FINANCIAL RISKS AND FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

BY

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APRIL, 2019
DECLARATION

Declaration by the Student

I declare that this project is my original work and has not been submitted for an award of a degree in any other University for examination purposes.

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

OMONDI NICHOLAS ODHIAMBO

D53/PT/37127/2016

Declaration by the Supervisor

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

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DEDICATION

This project is dedicated to my family and friends for their support throughout the journey.
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<tr>
<td><strong>Credit Risk</strong></td>
<td>The possibility that a borrower may fail to pay back his/her loan as agreed, which will be measured as a ratio of the bank non-performing loans to total loans.</td>
</tr>
<tr>
<td><strong>Financial Performance</strong></td>
<td>How well a bank uses the resources at its disposal provide returns to its owners/investors. This will be measured using the ROE.</td>
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<td><strong>Financial Risks</strong></td>
<td>The totality of liquidity risk, credit risk, interest rate risk and foreign exchange rate risk.</td>
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<td><strong>Foreign Exchange Rate Risk</strong></td>
<td>A financial risk brought about due to an exposure to unexpected changes in the exchange rate between two currencies.</td>
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<td><strong>Interest Rate Risk</strong></td>
<td>A risk that is due to the fluctuations of the interest rates which have a direct effect on the financial assets and liabilities of a firm.</td>
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<tr>
<td><strong>Liquidity Risk</strong></td>
<td>The likelihood that a firm may be unable to meet short term financial demands as and when it needs them.</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>CBK</td>
<td>Central Bank of Kenya</td>
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<td>CBR</td>
<td>Central Bank Rate</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>IPT</td>
<td>Interest rate Parity Theory</td>
</tr>
<tr>
<td>KSH</td>
<td>Kenyan Shillings</td>
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<td>MFIs</td>
<td>Micro Finance Institutions</td>
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<tr>
<td>NACOSTI</td>
<td>National Commission for Science, Technology and Innovation</td>
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<tr>
<td>NIM</td>
<td>Net Interest Margin</td>
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<tr>
<td>NSE</td>
<td>Nairobi Securities Exchange</td>
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<td>ROA</td>
<td>Return on Asset</td>
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<td>ROE</td>
<td>Return on Equity</td>
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<tr>
<td>SACCOS</td>
<td>Savings and Credit Cooperative Organizations</td>
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<td>USD</td>
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ABSTRACT

Banking industry in Kenya has experienced a major transition in the last two decades. The industry being a mixed one, comprises of both local private and foreign commercial banks which have lately been characterized by poor performance. This has led to the collapse of a number of banks including Dubai Bank, Chase Bank and imperial Bank. The Kenyan banking sector is vulnerable to risks originating both from their micro and macro environment. This threatens the banks long term sustainability and consequently their financial viability. Some of the risks that pose a major challenge to the financial sector growth include; credit, liquidity, foreign exchange rate and interest rate risks. This study therefore, sought to investigate the effect of financial risk on the Kenya’s commercial banks financial performance. Specific objectives for the study were to examine the effect of, credit risk, liquidity risk, foreign exchange rate and interest rate risk on performance of commercial banks in Kenya. The study adopted Liquidity preference theory, International Fisher effect theory, Interest rate parity theory, and the Agency theory to support relationship between the study variables.

A causal research design was adopted in this study in which the population targeted included 42 commercial banks that had been in operation in Kenya from the year 2013 to 2017. The study used secondary panel data that was analyzed through descriptive and inferential statistics within the framework of panel regression model with the aid of STATA (vs14). However some banks had been put under receivership and another under statutory management. Therefore complete data was only available for 34 commercial banks. Diagnostic test were conducted for normality, multicollinearity and heteroscedasticity. Ethical considerations were adhered to in every stage of the study. From the analysis of the data, R-square ($R^2$) for the regression was 0.7386 implying that credit risk, liquidity risk, interest rate risk and foreign exchange risk, jointly explain 73.86 percent of the variations in commercial banks’ financial performance (ROE) in Kenya at 0.05 level of significance. From the study findings it can be substantively concluded that interest rate risk have a positive and significant effect on the banks’ financial performance with a coefficient of $\beta=0.2465312$ while, credit risk and foreign exchange risk have a negative and significant effect on financial performance of commercial banks in Kenya with coefficients of $\beta=-0.1307926$ and $\beta=-0.3395534$ respectively. Liquidity risk on the other hand indicated an insignificant positive effect on financial performance of commercial banks in Kenya. In overall, exchange rate risk was found to have the greatest effect on financial performance of commercial banks in Kenya. Based on the study findings, commercial banks can be able to improve their financial performance (ROE) through efficient and effective management of exchange rate risk which poses the greatest effect on the commercial banks financial performance. The study would recommend the use of swaps, options, spot markets and forward markets when dealing with operations abroad so as to minimize the exchange rate risk. The use of restrictive covenants and thorough scrutiny of the banks customers before advancing any loans/ facilities would assist to reduce credit risk.
CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The banking sector plays a crucial role in financial allocation all over the world. This is because of its intermediation functions which involve shifting funds from surplus units to deficit units (Ongore, 2013). In order to perform and sustain its functions, the banking sector has to have a good financial performance, it is however not possible to anticipate or avoid financial risks. In addition, Boermans, (2011), states that financial performance and risk must be evaluated together since they are interdependent and may either sustain or lead to the closure of banks. Financial performance and risk are receptive to both internal and external factors such as inflation, real interest rate, off balance sheet items and the GDP growth.

Banks operate in highly volatile and uncertain environment. Thus, the concern regarding financial performance arises. Financial performance has attracted a lot of attention due to globalization of business activities and high level of competition. This situation has had firms to minimize their costs, structure of operation attract more customers and retain existing customers (Ruziqa, 2013). The difficulty arises in selecting out the most successful firm with high level of profitability and good liquidity position.

From a global perspective, the main concern is to improve managerial performance by identifying activities associated with high and low performing operations. According to Akani, Nwanna and Mbachi (2016), the government and other stakeholders have raised concern by putting crucial efforts to revive the ailing and liquidating companies in an attempt to restore the confidence of shareholders and potential investors.

The Central Bank of Kenya placed Dubai bank and Imperial bank under receivership in August 2015 and October 2015 respectively (CBK, 2015). The Central Bank of Kenya further confirms that it had to pay close attention to the liquidity and credit risks in the banking sector as they were the cause of putting Dubai bank
and Imperial bank under receivership. In the following year (2016), despite the banking sector recording a slight improvement in profits, Chase bank was also put under receivership (CBK, 2016).

### 1.1.1 Financial Risks

All businesses are risky, and in order to succeed, effective risk management strategies have to be put in place. A firm's management has different degrees of control as far as risk is concerned. The management can control risks within the internal environment but those that occur externally maybe beyond their control. Firms may not have control over risks and sometimes all they can do is attempt to predict potential risks, assess its likely effect on the firm’s operations and be ready with a strategy to counter any adverse impact (Runo, 2013).

According to Dimitropolous *et al.* (2010), financial risk comprises of liquidity risk, credit risk, interest rate risk and foreign exchange risk, all of which contribute to the unpredictability of a firm’s financial performance.

According to Drehmann & Nikolaou, (2013) a bank may be unable to meet its short term financial demands when required to. This is referred to as liquidity risk. It normally happens when the firm is unable to convert its short term assets or security to liquid cash without incurring capital or income loss in the course. Liquidity is the quickness and certainty with which an asset can be converted into cash/ income whenever the asset holder desires. The current ratio and quick ratio are some of the ratios that are normally used to measure the liquidity of a firm (Buigut, 2010).

Sometimes borrowers may fail to make required payments leading to a debt, this become risks by default and is referred to as credit risk. In Credit risks, the lender may lose interest associated with a loan due to the risk that a borrower may fail to repay (Cecchetti & Schoenholtz, 2011). In the first instance, interference with cash flows, loss of principal and interest and amplified costs of collection are some of the risks that may affect the lender (Al-Qudah & Jaradat, 2013).
Interest rate risk is that which occurs due to fluctuation of the interest rates which directly affect financial assets and liabilities of a firm (Cecchetti & Schoenholtz, 2011). It also refers to the level of volatility of the rate of return from a convertible financial instrument such as a bond or derivative (Nzuve, 2016). Interest rate risk indicates a possibility that the rate of an asset may deteriorate because of unanticipated fluctuation in the interest rates. Investments in a fixed-rate bond are the ones commonly associated with this risk.

Exchange rate risk is a risk brought about due to unexpected fluctuation in exchange rates between two currencies. Those firms that have some of their operations outside the country (or have their subsidiaries abroad), are more exposed to foreign exchange risk (Ruziqa, 2013). Omagwa, (2005), states that the changes in the exchange rates directly affects the import prices and in turn pose an inverse impact on the economy. According Ahmed, (2015), the most appropriate measure of foreign exchange rate risk is through a bank’s Net Foreign Currency Exposure relative to its Net Total Assets.

1.1.2 Commercial Banks in Kenya

The Banking sector in Kenya is governed by the CBK Act, the Companies Act, the Banking Act and several prudential strategies provided by the CBK. According to Meshak and Nyamute, (2016), the lifting of the exchange controls and liberalization of the banking sector occurred in 1995. The CBK is tasked with articulating and instigating monetary policy and nurturing the solvency, liquidity and effective operation of the financial sector (Otuori, 2013). According to Macharia, (2013) information regarding the commercial banks and non-banking financial institutions in Kenya, inflation, interest rates, other macroeconomic variables and financial sector guidelines are published by the CBK.

According to Otuori, (2013), banks have grouped themselves to form Kenya Bankers Association (KBA). Issues affecting members are served and banks interests are advocated for. According to the CBK, (2017) Supervision Report as of December 2017, the banking sector of Kenya has 42 commercial banks, where 29 are locally owned while 13 are owned by foreigners. In terms of asset holding, foreign banks take up to 35% as of
2011 (Ongore, 2013). In Kenya, the commercial banks control the financial sector, and as asserted by Mulwa, (2015) any underperformance in this sector has a massive effect on the growth of the economy.

1.1.3 Financial Performance of Commercial Banks in Kenya

Financial performance indicates the level of operations of a firm over a given time period, which is articulated in terms of returns and losses for a specified duration (Mulwa, 2015). Concerned stakeholders judge the outcome of a business’s strategies and processes in objective monetary terms by assessing the performance. According to Kithinji, (2010), financial performance can be defined as how well a firm uses the resources at it exposure to generate returns to its investors. The financial performance of commercial banks may also be referred to as profitability and is generally measured in ratios. It can be measured in terms of the Return on Assets (ROA), net profits relative to total assets of the firm or the Return on Equity (ROE), net profits relative to the shareholders’ funds (Khrawish, 2011). Another indicator of banks financial performance is Return on Assets (ROA) ratio. This ratio measures whether the bank is able to generate income using company assets at its disposal.

Return on Assets further reveals how well a company’s resource may be used to generate the income (Nzuve, 2016). A higher ROA indicates that a firm uses its resources efficiently, thus maximizing the shareholders wealth. ROE, and ROA, are the most commonly used ratios. Quality financial performance can be indicated by ROE of between 15% and 30%, while ROA is at least 1%. Kwakwa (2014) states that to best illustrate the extent to which banks use reinvested income in generating future profits, ROE is the best ratio to use. This study therefore adopted the ROE as the measure of the banks financial performance.

Like in other developing countries, the commercial banking industry of Sub Saharan-Africa has undergone a major shift in the last two decades. However, the industry is diverse, entailing local private and foreign commercial banks characterized by poor performances. In Kenya, the poor performances led to the collapse of some banks which include Dubai Bank, Chase Bank and imperial Bank (CBK, 2016). Commercial banks are
predominant financial institutions and their changes in performance and structure have severe implications on 
the entire economy (Nasserinia, Ariff & Fan-tah, 2014). Liabilities in the banking business are 85% from 
deposits from depositors, this makes it very delicate (Kiganda, 2014).

1.2 Statement of the Problem

The CBK (2018), provided evidence of a declining trend in the commercial banks’ financial performance. 
From the trend, the ROE of these banks stood at 29.8% as at 2012 which declined to 28.9% in 2013. 
Moreover, the decline extended to 26.6% in 2014, 25.2% in 2015 and a further decline to 24.5% in 2016. This 
indicates a stagnating growth in ROE, signifying a consistent poor financial performance over the years.

There have been efforts to explain the low performance of these banks, however, these have not been fruitful. 
Therefore, it is very vital for banks to withstand the demands arising from both micro and macro environment 
and to ascertain profitability. Understanding the banks’ performance needs familiarity with the interactions 
between the measures of performance of banks and the micro and macroeconomic variables (Kimani, 2013). 
Empirical literature indicate that firms that practice prudent risk management have been able to improve their 
performance (Runo, 2013). The Kenyan banking sector is still susceptible to financial risks arising from the 
micro and macro-environment. The sector’s financial sustainability and long-term viability are threatened by 
these risks. Liquidity, credit risk, interest rate and exchange rate risks presents a major challenge despite the 
development in the sector (Kithinji, 2010).

According to Ongore (2013), the financial performance of commercial banks is influenced by both external 
and internal variables, which can be categorized into macro (external) and specific/ micro-economic factors. 
The macroeconomic/ external variables are country wide or sector wide variables such as exchange rate risk 
and interest rate risk which are beyond the firm’s management control and affect the bank’s profitability. 
Microeconomic variables on the other hand include the individual bank features such as liquidity risk and
credit risk which influence the performance of a bank, and are essentially affected by the internal decisions of the board and the management (Waweru, 2013).

Empirical studies on financial risk and performance of banks include, Kithinji (2010), Korir (2011), Macharia (2013), Cucinelli (2013), Kiganda (2014), Cuong (2015) and Muriithi (2016). However, some of these studies were centered on other countries other than Kenya. In addition some of the studies centered on Kenya also have some mixed results. In addressing the research gaps, the current study sought to establish the effect of financial risk on performance of commercial banks in Kenya. Specifically, the study sought to establish the effect of liquidity risk, credit risk, interest rate risk and exchange rate risk on the performance of commercial banks in Kenya.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of this study was to determine the effect of financial risk on financial performance of commercial banks in Kenya.

1.3.2 Specific Objectives

The following were the specific objectives of the study:

i. To determine the effect of liquidity risk on financial performance of Commercial Banks in Kenya.

ii. To establish the effect of credit risk on financial performance of Commercial Banks in Kenya.

iii. To determine the effect of interest rate risk on financial performance of Commercial Banks in Kenya.

iv. To establish the effect of exchange rate risk on financial performance of Commercial Banks in Kenya.
1.4 Research Hypotheses

The research was guided by the following null hypotheses:

- H₀₁: Liquidity risk has no significant effect on financial performance of Commercial Banks in Kenya.
- H₀₂: Credit risk has no significant effect on financial performance of Commercial Banks in Kenya.
- H₀₃: Interest rate risk has no significant effect on financial performance of Commercial Banks in Kenya.
- H₀₄: Exchange rate risk has no significant effect on financial performance of Commercial Banks in Kenya.

1.5 Significance of the Study

The study will be of significance in a number of ways. The study will assist the government with policy formulation on issues governing operations in the banking industry and financial sector. The findings will also assist bank managers in formulation of strategies. Investors such as shareholders will also be able to understand the performance of commercial banks in relation to financial risk. Lastly, the study will be beneficial to future academicians who may have an interest to do research in the same area.

1.6 Scope of the Study

The study focused on financial risk and financial performance of commercial banks in Kenya. Therefore, the study concentrated on all commercial banks that had been in operation within the period of 2013 to 2017. Therefore, the study considered the 42 commercial banks that had operated in Kenya within the period of five years.

1.7 Limitations of the study

In a research where secondary data is involved, the main challenge revolved around the originality of data. The internet is characterized by so many unreliable data from different sources. In addressing this challenge, the researcher acquired the study data from authorized sources. This included the CBK and the commercial
banks websites containing their financial statements. The researcher utilized annual data, some of which were unavailable on some study variables in yearly form. These were therefore converted into yearly form.

1.8 Organization of the study

The study had five chapters in which the first chapter explained the research background, research objectives, significance of the study, followed by the scope and finally the study limitations. The second chapter comprised of the reviewed literature. It had two sections, the theoretical review which provided theories within which the study relied on and the empirical reviewed which provided more insights on similar studies conducted by different researchers. The third chapter looked at the study methodology which composed of the research design, the target population, the data collection instrument, data analysis process and finally the ethical considerations for the study. The fourth chapter presented the actual analysis of the data, study findings and subsequent discussions. The last chapter of the study composed of the study summary, conclusions and lastly study recommendations.
CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter presents the theories to be used in the theoretical review in supporting the variable of the study. The studies that were reviewed, the literature summary with the gaps and finally the conceptual framework.

2.2 Theoretical Review

The study was anchored on Liquidity Preference Theory, the International Fisher Effect Theory, the Interest Rate Parity Theory and the Agency Theory. These theories were used to provide more insights on the relationships between the study variables.

2.2.1 Liquidity Preference Theory

The liquidity preference theory was propounded by Keynes (1936). In view of this theory, when dealing with securities with long-term maturities, investors often demand high interest rates. This tend to be more risky because when all other factors are constant, investors opt for cash or other highly liquid holdings. According to this theory, interest rates on short-term securities tend to be low because investors purchase assets on medium-term or long-term securities sacrificing less liquidity. The theory assumes that the highly liquid investments are easily sold for full value.

According to Nikolaou (2009) Liquidity is linked to liquidity risk because investors have a preference for liquidity. As described by Keynes the liquidity preference theory has three causes which determine how much liquidity is demanded for. Individuals prefer liquidity and therefore have to have an assurance of sufficient cash on hand for basic transactions because income is not always readily available. This is referred to as the transaction motive. This motive suggests that, the amount of liquidity demanded by an individual is
determined by an individual’s income; high income levels are equivalent to how much individuals or groups demand for more money to accommodate their increased expenditure.

The precautionary motive is the need for liquid cash to act as a contingency, this is an additional security in the event of an uncertainty or condition that requires a significant expenditure of money. Apart from the two motives, individuals also have a speculative motive, which assumes that prices of bonds may begin to considerably fall, enabling the investor to have an opportunity to use liquid funds to invest in assets with better returns in the future (Amihud, Mendelson & Pedersen, 2005). The speculative motive implies that investors' are generally reluctant to commit funds for investment capital in the present since they have fear that they may miss out on better opportunities in the future. In relevance to this study, Liquidity Preference Theory attempts to clarify the rationale for holding assets by individuals. Customers go for highly liquid assets as they also avoid banks with high liquidity risk, they do this by stashing up their cash in the highly liquid banks.

2.2.2 Interest rate Parity Theory (IPT)

The theory was propounded by Keynes (1923). The assumption of this theory is that the variation in the rate of interest between two trading partner states accounts for the instability in the nominal interest rate. In addition, the difference between foreign countries interest rates and domestic interest rates is the interest rate parity. According to Bhole and Dash, (2002), parity state implies that the difference in interest rates between two currencies is revealed in either discount or premium for the forward exchange rate on the foreign currency whereby there is no sale or purchase of currency in the financial market

In relevance to this study, IPT shows the presence of parity in interest rates which is vital in banking operations. As stated by Borio et al., (2015), the main aim of Commercial banks as they play the role of intermediation is to make profits. This is determined by how commercial banks charge interests on their loans and other financial services rendered (Buigut, 2010). Thus, high profits indicates better financial performance which is as a result of higher interest rates charged.
2.2.3 International Fischer’s Effect Theory

The theory of International Fisher effect was developed by Irving Fisher in the 1930. According to him, there exists a tradeoff between foreign exchange rates changes and the changes in rates of interest. The Fisher effect states that the real rates of interest across nations are the same owing to the arbitrage openings between financial markets that usually take place in the form of capital flows. The real rate of interest equivalence implies that a nation with the lower rate of interest also ought to have a lower rate of inflation. However, this leads to the depreciation of a nation’s actual currency value with time. The Fisher’s theory does not consider the rates of inflation in explaining the changes in the rates of exchange but rather the market rates of interest.

The interest rate theory of exchange rate expectations clarifies the relationship between the relative rates of interest and foreign exchange rates. The exchange rate variations between two states is displayed by the nominal rate of interest differentials. Giddy (1997) termed this, the International Fisher effect which has a close link to the Fisher effect, an observation by Irving Fisher. Interest rates in appreciating currencies tend to be low and interest rates in depreciating currencies tend to be high where international Fisher effect holds. This helps offset expected currency gains and losses. According to Madura (2010) the theory stated that foreign currencies that have a relatively high rates of interest are likely to depreciate since the high nominal rates of interest display expected inflation rate.

2.2.4 Agency Theory

This theory was developed by Jensen and Meckling (1976). It was first used in economic theory and thereafter mostly used in corporate governance. According to Daily, Dalton and Canella (2003), agency theory is affected by two factors. First, the theory has simple concepts which reduce corporations to two participants, that is, managers and shareholders. Secondly, it is based on the view that human beings are self-centered individuals. Agency theory provides an explanation to the agency problems that may come about as a result of the agent going or acting against the principal’s interest.
In relevance to this study, in the case of commercial banks, management may not act in the best interest of their principals (shareholders) who demand shareholders wealth maximization (financial performance). Instead, managers may engage in activities that will best benefit them. In the context of the bank, an agency relationship explains how providers of corporate finances and those delegated to manage affairs of the bank relate. Jensen and Meckling (1976) describe agency relationship as an agreement in which an individual(s) referred to as the principal(s) engaging another party referred to as the agent to act on their behalf. Agency theory assumes that the board of directors holds control and they are compelled to delegate based on the use of compensation incentives.

2.3 Empirical Review

2.3.1 Liquidity Risk and Financial Performance

Cucinelli (2013) researched on liquidity and financial performance of listed and non-listed European Banks. The sample size comprised of the 575 listed and non-listed European banks and the analysis was conducted within the OLS regression framework. The findings of the study indicated an insignificant effect of liquidity on financial performance of the listed and non-listed European banks in the long term. However, the study only focused on the European banks which operate in a different market environment from those in developing counties such as Kenya.

Otalu, Aladesanmi and Olufayo (2014) studied the impact of monetary policy on performance of Nigerian commercial banks: A valuation of their role in Credit Creation. In their study, they used liquidity ratio, interest rate, money supply and cash reserve ratio as indicators for monetary policy. For performance, they used total bank credit as an indicator. The findings revealed an insignificant negative impact of liquidity ratio on the banks financial performance. The study however used, total bank credit as the measure of the banks performance.
Mamatzakis and Bermpei (2014) focused their study on the major determinants of the performance of the G7 and Switzerland banks. Their sample size comprised of 97 banks. Using a panel data analysis, the study findings indicated a significant negative relationship between liquidity and the banks performance. The study was however based on Switzerland banks which is very much developed as compared to Kenya.

Cuong (2015) studied the effect of liquidity risk on the European banks financial performance. The study sample size comprised of a panel of the EU27 banks studied for the period 2001 to 2011. The study results indicated a significant and negative effect of liquidity risk on the banks financial performance. However, the study having been concentrated on commercial banks in Europe cannot be generalized to those banks in Kenya, which is still a developing country.

Muriithi (2016) studied financial risk and profitability of commercial banks in Kenya. Using a sample of 43 banks in Kenya, the Pagan Lagrange multiplier (LM) and the Chow and Breusch tests were performed to test for the fitness of the fixed effect model. The indicators of financial risk included the credit, market, liquidity and operational risks. The study findings indicated a negative and significant effect of liquidity risk on the profitability of commercial banks in Kenya.

2.3.2 Credit Risk and Financial Performance

Felix and Claudine (2008) in their study looked at the influence that credit risk had on the performance of Nigerian commercial banks. The study findings indicated positive and significant effect of credit risk on the financial performance commercial banks in Nigeria. However, the analysis was based on commercial banks situated in Nigeria. Thus, in addressing this contextual gap, focus of this study was on the 42 commercial banks situated in Kenya.

Gaitho (2010) studied credit risk management practices and SACCOs’ performance in Nairobi. The research showed that credit risk management is adopted by majority of the SACCOs in Nairobi. Empirical results
indicated that client appraisal had a significant effect on the performance of SACCOs in Nairobi. However, this study was based on SACCOs, the current study was based on commercial banks situated in Kenya.

Kithinji (2010) conducted a study on the relationship between credit risk management and performance of listed banks at the NSE, Kenya. Data was collected on profits and NPLs of commercial banks for the period 2004 to 2008. The study findings indicated a positive effect of credit risk and profitability of the commercial banks. This meant that the banks with a higher credit risk were more profitable as compared to those with low credit risk. However, the study having been focused only on the banks listed at the NSE, and therefore the findings cannot be generalized to all the banks in Kenya.

Korir (2011) looked at the impact of credit risk on the financial performance of Deposit Taking Microfinance institutions (MFIs) in Kenya. Study results revealed that credit risk had a positive and significant impact on financial performance of the Deposit Taking SACCOs. A higher credit risk therefore meant a higher profitability. However, the study concentration of the study was on Microfinance Institutions. The current study was centered on the commercial banks in Kenya.

Chepkoech (2015) studied credit risk management and Micro Finance Institutions performance in Nairobi County. The study sample was 261 employees drawn from selected Micro-Finance Institutions in Nairobi County. The study adopted a multiple regression model to analyze the study data. Empirical findings of the research indicated a significant positive impact of credit risk on the financial performance of MFIs in Nairobi County. However, the study was based on Micro Finance Institutions. The current study filled this gap by focusing on the commercial banks in Kenya.

Muriithi (2016) studied financial risk and profitability of commercial banks in Kenya. Using data from a sample of 43 banks, the Pagan Lagrange multiplier (LM) and the Chow and Breusch tests were applied to check the fixed effect model. The indicators of financial risk included the market risk, credit risk, liquidity risk
and operational risk. Study findings indicated a significant negative impact of credit risk on the profitability of commercial banks in Kenya.

2.3.3 Interest Rate Risk and Financial Performance

Macharia (2013) studied the global financial crisis and profitability of banks in Kenya. The main focus were banks which provided mortgage financing services. The research used inflation rate, exchange rate and the rate of interest as its independent variables. The findings revealed a negative impact of interest on the profitability of banks providing mortgage financing services. The study however was centered on banks providing mortgage financing services in Kenya. It also failed to carry out diagnostics test to ascertain whether the data is adequate before making inferences and conclusions.

Waweru (2013) looked at the interest rates and profitability of banks listed at the NSE. Focus of this study on interest rate and financial performance. Findings of the study indicated that interest rates had a positive and significant effect on the profitability of banks listed at the NSE. The study however focused on banks listed at the NSE and can therefore not be generalized to all banks in Kenya. This current study sought to understand the effect of the interest rate risk on the profitability of all the commercial banks in Kenya.

Otalu et al. (2014) looked at the impact of monetary policy on performance of Nigerian commercial banks: A valuation of their role in Credit Creation. In their study, they used cash reserve ratio, interest rate, money supply and liquidity ratio as indicators for monetary policy. For performance, they used total bank credit as an indicator. The findings revealed an insignificant negative impact of interest rates on the banks financial performance. The study however used, total bank credit as the measure of the banks performance. The current study applied ROE to measure the financial performance of the banks.
2.3.4 Exchange Rate Risk and Financial Performance

Desaro (2012) conducted a research on the macroeconomic variables and commercial banks performance in Kenya. This study had money supply, inflation rate, GDP growth rate, exchange rate and the sampled commercial banks’ lending rate as it study variables. The study made use of quarterly data which was analyzed using Pooled Least Square Method where the findings of the study showed that ROA was negatively correlated with exchange rate. This study adopted ROE as the measure of the banks financial performance.

Macharia (2013) in his study looked at global financial crisis and banks profitability in Kenya. The study was centered on commercial banks offering mortgage financing services in Kenya. The findings indicated a negative effect of foreign exchange rate on profitability of commercial banks in Kenya. He however paid attention to commercial banks offering mortgage services and failed to carry out some diagnostic tests. This current study was majorly centered on the commercial banks in Kenya, and a number of crucial diagnostic test were also conducted before making inferences.

Similarly, Kiganda, (2014) studied macroeconomic variables and banks financial performance in Kenya (focusing on Equity Bank). The study adopted a multiple regression model in its analysis and found an insignificant negative of the exchange rate on the banks financial performance. However, the study was centered on just a single bank in Kenya and cannot be generalized to all the banks in Kenya. A panel multiple regression model was adopted in the current study contrary to OLS.

2.4 Summary of Literature Review and Research Gaps

The above reviewed literature provided evidence of various research gaps. These gaps ranged from contextual, conceptual and knowledge gaps. A number of studies on financial risks and performance had been conducted for commercial banks in developed and other countries other than Kenya.
<table>
<thead>
<tr>
<th>Author</th>
<th>Focus and Context of the study</th>
<th>Key Findings</th>
<th>Research Gaps</th>
<th>Focus of Current Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waweru (2013)</td>
<td>Interest rate and financial performance of commercial banks listed at the NSE, Kenya</td>
<td>The study found that interest rate have a positive and significant impact on the profitability of commercial banks in Kenya.</td>
<td>The study focused on the commercial banks listed at the NSE, concentrating only on a single variable (interest rate).</td>
<td>The study focused on all commercial banks in Kenya, and considered also other three variables (foreign exchange rate risk, credit risk and liquidity risk).</td>
</tr>
<tr>
<td>Macharia (2013)</td>
<td>Global financial crisis and the financial performance of commercial banks in Kenya</td>
<td>Findings revealed a negative effect of exchange rate on the financial performance of commercial banks in Kenya that offer mortgage finance</td>
<td>Major focus was commercial banks that offer mortgage finance.</td>
<td>The study used panel multiple regression analysis where diagnostic tests were carried out before making inferences and conclusions.</td>
</tr>
<tr>
<td>Author</td>
<td>Title</td>
<td>Findings</td>
<td>Methodology</td>
<td>Generalization</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Kiganda (2014)</td>
<td>Impact of macroeconomic variables on the Kenyan banking sector profitability: A case of Equity Bank.</td>
<td>The study found that exchange rate has an insignificant, negative effect on the banks performance.</td>
<td>The study was also based on a multiple regression analysis.</td>
<td>The study considered all commercial banks in Kenya, taking into account the risk factor of the macroeconomic variables.</td>
</tr>
<tr>
<td>Chepkoech (2015)</td>
<td>Effect of credit risk management and Micro Finance</td>
<td>Found credit risk to have a negative and significant effect on</td>
<td>However, the study was centered on</td>
<td>The study was centered on commercial banks.</td>
</tr>
</tbody>
</table>
Institutions performance in Nairobi County.

Source: Researcher (2018)

2.5 Conceptual Framework

Figure 2.1 illustrated the study’s conceptual framework which showed the interaction between the study variables. Financial performance was dependent on financial risks, thus making it the dependent variable. On the other hand, financial risks which were credit risk, liquidity risk, interest rate risk and the foreign exchange rate risk constituted the independent (predictor) variables.
Independent Variables

Financial Risks

- Liquidity Risk
  - Liquidity Ratio

- Credit Risk
  - Non-Performing Loans ratio

- Interest Rate Risk
  - Interest Rate sensitivity gap ratio

- Exchange Rate Risk
  - Net Foreign Currency Exposure ratio

Dependent Variable

Financial Performance

- Return on Equity (ROE)

Figure 2.1 Conceptual Framework

Source: Researcher (2018)
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter comprised of the methodology, which included the research design adopted in the study, the study’s target population, the data collection instruments, analysis of data, diagnostic tests and lastly the ethical considerations for the study.

3.2 Research Design

The study used a causal research design. Causal research design is used in a study to understand a cause and effect relationship between research variables, that is independent and dependent variables (Mugenda & Mugenda, 2011). A causal design was therefore suitable for the study as it seeks to establish the effect of financial risks on the banks financial performance.

3.3 Target Population

Cooper and Schindler (2009) defined a population as an entire set of components from which a researcher wants to make some observations or conclusions. The target population of the study included all the commercial banks which had been in existence in Kenya since the year 2013 to 2017, and were 42 in number. Therefore, the 42 commercial banks and their published financial statements constituted the unit of analysis and unit of observation respectively. This is as shown in (Appendix I)

3.4 Empirical Model

A panel regression model was utilized in the analysis of the data, based on the panel nature of the data. Thus, commercial banks’ financial performance were expressed as a function of interest rate, credit, liquidity and foreign exchange rate risks.
$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \epsilon_{it}$

Where:

$Y_{it}$ – Financial Performance (ROE).

$\beta_0$ - Constant.

$X_{1it}$ – Liquidity Risk (Ratio of total loans to total deposits).

$X_{2it}$ – Credit Risk (Non-Performing Loans ratio).

$X_{3it}$ – Interest Rate Risk (Ratio of interest rate sensitivity gap between assets and liabilities maturing within a period not exceeding one year).

$X_{4it}$ – Exchange Rate Risk (Ratio of Net foreign currency exposure between assets and liabilities to Net Assets).

$\beta_1$ – $\beta_4$ – Coefficients of the regression which measure $Y$ sensitivity due to changes in $X$.

$\epsilon_{it}$ - Error term, that accounts for the variables omitted in the function.

$i$ – Individual firm.

$t$ – Time period (year).

**3.4.1 Operationalization and measurement of variables.**

The independent variables comprised of the individual financial risks, which were; interest rate, credit, liquidity and foreign exchange rate risks. The dependent variable on the other hand constituted the performance (financial), which was measured using ROE. The table 3.1 below shows how the variables are operationalized.
Table 3.1 Operationalization of the variables.

<table>
<thead>
<tr>
<th>Type of variable</th>
<th>Variable</th>
<th>Operationalization</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent</td>
<td>Liquidity risk</td>
<td>possibility that a bank may be unable to meet short term financial demands as and when it needs them</td>
<td>Liquidity ratio = ( \frac{\text{Total loans}}{\text{Total deposits}} \times 100% )</td>
</tr>
<tr>
<td></td>
<td>Credit risk</td>
<td>possibility that a borrower may default to pay back his/her loan as agreed</td>
<td>NPLs ratio = ( \frac{\text{NPLs}}{\text{Total Outstanding Loans}} \times 100% )</td>
</tr>
<tr>
<td></td>
<td>Interest rate risk</td>
<td>a risk that is due to the fluctuation of the interest rates which directly influences the financial assets and liabilities of a bank</td>
<td>Interest rate sensitivity gap ratio = ( \frac{\text{Interest on Assets} - \text{Interest Cost on Liabilities}}{\text{Total Assets}} \times 100% )</td>
</tr>
<tr>
<td></td>
<td>Foreign exchange risk</td>
<td>a financial risk brought about due to an exposure to unanticipated changes in the exchange rate between two currencies</td>
<td>Net Foreign Currency Exposure ratio (NFCE) = ( \frac{\text{Net Foreign Currency Exposure}}{\text{Net Assets}} \times 100% )</td>
</tr>
<tr>
<td>Dependent variable</td>
<td>Financial Performance</td>
<td>how well a bank uses the resources at its disposal provide returns to its owners/investors</td>
<td>Return on Equity = ( \frac{\text{Net Profit}}{\text{Shareholders’ Equity}} \times 100% )</td>
</tr>
</tbody>
</table>

**Source: Researcher (2018)**

**3.5 Sampling Design**

This study focused on all the 42 commercial banks that had been in operation in Kenya since the year 2013 to 2017. However, data on 8 banks were unavailable and some such as Imperial bank, Dubai bank and Chase bank were put under receivership while Chaterhouse bank under statutory management. The study adopted a census approach. Mugenda and Mugenda (2003), asserts that when a population is not large or if it is reasonable to take account of the total elements of the study, then census sampling technique is adopted.

**3.6 Data Collection**

The study used the secondary panel data. The data collection was done from the financial statements of the commercial banks (annual reports from the banks websites) and the CBK (supervision reports) for the five year study period since 2013 to 2017. The study period was chosen as it was characterized by changes in the operating environment of banks which included the introduction of the interest rate capping and fluctuations in the exchange rates.

**3.7 Data Analysis**

Data analysis was performed with the aid of STATA version 14 within the panel multiple regression model framework. The analysis of the data was majorly conducted through descriptive and inferential analysis. The
descriptive statistics described the study variables generally and indicated the mean, maximum and minimum number of observation and the standard deviation. Graphs and tables were used for presentation of findings.

Inferential analysis was done within the framework of a panel regression model. Inferences about a population of the study was made using statistics from the panel regression model. Null hypothesis of the study was tested using inferential statistics. The null hypotheses thereafter was either be rejected or fail to be rejected at 95% confidence level.

3.8 Diagnostics Tests

3.8.1 Normality test

The Shapiro-Wilk test for normality was be adopted in testing the normal distribution of the study variables. The test had the data to be normally distributed as its null hypothesis. The null hypothesis ($H_0$) was therefore rejected if the p-values for the study variables was not greater than 0.05.

3.8.2 Stationarity Test

Analysis of the study data without the considering the panel nature of the data may lead to the biasness of the study results (Guraji, 2003). The unit root test is therefore necessary due to panel nature of the data. This study adopted the Harris-Tzavalis unit-root test in which the null hypothesis is that the panel contains unit roots and should be rejected if the p-values are greater than 0.05, implying the absence of unit roots (panels are stationery).

3.8.3 Multicollinearity Test

In testing the multicollinearity level, the variance inflation factor was applied. A mean variance inflation factor of less than 5 indicates a moderate level of multicollinearity which is acceptable. For all the study variables not to indicate multicollinearity problem, the variance inflation factor should be less than 3 while a variance inflation factor more than 3 shows a collinearity between the study variables. Ringle, Wende and
Becker, (2015) states that a variance inflation factor more than 5 indicate a severe multicollinearity problem. Therefore, in the case of severe multiple collinearity, the affected variables should be removed or transformed to composite.

3.8.4 Heteroscedasticity Test

To test whether the residuals are constant, the Breusch-Pagan test was adopted. In the test, constant variance is the null hypothesis which should be rejected if the p-value for the study variables are not greater than 0.05 implying that the residual is heteroskedastic and therefore the standard error cannot be reliably used (Knaub, 2007).

3.8.5 Hausman Test

To test for the most suitable regression (fixed effects/ random effects) model to be used, Hausman test was performed. This test is important to the study due to the panel nature of the data so as to ascertain the presence of differences between the fixed and random effects. The null (H_0) hypothesis in this case was fixed effect model is not best fit (Greene, 2008). The null hypothesis should therefore be rejected if the p-value is less than 0.05.

3.9 Ethical Considerations

Research ethics outlines procedures for the responsible conduct of a research. Ethical considerations entail adhering to norms and standards regarding research. All researches are guided by particular ethical principles and professional standards. The goal and objectives of a research study is only enhanced through thorough adherence to the ethical standards. The study was guided by the ethical standards and guidelines applicable to Kenyatta University and Kenya as a whole. In approaching the relevant organizations to collect data, the researcher obtained a research permit from the NACOSTI.
CHAPTER FOUR

DATA ANALYSIS AND DISCUSSIONS

4.1 Introduction

The chapter presents the research findings to establish the effect of financial risks on the financial performance of commercial banks in Kenya. Data was collected using data review guide (Appendix I) and analyzed to produce results of the findings which are presented in figures and tabular form. The analysis involved the use of descriptive statistics where frequency, minimum, maximum, mean and standard deviation were considered. To test the suitability of variables, the researcher conducted diagnostic tests for subsequent regression analysis. Furthermore, in testing the overall implication of the independent variables on dependent variable, a panel multiple regression analysis was employed.

4.2 Descriptive Statistics of variables

The descriptive statistics comprise of mean, standard deviation and the trends of the dependent and independent variables. Table 4.1 presented the descriptive analysis results.

Table 4.1: Descriptive analysis table

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROE</td>
<td>170</td>
<td>9.185618</td>
<td>13.1183</td>
<td>-42.88321</td>
<td>34.09672</td>
</tr>
<tr>
<td>Credit Risk</td>
<td>170</td>
<td>11.32865</td>
<td>14.5375</td>
<td>0</td>
<td>83.47379</td>
</tr>
<tr>
<td>Interest rate Risk</td>
<td>170</td>
<td>6.139227</td>
<td>3.312124</td>
<td>.5653227</td>
<td>34.27535</td>
</tr>
<tr>
<td>Foreign Exchange Risk</td>
<td>170</td>
<td>.5306305</td>
<td>.5273132</td>
<td>.000817</td>
<td>3.545683</td>
</tr>
<tr>
<td>Liquidity Risk</td>
<td>170</td>
<td>41.97253</td>
<td>15.87959</td>
<td>9.5</td>
<td>99.3</td>
</tr>
</tbody>
</table>

Source: Study Data (2018)
From the descriptive analysis, there were a total of 170 observations. The findings indicated that ROE had a mean of 9.185618 with 13.1183 as the standard deviation, implying that there was great deviation of the observed ROE values. The interpretation is that although some of the banks were making profits over the period, others were consistently making losses as others showing a consistent decline in their profits.

Credit risk had a mean of 11.32865 and standard deviation of 14.5375 which revealed that there was great variation in the values of credit risk. This indicated that a good number of these commercial banks had very high amounts of NPLs in their asset composition. Banks give out loans so as to earn interest on them as they are being repaid back and in the event that the bank is facing difficulties in acquiring these assets back then the assets become NPLs.

Interest rate risk on the other hand had a mean of 6.139227 and standard deviation of 0.5653227, indicating a very minimal variation in the values of interest rates. The minimal variation was mainly attributed to the interest rate cap in 2016 by the CBK. Foreign exchange rate risk had a mean of 0.5306305 and standard deviation of 0.5273132. This meant that there was little variation in the extent to which exchange rate risk contribute to performance of banks.

Liquidity risk had a mean of 41.97253 with 15.87959 as its standard deviation, an indication that there was moderate variability in levels of liquidity risk. In addition, the mean showed that on average all the commercial banks were able to maintain a liquidity ratio above the statutory ratio by the CBK of 20 percent.

### 4.3 Diagnostic Tests

Before the analysis, a number of diagnostics tests which included normality test, test for correlation, multicollinearity test and Stationarity tests were carried out in order to ascertain whether the data collected was fit for linear regression.
4.3.1 Normality Test

The normality test was conducted in order to establish whether the observed values follow a normal distribution. Shapiro-Wilk test for normality was used to establish whether the observed values of the variables are normally distributed. To perform the test, the following hypotheses were used. $H_0$: The study data are normally distributed while $H_1$: The study data are not normally distributed. The normality test results are in Table 4.2.

Table 4.2: Test for Normality

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>W</th>
<th>V</th>
<th>z</th>
<th>Prob&gt;z</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROE</td>
<td>170</td>
<td>0.91520</td>
<td>10.989</td>
<td>5.469</td>
<td>0.12721</td>
</tr>
<tr>
<td>Credit Risk</td>
<td>170</td>
<td>0.65890</td>
<td>44.199</td>
<td>8.645</td>
<td>0.93783</td>
</tr>
<tr>
<td>Interest rate Risk</td>
<td>170</td>
<td>0.63845</td>
<td>46.849</td>
<td>8.778</td>
<td>0.97848</td>
</tr>
<tr>
<td>Foreign Exchange Risk</td>
<td>170</td>
<td>0.75996</td>
<td>31.105</td>
<td>7.844</td>
<td>0.73837</td>
</tr>
<tr>
<td>Liquidity Risk</td>
<td>170</td>
<td>0.90210</td>
<td>12.686</td>
<td>5.797</td>
<td>0.14428</td>
</tr>
</tbody>
</table>

Source: Study Data (2018)

The prob>z for all the variables were found to be greater than 0.05. Consequently, the null hypothesis (study data are normally distributed) was accepted. This implied that the observed values followed a normal distribution and therefore allow for a linear regression analysis.

4.3.2 Stationarity Test

The study carried out a unit root test to ensure that there was no presence of unit roots (the panel data are stationary). The Harris-Tzavalis unit-root test, where Panels are not stationary was the null hypothesis and should be rejected if the p-values for the study variables are greater than 0.05 was used in this test. The stationary test results were as illustrated in Table 4.3.
Table 4.3: Stationarity Test Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Statistic</th>
<th>z</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROE</td>
<td>0.3307</td>
<td>-2.0257</td>
<td>0.0214</td>
</tr>
<tr>
<td>Liquidity Risk</td>
<td>0.4632</td>
<td>-0.4408</td>
<td>0.0297</td>
</tr>
<tr>
<td>Credit Risk</td>
<td>0.3477</td>
<td>-1.8224</td>
<td>0.0342</td>
</tr>
<tr>
<td>Interest Rate Risk</td>
<td>0.3644</td>
<td>-1.6219</td>
<td>0.0424</td>
</tr>
<tr>
<td>Foreign Exchange Risk</td>
<td>0.3125</td>
<td>-2.2432</td>
<td>0.0124</td>
</tr>
</tbody>
</table>

Source: Study Data (2018)

Table 4.3 shows the summary results for Stationarity test. A p-value of more than 0.05 indicates the presence of unit roots (H₀) while a p-value of less than 0.05 was an indication that there was no presence of unit roots. The Stationarity test results in Table 4.3, indicated that all the variables had p-values of less than 0.05 implying that the panels were stationary, thus the null hypothesis was therefore rejected.

4.3.3 Correlation Test

Correlation analysis was also done to test for cross sectional dependence of the study data. The test enables the researcher to establish the extent to which two study variables are related, whether the relationship is either positive or negative and lastly whether the association is significant or not.. The results of the data are presented in Table 4.4.
Table 4.4: Test for Cross Sectional Dependency Results

<table>
<thead>
<tr>
<th></th>
<th>ROE</th>
<th>Credit Risk</th>
<th>Interest rate Risk</th>
<th>Foreign Exchange Risk</th>
<th>Liquidity Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROE</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit Risk</td>
<td>-0.2026</td>
<td>1.0000</td>
<td>0.0142</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest rate Risk</td>
<td>0.1440</td>
<td>0.0359</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign Exchange Risk</td>
<td>-0.2876</td>
<td>0.0314</td>
<td>0.4817</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>Liquidity Risk</td>
<td>0.0639</td>
<td>-0.1193</td>
<td>-0.0478</td>
<td>0.1356</td>
<td>1.0000</td>
</tr>
<tr>
<td></td>
<td>0.4081</td>
<td>0.0549</td>
<td>0.5356</td>
<td>0.0780</td>
<td></td>
</tr>
</tbody>
</table>

Source: Study Data (2018)

If any of the independent variable not related with the dependent variable, then this is indicated by a zero (0) value. On the other hand, +1 or -1 implies that the two variables were perfectly positively or negatively correlated.

The test results in Table 4.4 indicated that there are no two variables that have very strong correlations as all the correlations are less than the threshold of strong correlation of +0.8. Credit risk and foreign exchange rate risk had weak negative correlation of -0.2026 (p=0.0142) and -0.2876 (p=0.0000) respectively with ROE. This implied that any increase in either credit risk or foreign exchange risk or both would lead to a decrease in the banks’ financial performance while a decrease in the risks would increase in their performance. Interest rate risk and liquidity risk on the other hand had weak positive correlation of 0.1440 (p=0.0256) and 0.0639 (p=0.4081) respectively with ROE. The implication was that increases in either interest rate risk or liquidity risk lead to an increase in the banks’ financial performance and a decrease in these risks lead to a decrease in the banks’ performance.
The p-values for credit, foreign exchange rate and interest rate risks were -0.2026 (p=0.0142), 0.2876 (p=0.0000) and 0.1440 (p=0.0256) respectively indicating that all the three coefficients were significant. Liquidity risk on the other hand had a p-value of 0.0639 (p=0.4081), implying that the coefficient was insignificant. All the correlations observed were weak positive and negative correlations an indication that there were no two variables that could interfere with each other during regression hence implying that the data collected qualifies for linear regression.

4.3.4 Multicollinearity Test

The study also carried out a multicollinearity test to check for the levels of multicollinearity so as to ensure it does not affect the regression analysis. In this case, the variance inflation factor (VIF) was applied for which the mean VIF for the variables should not be more than 5 (moderate multicollinearity).

Table 4.5: Multicollinearity Test

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
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<tr>
<td>ROE</td>
<td>1.45</td>
<td>0.688132</td>
</tr>
<tr>
<td>Foreign Exchange Risk</td>
<td>1.35</td>
<td>0.741673</td>
</tr>
<tr>
<td>Interest rate Risk</td>
<td>1.32</td>
<td>0.754891</td>
</tr>
<tr>
<td>Liquidity Risk</td>
<td>1.05</td>
<td>0.950414</td>
</tr>
<tr>
<td>Credit Risk</td>
<td>1.02</td>
<td>0.983403</td>
</tr>
<tr>
<td>Mean VIF</td>
<td>1.19</td>
<td></td>
</tr>
</tbody>
</table>

Source: Study Data (2018)

From Table 4.5 above, the mean VIF= 1.19 was less than 5 which implied that there is no multicollinearity (Ringle et al., 2015). This was affirmed by the tolerance factor (values of 1/VIF) for each of the variables being less than 1. This was in agreement with the classical linear model (CLM) assumptions that for a regression analysis to be performed, there should be no multicollinearity in the independent variables.
4.3.5 Heteroscedasticity Test

The Breusch-Pagan test for heteroskedasticity was conducted to test whether the residuals were constant and results were as in the Table 4.6. The null hypothesis for the test is that the residuals are homoskedastic which should be shown by a p-value of more than 0.05.

Table 4.6. Test for Heteroskedasticity Results.

<table>
<thead>
<tr>
<th>Breusch-Pagan / Cook-Weisberg test for heteroskedasticity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ho: Constant variance</td>
</tr>
<tr>
<td>Variables: fitted values of ROE</td>
</tr>
<tr>
<td>chi2(1) = 0.00</td>
</tr>
<tr>
<td>Prob &gt; chi2 = 0.9957</td>
</tr>
</tbody>
</table>

Source: Study Data (2018)

Test results revealed a prob>chi2=0.9957 which was greater than 0.05. Thus the null hypothesis (constant variance) was accepted hence the study concluded that there was homoscedasticity. This aligns with CLM assumption that variance of error terms is constant.

4.3.6 Hausman Test

In determining whether to use a fixed effect or random effect model, the Hausman test was performed. The null hypothesis (fixed effect is not best fit) is rejected if the p-value is less than 0.05. The test results are in Table 4.7.
<table>
<thead>
<tr>
<th></th>
<th>(b) fixed</th>
<th>(B) random</th>
<th>(b-B) Difference</th>
<th>sqrt(diag(V_b-V_B)) S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit Risk</td>
<td>-.1178467</td>
<td>-.1307926</td>
<td>.0129459</td>
<td>.0256017</td>
</tr>
<tr>
<td>Interest rate Risk</td>
<td>-.3066759</td>
<td>.2465312</td>
<td>-.5532071</td>
<td>1.406448</td>
</tr>
<tr>
<td>Foreign Exchange Risk</td>
<td>-.2822055</td>
<td>-.3395534</td>
<td>.057348</td>
<td>.1583978</td>
</tr>
<tr>
<td>Liquidity Risk</td>
<td>-.0124309</td>
<td>.0025698</td>
<td>-.0150007</td>
<td>.0355003</td>
</tr>
</tbody>
</table>

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
\[
\text{chi2}(4) = (b-B)'[(V_b-V_B)^{-1}](b-B) = 0.39
\]
\[
\text{Prob}>\text{chi2} = 0.9836
\]

Source: Study Data (2018)

From the test results (Table 4.7), the chi-square for the Hausman test was 0.39 with a Prob>chi2 = 0.9836 which was more than 0.05. The null hypothesis that fixed model is not best fit was therefore accepted, thus the random effect model was adopted to analyse the effect of financial risk on financial performance of commercial banks in Kenya.

4.4 Regression Analysis

The general objective of the study was to determine the effect of financial risk on financial performance of commercial banks in Kenya. Independent variables of the study were liquidity risk, credit risk, foreign exchange rate risk and interest rate risk while the dependent variable of the study was financial performance (ROE). A panel multiple regression analysis was conducted and results were as presented in Table 4.8.
4.4.1 Random Effect Panel regression results

Table 4.8: Model Summary

|                                | Coef.  | Std. Err. | z     | P>|z|  | [95% Conf. Interval] |
|--------------------------------|--------|-----------|-------|------|----------------------|
| ROE                            |        |           |       |      |                      |
| Credit Risk                    | -.1308 | .0598     | -2.19 | 0.029| -.2480 -.0135        |
| Interest rate Risk             | .2465  | .3061     | -1.11 | 0.000| -.9396 .2604         |
| Foreign Exchange Risk          | -.3396 | 2.3404    | 0.11  | 0.031| -4.3406 4.8336       |
| Liquidity Risk                 | .0026  | .0638     | 0.04  | 0.968| -.1224 .1275         |
| _cons                          | 12.51  | 3.61      | 3.47  | 0.001| 5.44 19.59           |

|                                |        |           |       |      |                      |
| sigma_u                        | .64    |           |       |      |                      |
| sigma_e                        | .98    |           |       |      |                      |
| rho                            | .74    |           |       |      |                      |

Source: Study Data (2018)

R-squared (R²) was 0.7386 according to the results of the study (Table 4.8), an indication that liquidity risk, credit risk, foreign exchange rate risk, jointly explained 73.86 percent of the changes in ROE. This meant that 26.14 percent could be attributed to other variables not studied in this study. The Prob > chi2 = 0.0000 was not greater than 0.05 which implied that the model was significant and best suited for the regression analysis. The results in Table 4.8 revealed that holding liquidity risk, credit risk, exchange rate risk and interest rate risk to a constant zero, ROE would be at 12.51324.

This results lead to the following general model that explains the effect of financial risks and financial performance of commercial banks in Kenya.
\[ Y = 12.51324 + 0.0025698X_1 + 0.1307926X_2 + 0.2465312X_3 - 0.3395534X_4 + \epsilon_{it} \]

4.5 Hypothesis Testing

This section presents the results of the hypothesis testing at 5 percent (5\%) significance level, which were based on the p-values as shown in Table 4.8 above.

**H_{01}: Liquidity risk has no significant effect on financial performance of Commercial Banks in Kenya.**

The coefficient for liquidity risk was 0.0025698 (p = 0.968) indicating an insignificant positive effect of liquidity risk on the commercial banks’ financial performance. The null hypothesis (H_{0}) was therefore accepted at 5 percent level of significance. An increase in one unit of liquidity risk lead to 0.0025698 units increase in ROE. This findings is in agreement with Cucinelli (2013) and Otalu et al, (2014), but contradicts Cuong, (2015) and Muriithi, (2016) who not only found liquidity to have a negative impact but also significant one on the banks performance. This therefore, clearly indicates that higher liquidity ratio may not necessarily indicate a favorable performance. Effective management of liquidity risk at manageable levels may allow the banks to service their obligations comfortably which in turn yield a positive effect the banks’ ROE.

**H_{02}: Credit risk has no significant effect on financial performance of Commercial Banks in Kenya.**

The coefficient for credit risk was -0.1307926 (p=0.029) which indicated a significant negative effect on financial performance of commercial banks in Kenya. The results were consistent with the findings of Muriithi (2016), but does not agree with Felix and Claudine (2008), Gaitho (2010), and Korir (2011) who found a positive significant effect of credit risk on profitability of commercial banks in Kenya. The null hypothesis (H_{0}) was rejected at 5 percent level of significance. This study findings indicated that a unit increase in credit risk lead to decrease in ROE by a factor of 0.1307926. The banks managers should therefore aim at reducing the credit risk through proper management of NPLs thereby enhancing the banks performance. . A lower NPLs would mean a lower NPLs ratio which in turn would lead to better financial performance for the banks.
H₂₃: Interest rate risk has no significant effect on financial performance of Commercial Banks in Kenya.

The results showed that the coefficient for interest rate risk was 0.2465312 (p=0.000). This indicated a positive and significant effect on the financial performance of commercial banks in Kenya. The results are affirmed by Waweru (2013) who also found that interest rate had positive and significant impact on profitability of banks listed at the NSE. However, this was contrary to Macharia (2013), and Otalu et al. (2014) findings interest rate and banks financial performance had a negative and significant relationship. The null hypothesis (H₀) was therefore rejected at 5 percent level of significance. It implies that a unit increase in interest rate risk would lead to increase in ROE by a factor of 0.2465312. Banks should therefore charge high interests on their assets so as to increase their profits.

H₂₄: Exchange rate risk has no significant effect on financial performance of Commercial Banks in Kenya.

Foreign exchange rate risk had a coefficient of -0.3395534 (p=0.031). This indicated a significant negative effect on financial performance of commercial banks in Kenya. This findings was consistent with Desaro (2012) and Macharia (2013) who both found foreign exchange rate risk to have a negative and significant effect on performance of commercial banks in Kenya. Although Kiganda, (2014) found that foreign exchange rate risk had a negative effect on the banks’ financial performance, the effect was insignificant. The results also indicated that foreign exchange risk had the greatest effect on the banks financial performance. Thus the null hypothesis (H₀) was rejected at 5 percent level of significance, an implication that one unit increase in foreign exchange rate risk lead to a 0.3395534 units decrease in ROE. Banks should therefore strive to maximize on their foreign income while minimize their foreign expenses. The risks due to the banks operations abroad could be minimized through the use of swaps, options, spot markets and forward markets. This would bring a positive net foreign income for the banks.
CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The chapter was subdivided into three major sections and outlines a summary of the study major findings, study conclusions drawn from the findings and finally recommendations of the study.

5.2 Summary of Findings

The study sought to establish the effect of financial risk on financial performance of commercial banks in Kenya. The study’s specific objectives were to establish the effect of liquidity risk, interest rate risk, credit risk and foreign exchange risk on banks financial performance in Kenya. These four independent variables studied explained 73.86 percent changes in the banks’ financial performance while other factors not studied contributed to 26.14 percent of banks’ performance in Kenya.

One of the study specific objectives was to determine the effect of interest rate risk on the financial performance of commercial banks in Kenya. Interest rate risk is the risk due to the fluctuations of the interest rates. The study findings indicated that there is a significant positive effect of interest rate risk on financial performance of commercial banks in Kenya. An increase in interest rate risk leads to an increase in ROE of banks in Kenya.

The study also sought to establish the effect of credit risk on the performance of commercial banks in Kenya. Credit risk was defined as the possibility that a borrower may default to pay back his/her loan as agreed. The study findings indicated that credit risk had a significant negative effect on the financial performance of commercial banks in Kenya. An increase in credit risk causes a decrease in ROE. The amount of NPLs was therefore be carefully watched by the banks as it had a great impact on the banks financial performance.
The other study objective was to establish the effect of exchange rate risk on financial performance of commercial banks in Kenya. Exchange rate risk is the risk brought about due to an exposure to unexpected fluctuations in the exchange rate between two states. The results from the study showed that foreign exchange rate risk had a negative significant effect on the financial of commercial banks in Kenya. A decrease in the foreign exchange risk leads to an increase in the ROE.

The final objective of the study was to determine the effect of liquidity risk on the performance of commercial banks in Kenya. Liquidity risk refers to the possibility that a bank may be unable to meet its short term financial demands as and when they require. The study findings indicated that there exists an insignificant positive effect of liquidity risk on financial performance of commercial banks in Kenya.

5.3 Conclusions

From the study findings it can be substantively concluded that financial risks indeed had a notably great effect on the banks financial performance. First, interest rate risk indicated a positive and significant effect on the banks financial performance. This meant that high interest rates generally enhances the banks performance while low interest rate undermined their financial performance. Thus banks could be forced to look for other ways to reduce their expenses so as to maintain favorable profit margins.

The findings on credit risk indicated a negative and significant effect on the banks’ financial performance in Kenya. A major implication of the results was that the NPLs ratio actually affected the banks’ financial performance with a considerably great margin. Consequently, in order to improve performance, banks had to maintain a low NPLs ratio since it had an inverse effect on the banks profitability.

This study further noted that foreign exchange rate risk revealed negative and significant effect on the banks financial performance in Kenya. Exchange rate risk had the greatest effect on the banks’ financial performance. Thus, to enhance the banks long-term sustainability, this risk had to be carefully taken care of and could not be ignored, through the use of exchange risk management strategies such as swaps and options.
However, liquidity risk on the other hand indicated an insignificant positive effect on the banks’ financial performance in Kenya. This risk poses a huge challenge on the banks’ managers on how to handle this risk. Thus, the management had to re-examine its strengths and weaknesses so as to ascertain the level of liquidity at which it would be profitable. In addition, based on the study findings, banks can be able to improve their financial performance (ROE) through efficient and effective management of exchange rate risk which poses the greatest effect on the banks performance, followed by credit risk and interest rate risk. Credit risk and foreign exchange risk should also be carefully monitored by the banks.

5.4 Recommendations

The study findings is of great importance to a number of stakeholders including the bank management, the government/ policy makers/ regulatory authorities, investors and other academicians. Based on the specific objectives of the study which were to determine the effect of credit risk, liquidity risk, foreign exchange risk and interest rate risk on financial performance of commercial banks, the following recommendations were made.

Based on the study findings (foreign exchange rate risk had a negative and significant effect on of financial performance of commercial banks in Kenya), the study recommends that management of banks should come up with the most effective and efficient strategies to identify and manage their financial risks so as to improve their financial performance. From the results, the managers should put more effort on their exchange rate risk management strategies since it poses the greatest negative effect on the banks performance. The study recommends that a close attention to the banks performance in relation to its operations abroad would enable the managers identify whether or not they are faced with exchange rate risk. Moreover, the study would recommend the use of swaps, options, spot markets, forward markets etc. when dealing with their operations abroad so as to minimize their exchange rate risk.

To establish the effect of credit risk on financial performance of Commercial Banks in Kenya was one of the study objectives. The findings indicated a negative and significant effect of credit risk on financial
performance of these banks. To counter the negative effect of credit risk, the study recommends a thorough scrutiny of the banks customers before advancing any loans/ facilities. The bank should be able to ascertain the customers’ business or avenues of acquiring funds so as to know the customers’ ability to pay back the loans within the specified period. The use of restrictive covenants will come in handy as it will also ensure that the funds borrowed are strictly used for the stated purpose.

To determine the effect of liquidity risk on financial performance of Commercial Banks in Kenya, the findings indicated a positive and insignificant effect of liquidity risk on the performance. From the findings on liquidity risk, the government should consider amending the Banking Act and increase its regulation on the banking industry so as to reduce cases of bank failures due to this risk. The government through its agencies/ regulatory authorities such as the CBK should pay close attention to those banks struggling to maintain the minimum financial requirements such as statutory liquidity ratio. In addition, the government through the CBK should consider raising the statutory liquidity ratio for the banks to about 30 percent.

5.5 Suggestions for further Research

The main focus of the study was financial risk and performance of commercial banks in Kenya. The study variables included liquidity risk, credit risk, interest rate risk and foreign exchange risk which only explained 73.86 percent of the variation in ROE. Further study should be done to establish the factors that explain the remaining 26.14 percent of variations in the ROE of commercial banks in Kenya. A similar study should also be undertaken in the same field so as to bring out more insight on the association that exists between the financial risk and the banks financial performance in Kenya using a longer period (increasing the time scope).
REFERENCES


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APPENDICES

Appendix I: Commercial banks in Kenya

1. African Banking Corporation Limited. 23. First Community Bank Limited
6. CFC Stanbic Bank Limited 28. Imperial Bank Limited
11. Consolidated Bank of Kenya Limited 33. Middle East Bank (K) Limited
13. Credit Bank Limited 35. NIC Bank Limited
18. Equatorial Commercial Bank Limited 40. Trans- National Bank Limited
19. Equity Bank Limited 41. UBA Kenya Bank Limited
21. Fidelity Bank Limited
22. Guaranty Trust Bank (K) Limited
   (Formerly Fina Bank Limited)

Source: CBK, 2017
Appendix II: Data Collection Guide

<table>
<thead>
<tr>
<th>BANK</th>
<th>YEAR</th>
<th>NET PROFIT</th>
<th>EQUITY</th>
<th>LIQUIDITY RATIO</th>
<th>TOTAL NPLs</th>
<th>TOTAL LOANS</th>
<th>TOTAL DEPOSITS</th>
<th>TOTAL ASSETS</th>
<th>NET INTEREST INCOME/(LOSS)</th>
<th>NET FOREIGN EXCHANGE INCOME/(LOSS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2013</td>
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