evidenced in the long term among inflation rate changes and movements in the interest rates. Changes in inflation are directly related to interest rates, therefore in managing firms interest rates the changes in the rate of inflation should certainly know.

Exchange rate risk arises when a company is involved in international business and the cash flows are in a foreign currency. As exchange rate is flexible and may not be fully predicted as any change in a foreign exchange rate causes change in risk of changes payable and receivable amount and change in receivables and payables (Krapf & Giaccotto, 2015).

According to Huang, (2012) Foreign exchange risk is prospective or current risk to capital and earnings brought by movement in rates of currency exchange. Commercial

bank losses arise from the process of valuation of foreign currency positions on both on and off balance sheet items. The most common types of exchange rate exposure are economic exposure and accounting exposure. Accounting exposure is the domestic value uncertainty of net accounting position at a particular time denominated in a foreign currency. The exchange rate change brings forth new accounting measurement of the firm's liabilities, assets, expenses and revenues initially measured in gains or losses. Economic exposure is another form of exchange rate exposure that arises due to fluctuation of currency and price leading to alteration of future expected revenue. Accounting exposure can be quantified while economic exposure is inevitably subjective.

Cornell and Shapiro (1983) contend that most of the existing corporate risk management programs are not adequate or effective but are responding to traditional financial management. Foreign exchange risk has a negative effect on the firms expected cash flow hence as a company's total exposure to risk rises the cost of operating the business also rises reducing its prospects for survival Shapiro and Titman (1985).

Liquidity risk affects an institutions capital or earnings coming from its lack of ability to hit its obligations when they fall due and not incurring major losses .Liquidity risk can lead to insolvency of the firm like what happened to Dubai and Imperial banks. In Kenya the effect of liquidity of one bank may result to loss of confidence of other banking institution resulting to bank run. This is because if citizens trust in the bank and one is affected he/she will tell others and everybody will withdraw all their money from the banks (Acharya, Schaefer, & Zhang, 2015).

Greuning & Bratanovic(2009) portends that a bank experiences liquidity risk when there is inability to accommodate effectively the deposits redemption and other liabilities. Liquidity risk is currently faced by most banks including Kenya Commercial banks due to very high number of people applying for loans which are not available in the banks. Listed commercial Banks in turn increase the interest rates so as to limit the number of loan applicants, this shows that financial risks replicates to different forms of risks hence lowering the profitability of the banks.

A credit risk is the prospective and current risk to capital and earning due to failure by obligor's to meet the terms of the banking institution contract. When the obligor otherwise fails to perform as agreed. The most obvious are loans, acceptances, interbank transactions, trade financing, financial futures and equities (Rogers, Rucks & Swindler, 2015). This risk entails non-performing loans that is usually experienced by every bank because it is a major source of income. Every bank has the policies put in place in order to hedge it from affecting the profits of the bank. However since it is major channels of income banks usually ignore some of credit techniques so as to make as many sales as possible at the end they make losses due to lack of adherence to policies of risk management guides by CBK. This ignorance is usually culminated to poor financial performance. The existence of Credit reference bureau (CRB) has also promoted to this vice because the bankers tend to believe that customers will not default for fear of being blacklisted. CRB is a long term control mechanism which should not be substituted by financial risk management.

Liquidity is the tendency of the assets to be easily converted in to cash. Liquidity of the bank means that it can easily convert their assets any time to cash when it needs. The major tool for any bank is the availability of cash when demanded either in demand deposits notes and coins. The CB regulates this by ensuring that every bank has sufficient liquid all the time.

According to Devinaga (2010) banks in Kenya supposed to keep liquidity assets at a particular level. This regulation ensures that the commercial banks possess sufficient liquidity to handle bank runs if it occurs. Dubai bank and Imperial bank were closed down by CBK due to lack of sufficient funds to run.

### **1.1.2 Financial Performance**

Financial performance is the use of financial measurement for determination and comparison of the outcome of the entities function as planned and the actual outcome. It aids management to understand whether the resources of the firm are properly utilized to add economic value to the firm and in turn increase the shareholders' value in terms of dividend, and capital gain. Financial performance components used are profitability,

Return on assets, operational efficiency, and return on equity. Financial performance is the subjective measure of how an organization uses its primary mode of business to generate revenue (Delaney, McManus, & Lamminmaki 2015). It also refers to the firms overall financial health over a given period of time (Kahuria &Waweru, 2015).

Financial performance is measured by how better investors and shareholders are at the end of the period than they were at the start. It is usually determined by using ratios from statements that is statement of comprehensive income and financial position as well as data on securities prices .The results enables the firms to compare based on the previous periods and compare with other firms of similar business (Graca, Barry &Doney 2015).This study assessed intends to assess liquidity, credit ,Interest rate risk and Foreign exchange risks as independent variables and how they influence financial performance of commercial banks. Liquidity risks involve lack of enough securities that can easily be converted to liquid that is desirable by investors in the bank. Its inadequacy will mean loss of sales hence affecting the profitability of the firm. Market risk involves high interest rate among others which will cause investors to look for alternative products hence reducing loan portfolio sales. Credit risk affects the financial performance when the firm has many nonperforming loans that do not have guarantors or securities for the company hence lowers the financial performance of the firm. Financial performance is the indicator of how healthy the organization is in terms of profitability, asset base and the number of branches the organization has.

### **1.1.3 Commercial Banks in Kenya**

Kenya commercial banks are governed by the Companies Act Cap (489) Banking Act Cap (488) and the CBK Cap (491) Including prudential risk management guidelines. Commercial banks were liberalized in 1995 and the exchange controls lifted. There are 42 commercial banks, 12 deposit taking microfinances banks, 30 non-regulated credit only microfinance institutions 199 registered savings and credit cooperatives (SACCOS) and 5 mobile money operators. Furthermore there are 10 banks listed in the NSE after meeting the requirement of registration.CBK prudential guidelines protect commercial banks from liquidity stress which may lead to financial distress culminating to a financial

crisis in the banking industry. CBK Licenses both local banks and new entrants to promote economic growth of the country.

According to banking survey, 2009 Kenya commercial banks are classified into three tier groups. Tier group one has an asset base of ksh.40 billion and consist of eleven commercial banks; tier group two has an asset base of between ksh.40 billion and ksh.10 billion and consist of eleven commercial banks while tier group three has an asset base of less than ksh.10 billion.

According to The Kenya financial stability report, (2015); Kenya's financial sector has experienced tremendous growth in the Gross Domestic Product (GDP). In 2015, financial sector's assets as a share of nominal GDP was 83.27 per cent compared to 88.41 per cent in 2014, with a decline attributed to exclusion of assets for three banks placed under receivership. Market Capitalization for all listed and actively trading equities at the Nairobi Securities Exchange (NSE) accounted for 32.27 per cent as at the end December 2015 compared to 42.61 per cent at the end December 2014, reflecting a decline in shareholders' wealth due to fall in share prices. In terms of the proportions by each sub-sector, the total banking sub-sector including Microfinance banks' assets accounted for 56.11 per cent; the Pension subsector accounted for 13.08 per cent; Insurance industry accounted for 7.90 per cent; and SACCOS subsector accounted for 5.59 per cent, respectively of nominal GDP by end December 2015. It is evident that there has been inconsistent and uneven financial performance of commercial banks with the top five performing exceedingly well and the bottom five commercial banks performing poorly.

## **1.2 Statement of the Problem**

Financial risks have led to the decline in the performance of commercial banks in Kenya. In 2015, financial sector's assets as a share of nominal GDP was 83.27 per cent compared to 88.41 per cent in 2014, with a decline attributed to exclusion of assets for three banks placed under receivership. Market Capitalization for all listed and actively trading equities at the Nairobi Securities Exchange (NSE) accounted for 32.27 per cent as at the end December 2015 compared to 42.61 per cent at the end December 2014, reflecting a decline in shareholders' wealth due to fall in share prices.

There has been a sharp rise in nonperforming loans and bad debts in commercial banks. Credit risks are not well managed culminating to fluctuating performance of commercial banks. This has not only affected commercial banks but other financial institutions in Kenya making managers of commercial banks to liaise with the credit reference bureau before lending loans. The ratio of gross non-performing loans to gross loans increased from 9.2 percent in December 2016 to 12.3 percent in December 2017. The outstanding value of non-performing mortgages increased from Ksh.22.0 billion in December 2016 to Ksh.27.3 billion in December 2017. As a result credit risk increased. The slowdown in economic activity affected debt servicing across the sectors, as well as overall asset quality in the banking sector. This was reflected by the increase in the ratio of non-performing loans from 9.3 percent in 2016 to 12.3 percent in 2017 (Bank Supervision annual Report, 2017).

Despite Central bank of Kenya providing prudential guidelines to guide commercial banks manage and improve their return on assets but some commercial banks have experienced liquidity risks making them unable to raise sufficient funds to fulfill their obligations resulting to statutory receivership. Imperial bank was one of the victims that were put to statutory receivership regardless of how well it was capitalized.

Commercial banks are affected by interest rate risks whereby rates of borrowing and lending have caused banks to lose money thereby leading to poor performance return on assets. Kenya commercial banks are involved in international business and have branches and parent commercial banks abroad.

Financial risk management has gained an important role for financial institutions. In today's dynamic environment, nothing is constant but risk. Managing financial risk involves setting appropriate risk environment, identifying and measuring the insurances risk exposure, mitigating risk exposure, monitoring risk and constructing controls for protecting the insurance companies from financial risk (Tcankova, 2002). The government of Kenya and private sector has provided a very conducive environment and invested heavily in the banking sector, as a result commercial banks have performed exceedingly well. However, some commercial banks such as Dubai commercial bank, Imperial commercial bank and Chase bank have experienced fluctuating financial

performance to an extent of being put under statutory receivership by Central Bank of Kenya.

The global financial crisis disclosed the bank regulations importance to hedge risks responsible for banks imbalance. Stulz, (2008) stated that there various ways through which systems of financial risk management systems can go down, as noted from the global crisis and the most recent ones were failure to adopt the right risk metrics; miss-measurement of existing risks; not taking existing risks into account; not communicating risks to the overall management; not managing and monitoring risks. Central Bank Supervision Report, 2008 indicates that many banks that were collapsing in Kenya in the 1990's were due to credit risks poor management as indicated by the high levels of nonperforming loans.

A number of research studies in Kenya have attempted to address the issues of financial risk which have been studied in piece meal manner. They have addressed the different components of financial risk individually. For instance, Fredrick (2012), Kargi (2011), and Kithinji (2010) and researched on credit risk while Abid and Mseddi (2004), Gatsi et al., (2013), Nimalathasanet *al.*, (2012) and Wachiaya (2011) studied on market risk. Akhtar (2011), Said (2014) and Ogol (2011) studied on liquidity risk. By tackling the risks individually these studies fail to acknowledge the effect of financial risk on the financial performance of commercial banks. It was important therefore to study how banks are managing the broader financial risk.

### **1.3 General Objectives of the Study**

The General objective of this study was to investigate the effect of financial risks on performance of commercial banks in Kenya.

#### **1.3.1 Specific Objectives**

- 1 To determine the effect of Liquidity risk on performance of commercial banks in Kenya
- 2 To determine the effect credit risks on performance of commercial banks in Kenya
- 3 To determine the effect of interest rate risks on performance of commercial banks in Kenya.

4 To determine the effect of foreign exchange risks on performance of commercial banks in Kenya.

#### **1.4 Research Hypotheses**

**H<sub>01</sub>:** There is no statistically significant relationship between Liquidity risk and performance of commercial banks in Kenya.

**H<sub>02</sub>:** There is no statistically significant relationship between credit risks and performance of commercial banks in Kenya.

**H<sub>03</sub>:** There is no statistically significant relationship between interest rate risks and performance of commercial banks in Kenya.

**H<sub>04</sub>:** There is no statistically significant relationship between foreign exchange risks and performance of commercial banks in Kenya.

#### **1.5 Significance of the Study**

The study is of great benefit to the management of commercial in Kenya. The managers in all commercial banks will clearly understand more on impact of financial risk on the financial performance of commercial banks in Kenya. These study findings may aid policy makers of commercial banks to assess the success and failure of policy initiatives related to financial risks and supervision by Central Bank of Kenya and their effects on clients' fund and financial performances. When the financial risk managers of investment bank understand the effect of financial risks on financial performance they will be able to make policies that seek to improve the financial performance of the banks and advise them accordingly.

The study will have great benefit to the government and regulatory bodies. It will help the regulators to understand the scope to financial risks and how to strengthen the systems in the financial industry in terms of policies to determine the adequacy of the risk management provided for by the regulator.

The results of study may enable the shareholders to maximize their returns on investment since they have financial risk managers who are so informed to guide them make

informed choices of investment. Shareholders usually have the money to invest but are not informed on how the clients respond on the performance of the bank.

The results of the study will form a reference point for future scholars studying financial risks on financial performance of commercial banks in Kenya.

### **1.6 Scope of the Study**

This study focused on how credit risks, liquidity risk and interest rate risks and foreign exchange influenced financial performance of the commercial banks in Kenya. The study covered 42 commercial banks in Kenya. The study covered a period of six years from 2010 to 2015. The study was conducted in 2018.

### **1.7 Organization of Study**

The paper is organized in such a way that Chapter One will entail of the study background, problem statement, study objectives, study hypothesis, study significance, scope of the study and limitations encountered in the course of the study. Chapter Two comprises of Literature review of financial risks on financial performance of commercial banks in Kenya Empirical review, summary of literature review, knowledge gap and conceptual framework. Chapter Three was composed of Research philosophy, research design, target population, study variables, operationalization and measurement, sampling design and techniques, data collection, data collection procedure, analytical model, Data analysis, diagnostic tests and ethical consideration. Chapter Four is composed of Descriptive statistics and Trend analysis diagnostic tests, correlation analysis regression analysis, and Hypothesis testing. Chapter Five is composed of summary of findings, conclusions, recommendations and areas of further studies.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The chapter discusses theories and analysis of the reviewed literature relevant to the subject of the study. It will provide the reader with an account of the theoretical grounds of the research problem being studied. The specific areas covered under this chapter are empirical review, theoretical review, the conceptual framework and the research gap.

#### **2.2 Theoretical Review**

The section explains some of the specific theories that can be related to the topic of study on risk management and effect it has on the financial performance of organizations. The theories are Agency Theory, Stakeholder theory, Enterprise Risk Management, International Fisher Effect Theory as discussed below:

##### **2.2.1 Agency Theory**

The agency theory was put forward by Jensen and Meckling in 1976. Agency theory refers to a set of propositions in governing a modern corporation which is typically characterized by large number of shareholders or owners who allow separate individuals to control and direct the use of their collective capital for future gains (Percy, 2013). The agency theory is concerned with reducing the agency problem which will lead to increase value maximization. It provides a direct link between corporate governance and financial performance. Meckling (1976) on agency theory, argue that a firm is made of binding contracts between the owners of factors of productions and agents. Information asymmetry is the most common problem between the principal and the agent. The theory therefore suggests that to balance the demands of the parties' information flow between them must be enhanced.

This theory applies to the study in the sense that when the demands of the owner are made agency costs are minimized. Agency costs can cause a firm to experience financial problems that leads to liquidity risks which undermines the normal operations of the bank for case. The theory supports the decision making role of the top management to ensure

commercial banks and its employees adopt the best financing strategies and optimally utilize the resources within the organization to reduce the bad effects of liquidity risks.

### **2.2.2 Stakeholder Theory (Freeman 1984)**

This theory was founded by Freeman in (1984) as a managerial instrument that addressed morals and values in managing an organization. This theory argued that there are other parties involved in the operation of any organization including employees, customers, suppliers, financiers and governments that have interests in the organization. Stakeholder theory underpins the study by identifying the interested parties who are affected when the financial risks either benefit the company or deprives the value of the company.

According to Hill and Jones (1992), stakeholders refer to groups of constituents who have a legitimate claim on the firm when under liquidation, this could be creditors, or financiers hence this theory is linked to resource based view of strategic management theory. This implies that the financial risks can affect all the stakeholders who are legitimate claimants of the returns of the firm.

Zingales,(2000) posits that employees of the firm have the capacity to affect the of debt financing and credit ratings on any firm depending on how they are managed .The employees who have the right skills can be able to increase the financial performance of the firm based on the way they manage the resources. This is evidenced on the loan managers who apply the suitable techniques while offering loans to the clients so as to avoid non-performing loans.

Satisfied credit officers will execute credit techniques more efficiently and reduce credit risks substantially than unskilled credit officers. Employee relations affect bondholders through their influence financial risks. Companies with sound competitive employment practices are likely to enhance the capacity of the firm to generate higher and stable cash flows which will in turn boost financial performance of the firm.

According to Klimczak, (2005) corporate risk management practices lead to decreased expected costs, and high company value. Therefore stake holders provide new insights into possible rationale for risk management. Commercial banks can mitigate the

possibility of financial distress by hedging variability in earning through finding how financial risks are related to financial performance of the firm.

For example, while shareholders generally define value in financial terms, others stakeholders may seek benefits such as the satisfaction of pioneering a particular breakthrough, supporting a particular kind of corporate behavior or where the owner is also the operator, working in a particular way. It means stakeholders have non-equity stakes which requires management to develop and maintain all stakeholder relationships, and not of just shareholders. This suggests the need for reassessing performance evaluation based on traditional measures of shareholder wealth and profits by including measures relating to different stakeholder groups who have non-equity stakes. Nonetheless many firms do strive to maximize shareholder value while, at the same time, trying to take into account the interest of the other stakeholders.

### **2.2.3 Enterprise Risk Management Theory**

A company can employ risk management through two major ways by either managing risk separately, or by managing all the risks together. Managing of risks together is referred to as enterprise risk management (ERM). According to Tseng (2007), Enterprise Risk Management (ERM) focuses on a consistent and systematic proven approach to manage various risks in a company is exposed to. Gordon et al. (2009) explains ERM as the way an organization's exposure is managed to uncertainty by emphasizing on managing and identifying the events that could be preventing the organization from reaching its goals. ERM is applicable in all management levels of the firm.

According to Committee of Sponsoring Organizations (COSO) (2004), Enterprise risk management is a way, that the management, board of directors and other staff in the organization effects. ERM identifies potential events that might hit the organization, is applied across the enterprise in strategy setting, management of risk within the risk appetite, and provide reasonable assurance towards entity objectives achievement.

ERM looks at various methods that an organization's risk manager can concentrate on intellectual assets, people, brand values, skills, business expertise, the regulatory environment, principle source of profit stream (Searle, 2008). This helps an organization to balance business pressures like delivering success to stakeholders and manage risks to

sustain the business. The risk constantly monitors the risk exposure and is positioned to change strategy and ensure risk is at manageable level. The theory is applicable to the study by outlining the steps of managing financial risks.

#### **2.2.4 International Fisher Effect Theory (Irving Fisher 1930)**

This theory was developed by Irving Fisher in his journal *The Theory of Interest* (1930) which postulated the inflation rate and nominal interest rate relationship stating that that inflation rate is explained by nominal interest rate after a long time hence real interest rate is a constraint in the long run without being affected by inflation expectations. The emphasis of this theory in the banking sector is due to differences in the supply and demand of currencies which involves changes in price, thus its exchange rate. Commercial banks are highly affected by foreign exchange rate risk due to: international commerce, investment, arbitrage and speculation (Gonzales, 2000).

Kozikowski, (2000) portends that the currencies exchange rates shows weaknesses of the interest rates with regard to risk free instruments of various currency alternative. Countries whose currencies are faced by the challenge of high interest rates in the markets should appreciate with time.

Madura, 2010 contents that foreign currencies bearing high interest rates usually depreciates due to high nominal interest rate due to prospect of high rate of inflation .Many industries always use commercial banks as a platform to fix future rates in forward contracts so as not to suffer from foreign exchange loss, this has made banks to engage foreign exchange trade and gain spread as gains. The theory is applicable to the study by explaining the relationship existing inflation rate and nominal interest rate and how they existing inflation rate and nominal interest rate influence financial performance of commercial banks.

## **2.4 Empirical Review**

### **2.4.1 Liquidity Risk on Financial Performance of commercial Banks**

Financial risks is the possibility that many risks such as liquidity, credit, interest risk and foreign exchange risks may cause the financial institution to close down due to lack of implementation of risk management practices as stipulated in the prudential risk management guidelines of CBK 2013. According to Drehman and Nikolaou, (2001), Liquidity risk is the possibility that the bank will not be able to settle obligations with in time hence making it vulnerable to closure by CBK.

Mwangi,(2014) studied on the effect of liquidity on financial performance of deposit taking micro finance institution in Kenya .The study analyzed financial performance from 2009 to 2013.from Association of Microfinance Institution Reports (AMFI) and CBK annual reports for the period. Financial performance was measured by ROA while liquidity was assessed by using cash and cash equivalents over the total assets. The findings showed a positive relationship between financial performance and liquidity because the coefficient of determination was 0.91 or 91% of the variance on the financial performance. The researcher concluded that financial sector will realize increased financial performance if an effort to stimulate MFIS liquidity is implemented by the management. The study done on Effect of liquidity on financial performance left a significant gap on risk management exposure on liquidity and other risks like interest rate risk, credit risk and foreign exchange rate risks which is to be filled hence this study will address and other studies will be done to assess the effect of financial risk on commercial banks of Kenya.

According to Aneez, (2010) who studied on Liquidity risk and liquidity risk measures he carried out the study at Cape Town whose goal was to distil a clear definition for liquidity, molding organic groupings between the measures based on similarities of purpose and assessing them in terms of accuracy and practicality. The study is opposed to this study of financial risks on financial performance on commercial banks of Kenya. The author discussed on liquidity risk management is the component of financial risk management that the research concentrated and its effect on commercial banks in Kenya.

Maaka,(2013) studied on the relationship between liquidity risk and financial performance of commercial banks in Kenya. Correlation research design was adopted and secondary data analyzed for 33 commercial banks from 2008 to 2012. Multiple regression was used for assessment of the impact of liquidity on banks profitability. It was concluded that profitability of commercial banks in Kenya is negatively affected due to increase in liquidity gap and leverage.

Empirical evidences with regard to liquidity revealed almost inconsistent results. For instance, Naveed (2011) in his investigation in Pakistan found that ROA has statistically insignificant relationship with liquidity. Similarly, several other studies also have been conducted to evaluate the performance of the insurance firms. In contrast, Chen and Wong (2004) said that, liquidity a key factor of financial health in insurance industry depicting a negative relationship. Similarly, Hakim and Neaime, (2005) stated that capital, liquidity and investment key determinants of profitability in banks and insurance sectors. Flamini, McDonald, and Schumacher (2009) in their investigation regarding Sub-Saharan countries found significant and negative relationship between bank profitability and liquidity.

#### **2.4.2 Credit Risk on Financial Performance of Commercial Banks**

Grace, (2012) studied on the effect of management of credit risk to the on the financial performance of commercial banks in Kenya. Descriptive research design was adopted, collected data from commercial banks annual reports for the year 2007 to 2011 and out of 43 banks and analyzed 26 commercial banks using multiple regression analysis. The conclusion was that there is a significant relationship between financial performance and credit risk management. It also claimed that both non-performing loans ratio (NPLR) and capital adequacy ratio (CAR) have negative and relatively significant on equity. The researcher's scope of study was commercial banks in Kenya and studied on credit risk management which is a component of financial risk management. This literature has induced the researcher of this study to limit it to Nairobi Security exchange by finding the effect of the financial risk management which includes credit risk management as an element under study.

Ara, Bakaeva and Sun (2009) studied on credit risk management and profitability in commercial banks of Sweden. The purpose of the study was to describe the impact level credit risk management on profitability of four commercial banks in Sweden. Secondary data was collected from banks annual reports and was analyzed by the aid of SPSS. The findings revealed that credit risk management has an effect on profitability in all the four banks. Moreover the results showed that Base II application strengthened the negative impact of NPLR on ROE.

#### **2.4.3 Interest Rate Risk on Financial Performance of Commercial Banks**

Wanjiru, (2015) conducted a study was on the determinants of interest rates spread among commercial banks of Kenya. The study hypothesized inflation, operating costs, market structure, ownership structure and business risks affect the behavior of commercial banks in Kenya while setting interest rates. The study used both primary and secondary data from both central bank and Kenya bureau of statistics. The finding of the study was that ownership structure, market structure and business risks play significant role on explaining the interest spread.

Ngalawa and Ngare, (2014) conducted in the study on interest rate risk management for commercial banks in Kenya. The study was limited to listed commercial banks in Kenya. The objective was to determine whether commercial banks in Kenya retain a large exposure to interest rate that can be predicted through income gap. The study revealed there is sensitivity of income gaps to market interest rates as determined by the CBK through treasury instruments.

#### **2.4.4 Foreign Exchange Risk on Financial Performance of commercial Banks.**

Abiero, (2012) studied on Effect of market risk management on company value among the firms listed at Nairobi security exchange. The scope of study was of listed companies Nairobi Stock Exchange Chief Executive Officers (CEO). The researcher recommended that board of organization should Infuse risk management culture to increase the value of the firm. The study revealed that many banks had not embedded risk management culture hence the current research was meant to fill the gap other financial risks like credit risks

,liquidity risks ,interest rate risks and foreign exchange risks but not only components of market risks.

## **2.5 Financial performance of commercial banks in Kenya.**

Rodean, (2015) studied on the financial performance of commercial banks listed and traded on Bucharest stock exchange .The goal of the study was to achieve a factor analysis on financial profitability obtained by the top three commercial banks by using the Du Pont. The results of the study revealed that for banks to improve financial performance the need to maintain the leverage ratio fixed either to reduce capital costs. Rodean argued that the decrease in profitability rate determined the downward trend registered by the return on equity. The study related leverage and financial performance excluding other that can affect financial performance. The study left a research gap to be filled on this research that not only does the source of capital that affects the financial performance but the financial risk management practices applied by the banks in Kenya.

## **2.6 Summary of Literature Review**

Several studies have been done on effect of financial risk management on financial performance. Akong'a, (2014) in her study analyzed the current financial risk management practices of 44 commercial banks using multiple regression model and financial risk management. According to Omasete,(2014) on the effect of risk management on financial performance of insurance companies in Kenya; risk management techniques were studied and risk Identification was found to be the most significant influencing financial performance of insurance company. According to Aneez, (2010), the study focused on definitions of liquidity, molding organic groupings and assessing accuracy and practicality of liquidity risk. Maaka, (2013) found that profitability of commercial banks in Kenya is negatively affected by increase in liquidity gaps and leverage. Contrary to this, Mwangi, (2014) found out that there exist positive relationship on financial performance and liquidity. It is against these gaps that compel the researcher to study the effects financial risks on financial performance of commercial banks in Kenya.

**Table 1.1 Summary of Literature Review**

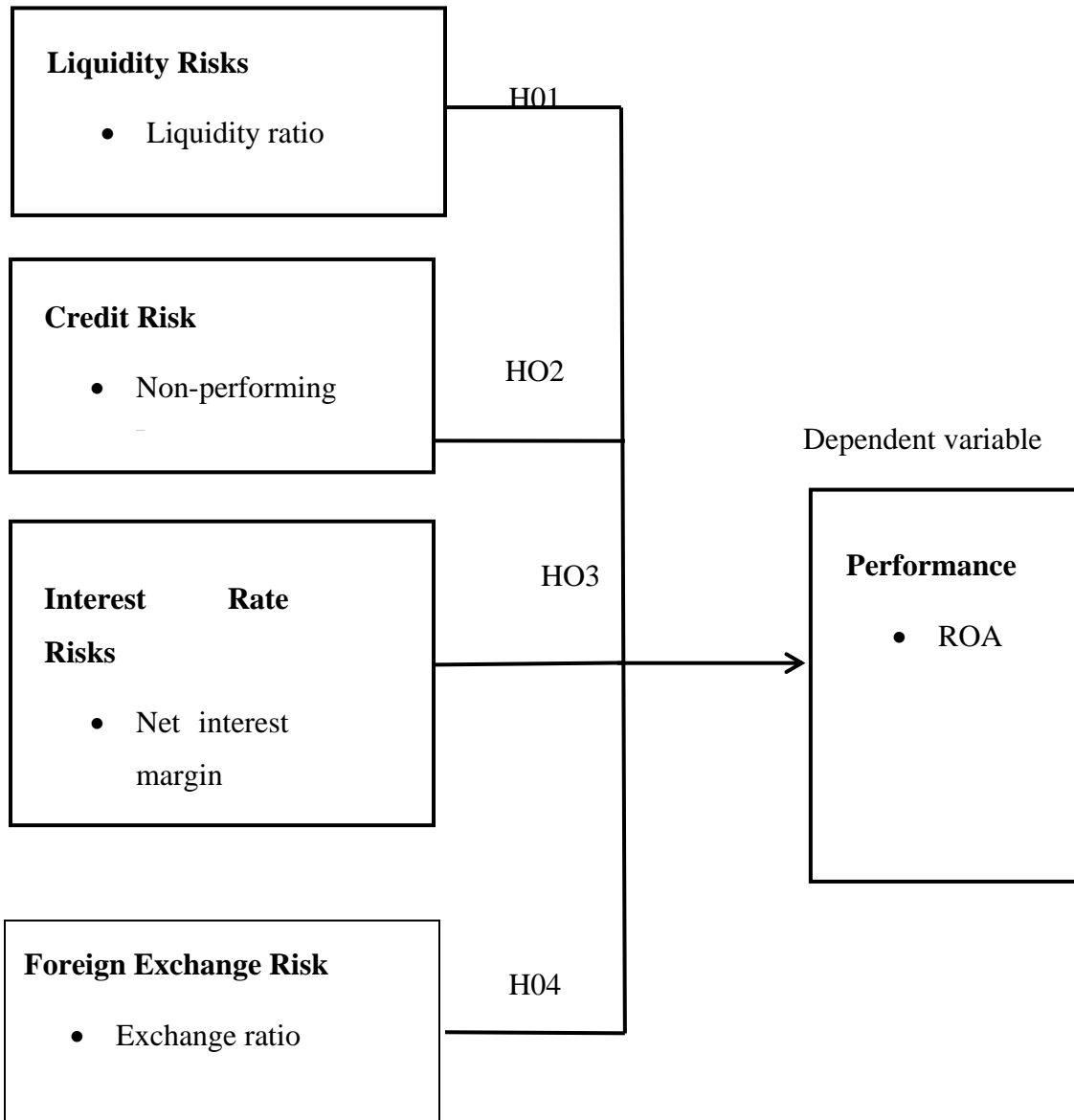
<b>Study</b>	<b>Context&amp; Focus</b>	<b>Key Findings</b>	<b>Research Gaps</b>	<b>Focus of this Study</b>
Aneez 2010	Cape Town South Africa  Focused on an examination of liquidity risk and liquidity measures	Liquidity risk is composed of an array of interrelated aspects of all which are important to its effect. -Liquidity has endemic effect which must be managed.	Research focused on South Africa, Cape town. -The study addressed liquidity risks and measures as a component of financial risk. -The study did not relate it to financial performance of commercial bank.	This study covers commercial banks in Kenya. -The financial risks have been addressed except commodity risk that affects commercial banks.
Mwangi G 2012	The study addressed commercial banks of Kenya. Focused on credit risk management on financial performance of commercial banks in Kenya	The study revealed that there exists significant relationship on credit risk management and credit risk management. -The result of analysis stated that the ratio of capital adequacy and non-performing loans ratio and have a negative and significant effect on ROA.	-Focused on credit risk management on financial performance of commercial banks. -Based on 26 commercial banks for 2007-2011.	This study will dwell on financial risks and not management of credit risk management. -This study will adopt explanatory research design for 2011-2015.
Abiero, 2012	NSE listed companies in Kenya Focused on The relationship between liquidity risk and financial performance	-CEO dwelt on foreign exchange, commodity risk, and interest rate instruments to hedge risks. -Foreign exchange risk added value to the organization.	The CEOs adopted market risk hedges and did not embrace credit and liquidity which is studied in the study. -The study focused on listed companies which is not covered with commercial banks	This study will address all the financial risks which was not covered by the study. -This study will cover the financial risks not covered like credit risk, interest rate risk and foreign exchange risk.

Maaka 2013	Thirty three commercial banks in Kenya. Focused on The relationship between liquidity risk and financial performance in Kenya for 2008-2012	Commercial banks profitability in Kenya is affected negatively due to increase in liquidity gap and leverage. -The level of customer deposit positively affected profitability hence need for many branches	The study focused on 33 commercial banks in Kenya. -Adopted correlation research design.	This study will dwell on relationship of financial risks and financial performance of commercial banks in Kenya. Explanatory research design is adopted and panel data regression model used for analyzing data Unlike the previous study that used correlation research design
Mwangi 2014	Financial institution in Kenya. Focused on Effect of liquidity risk management on financial performance of deposit taking institution.	There is a positive relationship between liquidity and financial performance. -The study concluded that efforts to stimulate the microfinance institution would enable micro finance sector realize increased financial performance	The focus of the study was micro finance institutions and not commercial banks. -Liquidity risk management was studied creating a gap of financial risks empty.	The study focused on financial risk and financial performance whereby liquidity risks is part of financial risk for 2011-2015 This study is based on commercial banks and not deposit taking institutions.
Ngalawa&Ngare 2014	Kenya commercial banks	-Banks' exposure to income gap also referred to as interest rate risk dictates the balance sheet structure. -Sensitivity of income gaps to market interest rate as determined by CBK is established through treasury instrument.	-Concentrated on interest risk management in isolation of other financial risks	This study will focus on all financial risks on financial performance except commodity risk. This previous study looked at interest rate risk while this study is based on interest rate risk among other financial risk.

Rodean Maria 2015	Bucharest stock Exchange Focused on Financial performance of commercial banks listed and traded on Bucharest stock exchange.	-The result was that for banks to improve profitability the indicator need to maintain the leverage ratio fixed to reduce capital cost. -The decrease in profitability rate determined the downward trend registered by the ROE.	-Financial performance is independent variable whereas in this study financial performance is dependent variable.	This study focused on financial risk as an independent variable while financial performance as dependent variable. There is a geographical variance whereby the study is done in Kenya while the other is done in Bucharest
Ahmed 2015	Kenya commercial banks Focused on Effect of foreign exchange exposure on financial performance of commercial banks in Kenya.	The studies revealed that interest rate have insignificant positive effect on financial performance of commercial banks in Kenya.	-did not consider other financial risks instead focused on foreign exchange rate leaving credit, liquidity , and other market risks.	This study will focus on all the financial risks including foreign exchange risk and their effect on financial performance of commercial banks.

Source: Author (2018)

Independent Variable



**Figure 2.1: Conceptual Framework**

Source: Author (2018)

The dependent variable is performance of commercial banks of Kenya proxied by ROA. That is ROA has been adopted to measure the performance of commercial bank. Commercial banks by law are required to have sufficient assets to support their business profitability and to protect investors' funds from loss of both internal and external risks. Performance of commercial banks is affected by various financial risks such as liquidity risks, credit risks, interest rate risks and foreign exchange risks. According to stake holders theory parties involved in the operation of organization such as employees customers, financiers and government have a great interest in the steady growth of financial performance. From the conceptual framework liquidity risks are measured by liquidity ratio which is calculated as current assets divided by current liability. If the liquidity risk is not managed then the ROA drops and vice versa. A credit risk measured by non-performing loans is another risk that affects ROA. For the bank when non-performing loans are high then the ROA declines and vice versa. Interest rate risk whose proxy is net interest margin has positive and negative effect on the performance of the organization. Finally foreign exchange risk is another financial risk that affects the ROA of the commercial bank. Its indicator is gain or losses that are experienced by commercial banks in their day to day business. The variation of this risk affects the ROA of the commercial banks. There is therefore relationship between independent and dependent variables as reflected in the conceptual framework above.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter details the methodology that was used to conduct. It describes the research philosophy, research design, target population, sampling procedure, research instruments, data collection procedures, data analysis diagnostic tests and ethical consideration that was used in the study.

#### **3.2 Research Philosophy**

The study adopted a positivism philosophy where deductions were elucidated from data collected from the 42 commercial banks who assume to have made rational decisions. In positivism studies, the researcher is deemed to be independent from the study and there are no provisions for human interests within the study. Under this philosophy it is the researchers' belief that he is neutral in the research and the research is purely objective. This philosophy was justified by the results of the study as indicated here in the paper..

#### **3.3 Research Design**

The study adopted explanatory research design adopted. Explanatory research design goes beyond description and attempts to explain the reasons for the various relationships between study variables. The justification for this method was that it assisted the researcher to explain the reasons behind the phenomenon of analysis of financial risks on performance of commercial banks in Kenya. The other advantage is that it went beyond the description of the situation in the industry about phenomenon of bank specific variables on financial performance because this information is readily available from literature reviewed. Govori (2013) employed explanatory research design to conduct a study on the performance of commercial banks and the determinants of profitability in Kosovo.

#### **3.4 Target Population**

Population of this study is comprised of all active commercial banks in Kenya both locally and foreign listed and unlisted at the NSE but regulated by Central Bank of Kenya

between the period of 2010 and 2015. During this period there were 42 banks that were licensed by the Central Bank to operate in Kenya. Data was collected from financial statements. The list of the commercial banks considered in the study is attached as shown in Appendix IV.

### **3.5 Study Variables**

This study identified independent and dependent variables to investigate the study objectives. The dependent variable was performance of commercial banks in Kenya that is return on assets measured by earnings before interest and tax on total assets. The independent variables are financial risks composed of credit risk measured by non-performing loans, liquidity risk measured by current ratio, interest rate risk measured by interest rate margin and foreign exchange risk measured by exchange ratio.

According to enterprise risk management theory, an organization may decide to manage their risks in two major ways: either manage the risks one at a time or manage all risks holistically. Tseng (2007), Enterprise Risk Management (ERM) adopts a consistent and systematic approach to manage the risks facing the organization. Gordon et al. (2009) on explains ERM as the process by which an organization manages its exposure to uncertainty with the emphasis on managing and identifying the events that may have the potential to hinder an organization from achieving its goals. This theory implies that all the risks should be managed if the performance can be improved. When the credit risks, liquidity risks, interest rate risks and foreign exchange risks increases then the ROA of commercial banks decreases and vice versa. The dependent and independent variables for forty two commercial banks were measured individually for each bank for the period of six years from 2010 to 2015.

### **3.6 Operationalization and Measurement of Variable**

Table 3.1 contains a list of variables and their operational definitions and measurements as adopted and validated by other researchers.

**Table 2.1 Operationalization and measurement of Variables**

<b>Variable</b>	<b>Definition of Variable</b>	<b>Measurement of variable</b>
Credit risks	Credit risk is the inability of the banks to get back it loans due to the default of customers to honor their debts due to non-performing loans.	-Non-performing loans /Deposits for each of 42 commercial banks in Kenya for the period 2010 to 2015.
Liquidity risk	Liquidity risk arises due to inability of the commercial bank to transact or issue loans due to inadequate of sufficient capital.	-Current assets/Current liability for each of 42 commercial banks in Kenya for the period 2010 to 2015
Interest rate risk	This is risk arising from the variability of interest rates received and issued by the commercial bank due to external environment like overall economy.	Interest received/interest paid For each of 42 commercial banks in Kenya for the period 2010 to 2015
Foreign Exchange Rate risks	The risk emanates from the various currency denominations of different countries traded in our commercial banks. The exposure of currencies to a variety of economies causes their value to vary from country to country hence affect commercial bank performance.	- Exchange gain /exchange loss. For each of 42 commercial banks in Kenya for the period 2010 to 2015
Performance -ROA	Return on Assets (ROA) measured by Profit generated by each shilling invested in assets.	EBIT/Total Assets for each of 42 commercial banks in Kenya for the period 2010 to 2015

**Source: Author 2017**

### **3.7Sampling Design and Techniques**

The study employed census technique in selecting all commercial banks in Kenya since they are regulated by CBK. The 42 commercial Banks that were active from 2010 to 2015 were analyzed to find the effect of financial risks of their performance as shown on Appendix IV. Census was adopted since it gives equal chance to capture the data of every commercial bank in Kenya.

### 3.8 Data Collection

The researcher used secondary data of the commercial banks in Kenya. The secondary data was collected for a period of six years between the years 2010 to 2015 from financial statements of commercial banks in Kenya as disclosed by CBK Annual Supervision Report on Financial Performance of listed commercial banks. Other data for commercial banks was collected from CBK website and respective commercial banks websites since they are readily available. The nature of the study did not require primary data.

#### 3.8.1 Data Collection Procedure

Since it is a requirement that all commercial banks submit annual report to CBK, it was easier for the researcher to obtain this data and use it to assess the effect of financial risks commercial banks in Kenya financial performance. The data was collected for the period of five years from 2010 to 2015. The panel data consisted of time series and cross sectional data. Cross sectional data represented forty two commercial banks of Kenya while time series data represented the period from 2010 to 2015.

### 3.9 Analytical Model

Analytical model that tested and estimated the effect of financial risks on financial performance of commercial banks in Kenya using panel data was as follows:

$$P_{it} = \alpha + \beta_1 x_{it} + \beta_2 x_{it} + \beta_3 x_{it} + \beta_4 x_{it} + \epsilon$$

Where:

P= Performance as measured by ROA

$\alpha$  = Constant.

$\epsilon$  = Error term

$x_{it}$  = liquidity risk

$x_{it}$  = Credit risk

$x_{it}$  = Interest risk

$x_{it}$  = Foreign exchange risks

$\beta_1 \beta_2 \beta_3 \& \beta_4$

Where Betas 1 to 4 are the coefficients for independent variables respectively.

### **3.10 Data Analysis**

Data analysis techniques entailed descriptive statistics, trend analysis and inferential analysis. Inferential analysis includes correlation and regression analysis. Result findings were presented in form of tables and figures. Correlation analysis is a tool in statistics that determines the level of relationship that exists amongst two or more variables (Levin & Rubin, 1998). The analysis is the initial step in determining the relationship existing between the independent and dependent variables in statistical modeling. A correlation matrix was developed before carrying out the multiple regression analysis. The relationship between the independent variable is analyzed to assist in developing a prediction multiple model which reveals relationship non-existence where the correlation value is 0. When the correlation is  $\pm 1.0$  it means a perfect negative or positive relationship exists (Hair et al., 2010). The values interpretation states that at between 0 there is no relationship and 1 means there is a perfect relationship.

Regression analysis of the Panel data model was used to assess and estimate the analysis of financial risks on financial performance of commercial banks in Kenya. Panel data was used both for analysis and quantifying relationships among variables expressed via an equation for predicting typically values of one variable given the values of other variables. This model was used for financial data of 42 commercial banks for six years. The study analyzed the data using SPSS (Statistical package of social sciences) version 20 and STATA version 14 whereby inferential statistics was applied using multiple regression model.

### **3.11 Diagnostics Tests**

Before data analysis is done the following diagnostic tests were undertaken. Assumptions testing are very key tasks while using multiple regressions. Serious violations bring about relationships estimates that are biased, high or low confident estimates of the precision of the coefficients, standard error and unreliable confidence intervals as well as significance tests (Williams, Grajales & Kurkiewicz, 2013).

#### **3.11.1 Normality**

To check for normality, descriptive statistics was used, that is Kurtosis and Skewness of the distribution of the data. Also a Jarque-Bera test was used. It's a test based on the residuals of the least squares regression model. For normal distribution Jarque-Bera statistics is expected to be zero. The study tests the null hypothesis that the disturbances are not normally distributed. If the p-value is less than 0.05, the null of normality at the 5% level is rejected.

### **3.11.2 Multicollinearity**

The presence of strong relationship amongst the independent variables was tested using Variance Inflation Factor among the independent variables. The rule of thumb on variance inflation factor is, if it greater than 10 it requires investigation and multicollinearity is a problem.

### **3.11.3 Heteroscedasticity**

This occurs when the variance of the error term is not constant. If the residuals have a constant variance they are said to be homoscedastic that is the variance for each disturbance (error) term is constant and independent of the explanatory variables.

The study used the white's test to detect heteroscedasticity. It examines whether the error variance is affected by any of the regressors', their squares or cross products.

### **3.11.4 Autocorrelation**

Autocorrelation can be defined as the correlation on a time series comparing the past values with future values over a period of time. Durbin Watson test was used to detect autocorrelation on the residual on the regression analysis. According to Wooldridge (2002), failure to identify and account for serial correlation in the idiosyncratic error term in a panel model would result into biased standard errors and inefficient parameter estimates. The null hypothesis of this test is that the data has no serial correlation. If the serial correlation is detected in the panel data, then the Feasible Generalized Least Squares (FGLS) estimation will be adopted.

### **3.11.5 Tests for Stationarity**

The study used Augmented Dickey-Filler test to test for stationarity. Non stationarity does hold when in a time series data the mean, variance is not constant within a certain period and the covariance value between two time periods depends entirely on the lag between the time periods and not within the actual time when the covariance is calculated. Non stationarity in regression analysis lead to spurious correlation that increases the value of  $R^2$  and t-scores of the non-stationary in dependent variables, leading to correct model specification.

### **3.12 Ethical Consideration**

An ethical consideration is the extent to which individuals use values and ethical principles consistently in different environmental issues. Researchers usually adhere to this consideration so as to obtain unbiased results Seligman, Syme and Gilchrist, (1994). The researcher in this study adopted confidentiality, plagiarism and informed consent. Adoption and adherence to the mentioned ethical consideration will enable the researcher to obtain unbiased response from the respondents.

The use of the other authors work in this study without citing their identity was plagiarism was avoided. The researcher avoided this behavior by citing the authors name and the year it appeared. The researcher also included the in references (Helgesson & Eriksson, 2015). To check for any plagiarism the document was tested to ensure that any detected case was cleared before submission.

## CHAPTER FOUR

### DATA ANALYSIS, RESULTS AND DISCUSSIONS OF FINDINGS

#### 4.1 Introduction

This chapter presents the empirical results and analysis of data. The chapter is divided into the following sections; descriptive statistics and trend analysis section, diagnostic test, correlation analysis, the regression results section, test of hypotheses section and summary of hypotheses results section. The Hypothesis section presented the results in line with the objectives of the study as presented in chapter one.

#### 4.2 Descriptive Statistics and Trend Analysis

Results in table 4.1 below indicate the descriptive statistics of ROA, liquidity ratio, credit risk, and interest rate risk and foreign exchange risk together with their respective trend analysis. The trend analysis is performed to determine the variables movements in the study and also helps to perform analysis of unit root and the trend graphically showing the variables pattern of movement.

**Table 4.1: Descriptive Statistics**

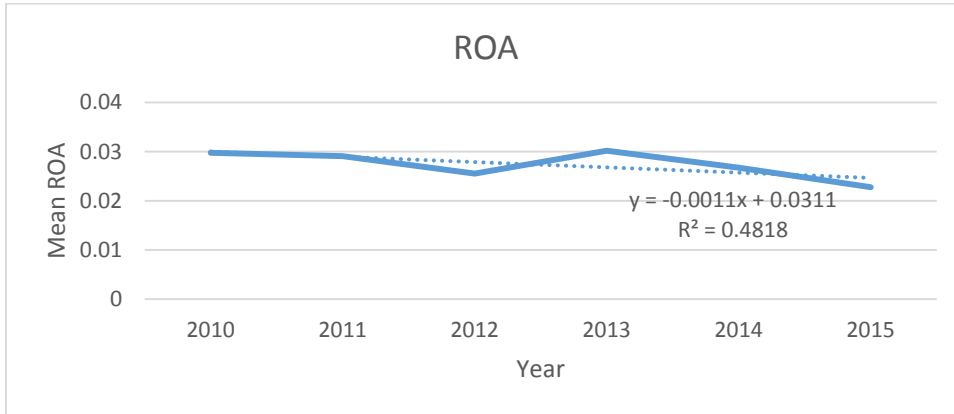
Variables	Minimum	Maximum	Mean	Std. Dev
ROA	-0.136	0.104	0.027	0.028
Liquidity Ratio	0.100	0.900	0.430	0.220
Credit Risk	-0.200	1.000	0.085	0.260
Interest rate risk	0.200	23.900	2.923	2.492
Foreign Exchange Risk	0.100	22.600	0.996	2.307

Source: Author 2018

As indicated in the table above the total mean of ROA for the period 2010 to 2015 was 0.027 implying that the performances of commercial banks in Kenya on average are profitable. With a standard deviation of 0.028 indicating small variability in ROA over time. The Maximum and minimum values of ROA during the period of time were -0.136 and 0.104 respectively this indicating that whereas some commercial banks are

performing well to the maximum of 0.104, there are some which are performing below average hence -0.136.

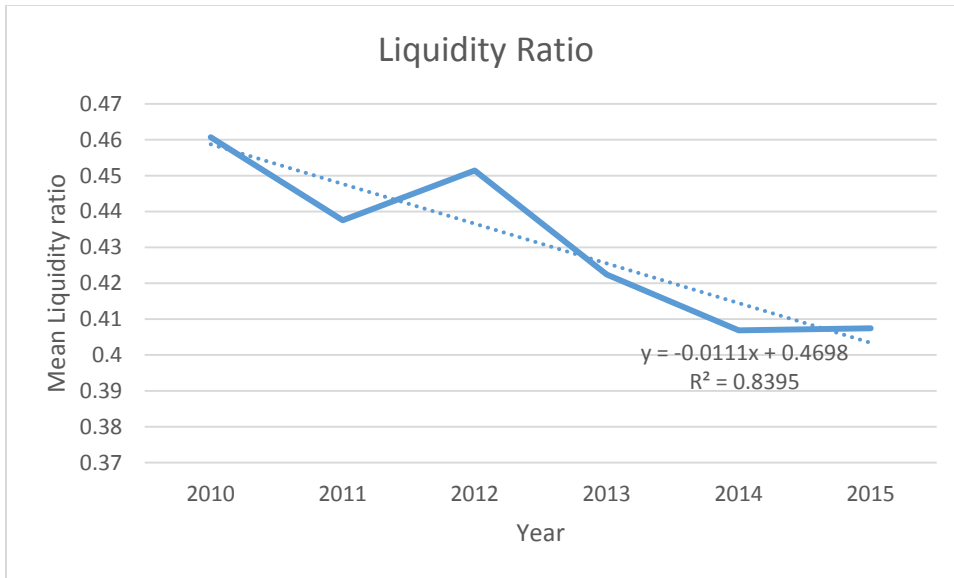
Figure 4.1



**Figure 4.1: Trend of ROA for the year 2010-2015**

The total mean of liquidity ratio for the period 2010 to 2015 was 0.430 with a standard deviation of 0.220 indicating variability in liquidity ratio over time. The Maximum and minimum values of liquidity ratio over the same period of time were 0.100 and 0.900 respectively. This Data implies that liquidity risk of the commercial banks are managed well since there is no negative minimum mean, implying that the commercial banks are following the guidelines of Central Bank of Kenya as illustrated in the prudential guidelines.

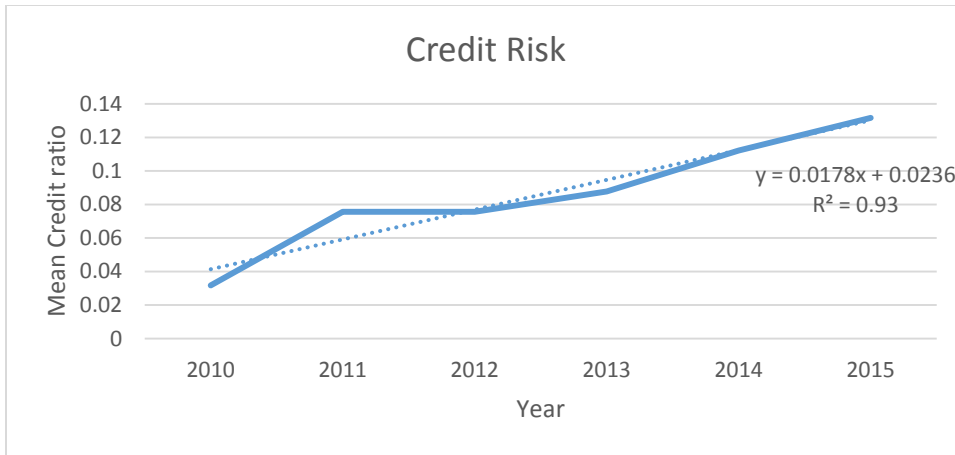
Figure 4.2 shows the liquidity ratio trend for the 42 banks from the year 2010 to 2015. The trend indicates that liquidity ratio has generally been on a decrease over the years with a significant drop in the year 2014.



**Figure 4.2: Trend of Liquidity ratio for the year 2010-2015**

The results depicts the total mean of credit risk for the period 2010 to 2015 was 0.085 with a standard deviation of 0.260 indicating small variability in credit risk over time. The Minimum and Maximum values of credit risk over the same period of time were -0.200 and 1.000 respectively. The negative liquidity risk shows that some commercial banks were operating with too much non-performing loans as compared to the deposits which makes the commercial banks to perform poorly due to high default rate that tie the banks money in form of interests.

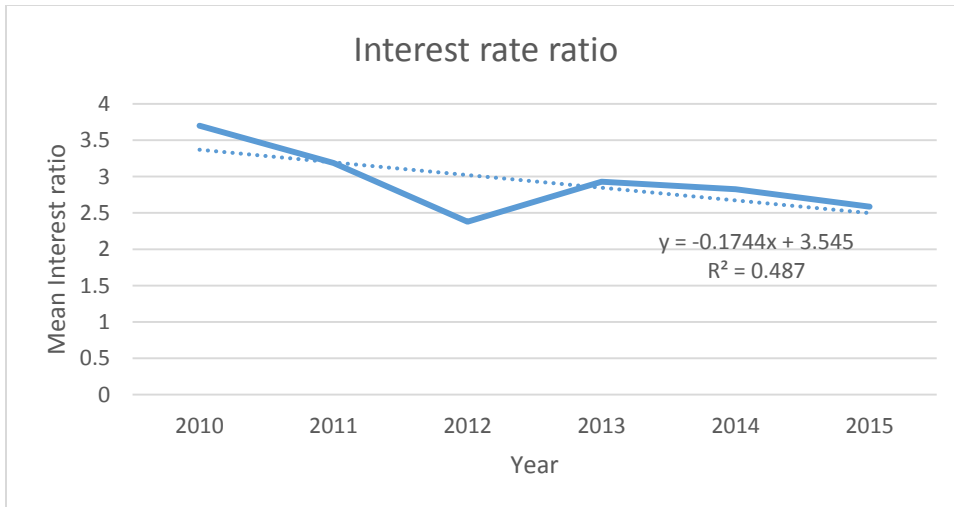
Figure 4.3 shows the credit risk trend for the 42 banks from the year 2010 to 2015. The trend line indicates that the credit risk ratio has been increasing overtime since 2010 to 2015.



**Figure 4.3: Trend of credit risk ratio for the year 2010-2015**

The total mean of interest rate risk for the period 2010 to 2015 was 2.923 with a standard deviation of 2.492 indicating a large variability in interest rate risk over time. The Minimum and Maximum values of interest rate risk over the same period of time were 0.200 and 23.900 respectively. This implies that there are few banks that are making income due to very high interests while others are making very low interest margins causing some commercial banks to grow while others stagnate. This trend shows that commercial banks had been left to operate liberally and could set any interest rate as long as it has clients. Since this is the major source of income then there should be measures to manage it.

Figure 4.4 shows the Interest Rate Ratio trend for the 42 banks from the year 2010 to 2015. The trend line indicates that Interest Rate Ratio trend has been fluctuating though with decreasing trend with a significant drop in the year 2012.

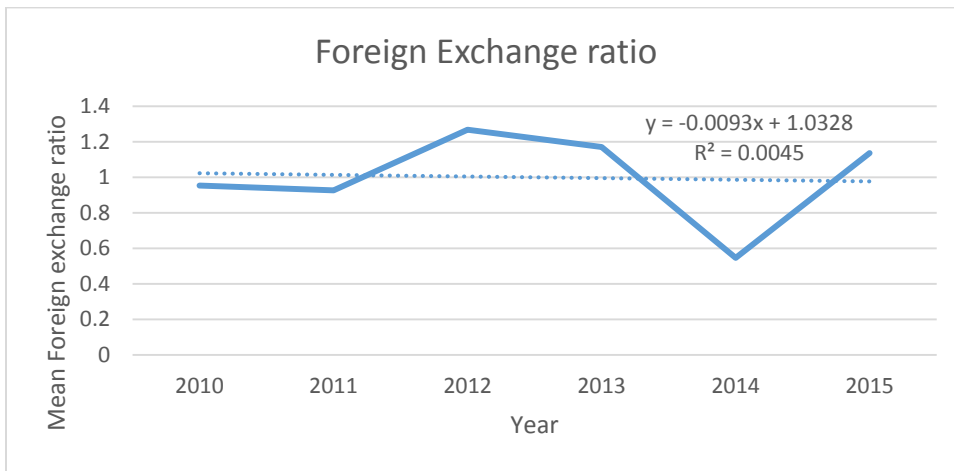


**Figure 4.4: Trend of Interest Rate Ratio for the year 2010-2015**

Lastly, as indicated in the table below the total mean of Foreign Exchange Risk for the period 2010 to 2015 was 0.996 with a standard deviation of 2.307 indicating a large variability in Foreign Exchange Risk over time. The Minimum and Maximum values of Foreign Exchange Risk over the same period of time were 0.100 and 22.600 respectively.

There was a steep drop of foreign exchange rate in 2013 due to election period where by many investors divested their investment to safe havens causing Kenya shilling to drop hence decreasing the performance of commercial banks, after 2014 their performance increased.

Figure 4.5 shows the Foreign Exchange Risk trend for the 42 banks from the year 2010 to 2015. The trend line indicates that Foreign Exchange Risk has been consistent over time.



**Figure 4.5: Trend of Foreign exchange ratio for the year 2010-2015**

#### 4.4 Correlation Analysis

Correlation analysis is the statistical tool that can be utilized to determine the level of association between two variables (Levin & Rubin, 1998). Correlation matrix was developed to analyze the strength of association between the expenditure on internal audit and expenditure on environmental audit. Table 4.2 presents the results of the correlation analysis.

**Table 4.2: Correlation matrix results**

	ROA	Liquidity Ratio	Credit Risk	Interest rate ratio	Foreign exchange ratio
ROA	1.000				
Liquidity Ratio	0.1570*	1.000			
Credit Risk	-0.1566*	0.113	1.000		
Interest rate ratio	0.1667*	-0.096	-0.100	1.000	
Foreign exchange ratio	-0.2507*	-0.088	-0.104	0.100	1.000

The results shows a significant and positive association between ROA and liquidity ratio ( $r=0.1570$ ,  $p<0.05$ ). This implies that liquidity ratio move in the same direction with financial performance of commercial banks measured in terms of ROA. The results also agree with Maaka, (2013) who studied on the relationship between liquidity risk and financial performance of commercial banks in Kenya and found that profitability of commercial banks in Kenya is negatively affected due to increase in liquidity gap and leverage.

The results revealed that there was a negative and a significant association between credit risk and ROA ( $r=-0.1566$ ,  $p<0.05$ ). This implies that credit risk move in opposite direction with financial performance of commercial banks measured in terms of ROA. The results also agree with Ara, Bakaeva and Sun (2009) who studied credit risk management and profitability in commercial banks of Sweden and revealed that credit risk management has an effect on profitability in all the four banks.

Further, the results shows a positive and significant relationship on interest rate ratio and ROA ( $r=0.1667$ ,  $p<0.05$ ). This implies that interest rate ratio move in the same direction with financial performance of commercial banks measured in terms of ROA. According to Ngalawa and Ngare, (2014) who conducted a study on interest rate risk management and financial performance of commercial banks in Kenya, there is sensitivity of income gaps to market interest rates as determined by the CBK through treasury instruments.

Finally, correlation analysis showed a negative and a significant association between foreign exchange ratio and ROA ( $r=-0.2507$ ,  $p<0.05$ ). This implies that foreign exchange ratio move in the opposite direction with financial performance of commercial banks measured in terms of ROA. The exchange rate risk is associated with depreciation in the local currency, an increase in prices and a decrease in output (Berument and Dincer, 2004).

## 4.5 Diagnostic tests

Before the regression model was obtained post estimation and pre estimation tests were performed. The pre-estimation tests performed include the unit root tests and multicollinearity. The post estimation tests include the normality test, test for test for autocorrelation and heteroscedasticity. This helps to avoid spurious regression results from occurring.

### 4.5.1 Test for Multicollinearity

According to William *et al.* (2013), multicollinearity occurs when there is correlations presence among the predictors. In some cases of perfect correlations among the predictor variables, multicollinearity may imply that unique least squares solution should not be computed to a regression analysis (Field, 2009). Multicollinearity increases the confidence intervals and standard errors which may lead to estimates that are unstable of the coefficients for the individual predictors. The results in Table 4.3 shows the variance inflation factors results and they indicate that the variables had a VIFs lower than 10 indicating no Multicollinearity.

**Table 4.3: Multicollinearity results using VIF**

<b>Variable</b>	<b>VIF</b>
Liquidity Ratio	1.026
Credit Risk	1.029
Interest ratio	1.027
Foreign Exchange Risk	1.025

### 4.5.2 Panel Unit Root Tests

Unit root tests are conducted using the LLC test to determine if the variables are non-stationary or stationary since most variables are non-stationary prior the regression analysis. Results in Table 4.4 indicate variables are stationary (i.e. absence of unit roots) at 5% level of significance.

**Table 4.4: Unit root**

Variable name	Statistic(adjusted)	P-value	Comment
ROA	-17.7467	0.000	Stationary
Liquidity Ratio	-3.2408	0.0006	Stationary
Credit Risk	-5.1820	0.000	Stationary
Interest ratio	-5.3430	0.000	Stationary
Foreign Exchange Risk	-5.7953	0.000	Stationary

**4.5.3 Test for normality**

For normality test the study employed the Jarque-Bera test. In null hypothesis if the p-value is less than 0.05, the null of normality at the 5% level will be rejected. When the p-value is < 5% for the residual, null hypothesis is rejected and concluded that the residuals are normally distributed. The results from the Jarque-Bera test are presented in Table 4.5 below, indicating that the residuals are normally distributed.

**Table 4.5: Jarque-Bera test/SK test for Normality**

Variable	Obs	Pr(Skewness)	Pr(Kurtosis) adj	chi2(2)	Prob>chi2
ROA	247	0.0000	0.00000	71.28	0.000
Liquidity ratio	247	0.0000	0.00710	22.69	0.000
Credit Risk	247	0.0000	0.00000	25.9	0.000
Interest rate ratio	247	0.0000	0.00000	74.49	0.000
Foreign exc risk	247	0.0000	0.00000	123.08	0.000

#### 4.5.4 Heteroscedasticity test

Modified Wald test is incorporated to test for heteroscedasticity. The null hypothesis in the test is that error terms have a constant variance. The results in the 4.6 indicate that the error terms are homoscedastic, given that the p-value is less than the 5% (0.0710).

**Table 4.6: Heteroskedasticity Results**

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H0:  $\sigma(i)^2 = \sigma^2$  for all i  
Prob> chi2 = 0.0710

---

#### 4.5.5 Test for autocorrelation

To establish whether or not the residual are serially correlated over time, Wooldridge test for autocorrelation was conducted. The null hypothesis is that no first order serial /auto correlation exists. The results are as indicated in Table 4.7 and therefore the null hypothesis of no autocorrelation is accepted and that residuals are not auto correlated (p-value=0.0525).

**Table 4.7: Serial Correlation Tests**

---

#### Wooldridge test for autocorrelation in panel data

---

H<sub>0</sub>: no first-order autocorrelation  
F( 1, 40) = 6.840  
Prob> F = 0.0525

---

#### 4.5.6 Hausman Test for random and fixed effects

In order to choose between fixed and random effects model for model, the Hausman test was used as presented in 4.8. Table 4.8 illustrates the results of the Hausmans test. The null hypothesis of the Hausmantest was that the random effects model was preferred to the fixed effects model. For the model, Hausman test reported a chi-square of 1.09 with a p-value of 0.9855 implying that at 5 percent level, the chi-square value obtained was statistically insignificant. The researcher therefore failed to reject the null hypothesis that random effects model was preferred to fixed effect model for return on assets as recommended by Greene (2008).

**Table 4.8: Hausman Random Test for random and fixed effects**

Column1	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
Liquidity Ratio	0.049384	-0.052279	0.003562	0.00742
Credit Risk	-0.027458	-0.028134	0.000676	0.001307
Interest rate ratio	0.007855	0.007356	0.000499	0.000893
Foreign exchange ratio	0.232333	0.2389956	-0.00666	0.011326

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$\chi^2(4) = (b-B)'[(V_b-V_B)^{-1}](b-B) = 1.09$

Prob>chi2 = 0.9855

(V\_b-V\_B is not positive definite)

#### 4.6Regression Analysis

Liquidity Ratio, Credit Risk, Interest rate ratio and Foreign exchange ratio were found to be sufficient variables to explain financial performance. The coefficient of determination R square of 54.8% supports the results. This means Liquidity Ratio, Credit Risk, Interest rate ratio and Foreign exchange ratio explain 54.8% of the variations in the dependent variable which is financial performance.

**Table 4.9: Model Fitness**

Indicator	Coefficient
R	0.740
R Square	0.548
Adjusted R Square	0.540
Std. Error of the Estimate	0.0266786

The p-value shows the level of relationship that exists between the independent variable to the dependent variable. When the significance level is lower than the critical value/probability value (p) which is at 0.05 statistically, the conclusion is that the model is significant to explain the relationship.

Table 4.10 shows the results on the ANOVA. The model is statistically significant from the results. The independent variables are good predictors of the commercial banks performance in Kenya. The F statistic of 73.288 and the p value (0.000) which is lower than the required 0.05 probability of significance level agrees with the results.

**Table 4.10: ANOVA**

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	0.209	4	0.052	73.288	.000
Residual	0.172	242	0.001		
Total	.381	246			

Regression of coefficients results in Table 4.11 shows that liquidity ratio and ROA are positively and significantly related ( $\beta=0.039$ ,  $p=0.000$ ). This means that a one percent increase in liquidity ratio, leads to an increase in ROA by 3.9%. The results conger with Aneez, (2010) who studied on Liquidity risk and liquidity risk measures he carried out the study at Cape Town whose goal was to distil a clear definition for liquidity, molding organic groupings between the measures based on similarities of purpose and assessing them in terms of accuracy and practicality.

The table further indicates that credit risk and ROA are negatively and significantly related ( $\beta=-0.014$ ,  $p=0.041$ ). This means that a one percent increase in credit risk, leads to a decrease in ROA by 1.4%. The results also agree with Ara, Bakaeva and Sun (2009) who studied credit risk management and profitability in commercial banks of Sweden and revealed that credit risk management has an effect on profitability in all the four banks. The results also agree with Afriyie and Akotey (2012) who examined the impact of credit risk on the profitability of rural and community banks in the BrongAhafo Region of Ghana and found that there is a relationship between the credit risk management and profitability of selected rural banks in Ghana.

It was further established that interest rate and ROA were positively and significantly related ( $\beta=0.002$ ,  $p=0.000$ ). The results are in tandem with Tafri et al., (2009) who examined the relationship between financial risk and profitability of the conventional and Islamic banks in Malaysia and established that interest rate risk influenced the profitability of commercial banks. This means that a one percent increase in Interest rate ratio, leads to an increase in ROA by 0.2% while foreign exchange risk and ROA were negatively and significantly related ( $\beta=-0.003$ ,  $p=0.000$ ). This means that a one percent increase in Foreign Exchange ratio, leads to a decrease in ROA by 0.3%. According to Gachua (2011) who did a study on the effect of foreign exchange exposure on a firm's financial performance of a case of selected listed companies in the Nairobi Stock Exchange unrealized foreign exchange gains/losses had an effect on the Net Income of listed companies as it was posted to either income statement or owners' equity.

**Table 4.11: Regression of Coefficient**

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Liquidity Ratio	0.039	0.005	0.483	8.062	0.000
Credit Risk	-0.014	0.007	-0.094	-2.052	0.041
Interest rate ratio	0.002	0.001	0.236	4.042	0.000
Foreign Exchange Risk	-0.003	0.001	0.207	4.417	0.000

The specific model therefore was;

$$ROA=0.000+ 0.039X_{1t} -0.014X_{2t}+ 0.002X_{3t} - 0.003X_{4t}$$

Where:

FP (ROA)=Financial performance as measured by ROA

$X_{1t}$  = liquidity risk

$X_{2t}$ =Credit risk

$X_{3t}$ =Interest risk

$X_{4t}$ =Foreign exchange risks

## 4.7 Hypothesis Testing

### 4.7.1 Hypothesis testing for Liquidity Risk

The hypothesis was performed using multiple linear regressions. The rejection and acceptance criteria were when p value is 0.05 or greater, the  $H_{01}$  is accepted but if it's less than 0.05, the  $H_{01}$  is rejected.

The null hypothesis was that there is no statistically significant relationship between Liquidity risk and return on assets of commercial banks in Kenya. Results in Table 4.11 above show that the p-value was  $0.000 < 0.05$ . This indicated that the null hypothesis was rejected hence there is a statistically significant relationship between Liquidity risk and return on assets of commercial banks in Kenya. The results agree with Mwangi, (2014) who studied the effect of liquidity on financial performance of deposit taking micro

finance institution in Kenya and the results showed a positive relationship between financial performance and liquidity. The results also agree with Maaka, (2013) who studied on the relationship between liquidity risk and financial performance of commercial banks in Kenya and found that profitability of commercial banks in Kenya is negatively affected due to increase in liquidity gap and leverage.

#### **4.7.2 Hypothesis testing for Credit Risk**

The hypothesis was performed using multiple linear regressions. The rejection and acceptance criterion was when p value is 0.05 or greater, the  $H_{01}$  is accepted but if it's less than 0.05, the  $H_{02}$  is rejected. The null hypothesis was that there is no statistically significant relationship between credit risk and return on assets of commercial banks in Kenya. Results in Table 4.11 show that the p-value was  $0.041 < 0.05$ . This indicated that the null hypothesis was rejected hence there is a statistically significant relationship between credit risk and return on assets of commercial banks in Kenya. The results agree with Grace, (2012) who studied the effect of management of credit risk to the on the financial performance of commercial banks in Kenya and found that there is a significant relationship between financial performance and credit risk management. The results also agree with Ara, Bakaeva and Sun (2009) who studied credit risk management and profitability in commercial banks of Sweden and revealed that credit risk management has an effect on profitability in all the four banks. According to Kargi (2011) who evaluated the impact of credit risk on the profitability of Nigerian banks, credit risk has a significant impact on the profitability.

#### **4.7.3 Hypothesis testing for Interest rate Risks.**

The hypothesis was performed using multiple linear regression (Table 4.10, above). The rejection and acceptance criterion was when p value is 0.05 or greater, the  $H_{03}$  is accepted but if it's less than 0.05, the  $H_{03}$  is rejected. The null hypothesis was that there is no statistically significant relationship between Interest rate Risks and return on assets of commercial banks in Kenya. Results in Table 4.11 show that the p-value was  $0.000 < 0.05$ . This indicated that the null hypothesis was rejected hence there is a statistically significant relationship between Interest rate Risks and return on assets of commercial banks in Kenya. The results agree with Wanjiru, (2015) who conducted a study was on

the determinants of interest rates spread among commercial banks of Kenya and the finding of the study was that ownership structure, market structure and business risks play significant role on explaining the interest spread. According to Ngalawa and Ngare, (2014) who conducted a study on interest rate risk management and financial performance of commercial banks in Kenya, there is sensitivity of income gaps to market interest rates as determined by the CBK through treasury instruments.

#### **4.7.4 Hypothesis testing for foreign exchange risks**

The hypothesis was performed using multiple linear regression (Table 4.10, above). The rejection and acceptance criteria were when p value is 0.05 or greater, the  $H_0$  is accepted but if it's less than 0.05, the  $H_0$  is rejected. The null hypothesis was that there is no statistically significant relationship between foreign exchange risks and return on assets of commercial banks in Kenya. Results in Table 4.11 show that the p-value was  $0.000 < 0.05$ . This indicated that the null hypothesis was rejected hence there is a statistically significant relationship between foreign exchange risks and return on assets of commercial banks in Kenya. The results agree with Abiero, (2012) who studied on effect of market risk management on company value among the firms listed at Nairobi security exchange and revealed that many banks had not embedded risk management culture hence the current research was meant to fill the gap other financial risks like credit risks, liquidity risks, interest rate risks and foreign exchange risks but not only components of market risks. Interest rate risk is the risk of lending or deposit interest rate fluctuation (Dimitropoulos et al., 2010). When the commercial bank lending interest rate is less than the deposit rate, or when the lending interest rate of the bank is greater than the market rate, or the deposit interest rate is less than the market rate, banks may face interest rate risk. The exchange rate risk is associated with depreciation in the local currency, an increase in prices and a decrease in output (Berument and Dincer, 2004).

#### 4.8 Summary of the Hypotheses

Table 4.12 presents a summary of the objectives and hypothesis results. The rules for rejecting the hypothesis and the critical p values presented. The actual /calculated p values were then evaluated against the critical p values and the comment on whether the hypothesis was rejected, or not rejected.

Objective No	Objective	Hypothesis	Rule	p-value	Comment
Objective 1	To establish the effect of Liquidity risk on return on assets of commercial banks in Kenya	Ho: There is no statistically significant relationship between liquidity risk and return on assets of commercial banks in Kenya	Reject Ho if p value <0.05	p<0.05	The null hypothesis was rejected, therefore there is a significant relationship between liquidity risk and return on assets of commercial banks in Kenya
Objective 2	To determine the effect of credit risks on return on assets of commercial banks in Kenya	Ho: There is no statistically significant relationship between credit risk and return on assets of commercial banks in Kenya	Reject Ho if p value <0.05	p<0.05	The null hypothesis was rejected, therefore there is a significant relationship between credit risk and return on assets of commercial banks in Kenya
Objective 3	To establish the effect of interest rate risks on return on assets of commercial banks in Kenya.	Ho: There is no statistically significant relationship between interest rate risk and return on assets of commercial banks in Kenya	Reject Ho if p value <0.05	p<0.05	The null hypothesis was rejected, therefore there is a significant relationship between interest rate risk and return on assets of commercial banks in Kenya
Objective 4	To evaluate the effect of foreign exchange risks on return on assets of commercial banks in Kenya.	Ho: There is no statistically significant relationship between foreign exchange risk and return on assets of commercial banks in Kenya	Reject Ho if p value <0.05	p<0.05	The null hypothesis was rejected; therefore there is significant relationship between foreign exchange risk and return on assets of commercial banks in Kenya

## CHAPTER FIVE

### SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

The chapter discusses the conclusion, the summary of the findings, and recommendations. This is per the study objectives. Further areas of research were suggested and study limitations considered.

#### 5.2 Summary of Findings

The summary of the finding were done per objective.

##### 5.2.1 Liquidity Risk

The first objective of the study was to investigate the effect of Liquidity risk on return on assets of commercial banks in Kenya. Descriptive statistics showed that total mean of liquidity ratio for the period 2010 to 2015 was 0.430 with a standard deviation of 0.220 indicating small variability in liquidity ratio over time. The Maximum and minimum values of liquidity ratio over the same period of time were 0.100 and 0.900 respectively. Regression results revealed that liquidity ratio and ROA are positively and significantly related ( $\beta=0.039$ ,  $p=0.000$ ). This means that a one percent increase in liquidity ratio, leads to an increase in ROA by 3.9%. The null hypothesis was rejected hence there is a statistically significant relationship between Liquidity risk and return on assets of commercial banks in Kenya.

The findings of this study is consistent with that of Mwangi (2014) who studied on the effect of liquidity on financial performance of deposit taking micro finance institution in Kenya and found out that there is a positive relationship between liquidity and financial performance. The researcher concluded that financial sector will realize increased financial performance if an effort to stimulate MFIS liquidity is implemented by the management.

In contrast, Chen and Wong (2004) noted that, liquidity is a key determinant of financial health in insurance firms whereby a negative relationship exists. Similarly, Hakim and Neaime, (2005) said that current capital, liquidity and investment are the important

determinants of banks profitability, as well as insurance companies. Flamini, McDonald, and Schumacher (2009) in their investigation regarding Sub-Saharan countries found significant and negative relationship between bank profitability and liquidity.

### **5.2.2 Credit Risk**

The second objective of the study was establishing the effect of Liquidity risk on return on assets of commercial banks in Kenya. Descriptive statistics showed that total mean of credit risk for the period 2010 to 2015 was 0.085 with a standard deviation of 0.260 indicating small variability in credit risk over time. The Minimum and Maximum values of credit risk over the same period of time were -0.200 and 1.000 respectively. Regression results revealed that credit risk and ROA are negatively and significantly related ( $\beta = -0.014$ ,  $p = 0.041$ ). This means that a one percent increase in credit risk, leads to a decrease in ROA by 1.4%. The null hypothesis was rejected hence there is a statistically significant relationship between credit risk and return on assets of commercial banks in Kenya. This finding concurs with that of Grace, (2012) who studied on the credit risk management on the financial performance of commercial banks in Kenya concluding significant relationship.

Ara, Bakaeva and Sun (2009) studied on credit risk management and profitability in commercial banks of Sweden. The findings revealed that credit risk management has an effect on profitability in all the four banks. Moreover the results showed that Base II application strengthened the negative impact of NPLR on ROE.

### **5.2.3 Interest rate Risk**

The third objective of the study was establishing the effect of interest rate risks on return on assets of commercial banks in Kenya. Descriptive results showed that the total mean of interest rate risk for the period 2010 to 2015 was 2.923 with a standard deviation of 2.492 indicating a large variability in interest rate risk over time. The Minimum and Maximum values of interest rate risk over the same period of time were 0.200 and 23.900 respectively. Regression results revealed that interest rate and ROA were positively and significantly related ( $\beta = 0.002$ ,  $p = 0.000$ ). This means that a one percent increase in Interest rate ratio, leads to an increase in ROA by 0.2%. The null hypothesis was rejected

hence there is a statistically significant relationship between interest rate risks and return on assets of commercial banks in Kenya.

This finding is consistent with that of Wanjiru, (2015) who conducted a study on the determinants of interest rates spread among commercial banks of Kenya and ownership structure, market structure and business risks play significant role on explaining the interest spread. Ngalawa and Ngare, (2014) conducted the study on interest rate risk management for commercial banks in Kenya. The study was limited to listed commercial banks in Kenya. The objective was to determine whether commercial banks in Kenya retain a large exposure to interest rate that can be predicted through income gap.

#### **5.2.4 Foreign Exchange Risk**

The forth objective of the study was establishing the effect of foreign exchange risk on return on assets of commercial banks in Kenya. Descriptive results showed that the total mean of Foreign Exchange Risk for the period 2010 to 2015 was 0.996 with a standard deviation of 2.307 indicating a large variability in Foreign Exchange Risk over time. The Minimum and Maximum values of Foreign Exchange Risk over the same period of time were 0.100 and 22.600 respectively. Regression results revealed that foreign exchange risk and ROA were negatively and significantly related ( $\beta=-0.003$ ,  $p=0.000$ ). This means that a one percent increase in Foreign Exchange ratio, leads to an increase in ROA by 0.3%. The null hypothesis was rejected hence there is a statistically significant relationship between foreign exchange risks and return on assets of commercial banks in Kenya.

According to Ahmed, (2015) study objective was to find out the effect of foreign exchange exposure on financial performance of commercial banks in Kenya. In the study both primary and secondary data was used. Descriptive design was utilized and data analyzed using SPSS. The study revealed that interest rates have positive in significant impact on financial banks performance in Kenya.

### **5.3 Conclusions**

Based on the findings above the study concluded that liquidity ratio and ROA are positively and significantly related. The null hypothesis was rejected hence there is a statistically significant relationship between Liquidity risk and return on assets of commercial banks in Kenya. The implication of the findings is that if the liquidity risk is well managed then the commercial banks gets very high returns but when liquidity risk is not managed well then the performance of commercial banks declines drastically. This study reveals that the liquidity risk of commercial bank has been well managed hence the theory of enterprises risk management is abides in this study.

The study concluded that credit risk has a negative and significant effect on ROA. The null hypothesis was rejected hence there is a statistically significant relationship between credit risk and return on assets of commercial banks in Kenya. When non-performing loans increases then the income of commercial banks declines since it has significant relationship with ROA.

Further, based on the findings, the study concluded that interest rate risk has a positive and significant effect on ROA. The study reveals that the higher the interest charged by the bank the higher the income the bank is likely to gain, the lower the interest the bank charges the lower the income hence the bank should abide by the CBK guidelines so as to charge optimal interest.

Lastly, the study concluded that foreign exchange risk has a negative and significant effect on ROA. The null hypothesis was rejected hence there is a statistically significant relationship between foreign exchange risks and return on assets of commercial banks in Kenya. The study showed that foreign currency exchange exposure has an adverse effect on banks income.

### **5.4 Recommendations**

#### **5.4.1 Liquidity Risk**

From the findings above, the study recommends that commercial banks to have a sound process for measuring, identifying, controlling and monitoring liquidity risk. The process should incorporate a robust framework for projecting cash flows in a comprehensive way

that arises from liabilities, assets and off-balance sheet items over an appropriate set of time horizons.

The study also recommends that it is vital for the management of the Kenyan bank to be aware of its liquidity position in different product segment. This will help in enhancing their investment portfolio and providing a competitive edge in the market. It is the utmost priority of a bank's management to pay the required attention to the liquidity problems. These problems should be promptly addressed, and immediate remedial measures should be taken to avoid the consequences of the bank becoming illiquid.

#### **5.4.2 Credit Risk**

From findings, it is recommended that management of Kenyan commercial banks should enhance their capacity in credit analysis and loan administration. Clear credit policies and lending guidelines should be established. Management also is required to make sure that the terms and conditions are adhered to in loans approval. Hence lending guidelines should be approved by senior management and made aware to all staffs. This will reduce loss on nonperforming loans and improve the asset quality management which raises banks' expenses and consequently increase profitability. It is also recommended that the bank need to monitor the loan and advances to total deposits ratio frequently since it also affect profitability.

The study also recommends that commercial banks should have a banking relationship with any entity or individual. As a lender, the bank should know: how the requested funds are going to be used and how they are anticipated to be repaid and how to categorize, identify and rank credit risks.

#### **5.4.3 Interest Rate Risk**

From the findings of this study, interest rate risk is an income source. High interest rate risk can lead banking corporations to huge losses and threaten their capital base. It is essential that banking corporations have a comprehensive risk management system put in place that effectively measures, identifies, controls and monitors exposures of the interest rate risk, subject to proper senior management and board supervision.

The study also recommends that commercial banks should explore avenues to enhance capacities within banks for managing interest rate risks. Commercial banks especially locally owned are required to consider finding ways of mitigating the market risks such use of financial derivatives and asset securitization which will reduce their interest rate. This can be done by use of generally accepted financial concepts and techniques for risk measurement.

#### **5.4.4 Exchange Rate Risk**

Lastly, the study recommended that commercial banks need to identify the risk appetite of its stakeholders including the directors. This helps to determine the method appropriate for hedging against foreign exchange risk. The study recommends the use of Forward exchange contract. Forward exchange contract helps businesses to shield it from the adverse shifts in exchange rates by fixing an exchange rate until future date.

#### **5.5 Areas for Further Study**

The study sought to investigate the Analysis of financial risks on performance of commercial banks in Kenya. This study called for the analysis of commercial banks located Kenya whereas we have commercial banks in other countries whose studies have never been considered. Financial institutions like insurance firms, Cooperative societies and pension funds for purpose of making a comparison of the findings with those of the current study may also be conducted. Similar research can be carried on for other global commercial banks to know their performance since financial risks cuts across all financial institutions.

The study also relied on ROA as a measure of profitability. It is important to note, however, that many factors can influence ROA, including a firm's degree of capitalization. ROA favors highly capitalized institutions. ROA measure treats equity capital as free funds, there is no cost associated with them. Financial theory tells us that this is certainly not the case. As a result of this and other limitations, it is advisable to combine ROA with other measures of profitability and performance. Future research should involve measuring profitability using both Return on Assets (ROA) and Return on Equity (ROE). ROE is a true bottom-line profitability metric, comparing the profit available to shareholders to the capital provided or owned by shareholders.

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## APPENDICES

### Appendix I: Introduction Letter

Andrew Muriayi Juma

P.O Box 10213 -00100

**NAIROBI**

Dear Respondent,

**RE: THESIS ON FINANCIAL RISK ON FINANCIAL PERFORMANCE OF  
COMMERCIAL BANKS IN KENYA**

I am a post graduate student of Kenyatta University, Master of Science in Finance, and school of business. I'm carrying out a research on the above topic. Your organization has been chosen to be participating in the study by providing secondary data. I'm kindly requesting you to assist by providing financial reports. Do not hesitate to ask for clarification. The information will be purely used for the purpose of the study and so will be treated as confidential. A copy of the final report will be available upon request.

I appreciate your assistance and cooperation.

Yours Faithfully.

Andrew Muriayi Juma

## Appendix II: List of Banks in Kenya

1. African Banking Corporation Ltd.
2. Bank of Africa Kenya Ltd
3. Bank of Baroda (K) Ltd
4. Bank of India
5. Barclays Bank of Kenya
6. CFC Stanbic Bank Ltd
7. Chase Bank (K) Ltd.
8. Citibank N.A Kenya.
9. Commercial Bank of Africa Ltd.
10. Consolidated Bank of Kenya Ltd.
11. Co-operative Bank of Kenya Ltd
12. Credit Bank Ltd
13. Development Bank of Kenya Ltd
14. Diamond Trust Bank (K) Ltd
15. Dubai Bank Kenya Ltd
16. Eco bank Kenya Ltd
17. Equitorial Commercial Bank Ltd
18. Equity Bank Ltd
19. Family Bank Ltd
20. Fidelity Commercial Bank Ltd
21. Guaranty Trust Bank Ltd (Formerly Fina Bank Limited)
22. First Community Bank Ltd
23. Giro Commercial Bank Ltd
24. Guardian Bank Ltd
25. Gulf African Bank Ltd
26. Habib Bank A.G Zurich
27. Habib Bank Ltd
28. I&M Bank Ltd
29. Imperial Bank Ltd
30. Jamii Bora Bank Ltd
31. Kenya commercial Bank Ltd
32. K-Rep Bank Ltd
33. Middle East Bank (K) Ltd
34. National Bank of Kenya Ltd.
35. NIC Bank Ltd.
36. Oriental Commercial Bank Ltd
37. Paramount Universal Bank Ltd
38. Prime Bank Ltd
39. Standard Chartered Bank (K) Ltd
40. Trans-National Bank Ltd.
41. Victoria Commercial Bank Ltd.
42. UBA Kenya Bank Ltd
43. Chartered house bank ltd

Source: Author (2018)

## Appendix III: Research Permit



### NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,  
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Fax: +254-20-318245, 318249  
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NAIROBI-KENYA

Ref. No: **NACOSTI/P/17/32165/18915**

Date: **12<sup>th</sup> September, 2017**

Andrew Muriayi Juma  
Kenyatta University  
P.O Box 43844-00100  
NAIROBI.

#### **RE: RESEARCH AUTHORIZATION**

Following your application for authority to carry out research on "*Analysis of financial risks on performance of commercial banks,*" I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **11<sup>th</sup> September, 2018**.

You are advised to report to **the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit a **copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

**GODFREY P. KALERWA MSc., MBA, MKIM  
FOR: DIRECTOR-GENERAL/CEO**

Copy to:

The County Commissioner  
Nairobi County.

The County Director of Education  
Nairobi County.