

**EFFECT OF FINANCIAL DISTRESS FACTORS ON  
PERFORMANCE OF COMMERCIAL BANKS IN KENYA**

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**Effect of Financial Distress Factors on Performance of Commercial  
Banks in Kenya**

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**A Thesis Submitted in partial Fulfillment for the Degree of Doctor of  
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## DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

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

**Fred Ochogo Sporta**

This thesis has been submitted for examination with our approval as university supervisors.

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## **DEDICATION**

This thesis is dedicated to my family and in particular to my wife, Maureen, children; Cash flow Good luck and Tricia Moraa (my Investment) and other children God will bless me with thereafter. I will not forget my parents Mr. and Mrs. Joel Sporta who constantly prayed for me, and my grandparent, one Mrs. Nyatuka, who kept on wondering about the length of my studies wishing I married another wife instead. I appreciate their support, encouragement, and understanding when I was not there for them including engaging holidays and Sundays including frequent overnight crash programs that not only saw the success of my thesis; a voluminous document; I wouldn't have made it this far without you.

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## ABBREVIATIONS AND ACRONYMS

<b>ASQ</b>	Asset quality
<b>BEP</b>	Basic Earning Power
<b>CAD</b>	Capital adequacy
<b>CAMEL</b>	Capital Adequacy, Asset Quality, Management, Earnings and Liquidity
<b>CBK</b>	Central Bank of Kenya
<b>CESEE</b>	Central Eastern and South-eastern Europe
<b>CFA</b>	Confirmatory Factor Analysis
<b>CFROI</b>	Cashflow Return on Investment
<b>CMA</b>	Capital Markets Authority
<b>CVA</b>	Cash Value Added
<b>EMH</b>	Efficient Market Hypothesis
<b>EPS</b>	Earnings Per Share
<b>EVA</b>	Economic Value Added
<b>FGLS</b>	Feasible Generalized Least Squares
<b>FP</b>	Financial Performance
<b>GDP</b>	Gross Domestic Product
<b>JIT</b>	Just In Time
<b>LEV</b>	Leverage
<b>LIQ</b>	Liquidity
<b>LM</b>	Lagrange multiplier
<b>LSDV</b>	Least Square Dummy Variable
<b>MDA</b>	Multivariate Discriminant Analysis
<b>MM</b>	Modigliani and miller
<b>MVA</b>	Market value added
<b>NPAs</b>	Non-Performing Loans
<b>NSE</b>	Nairobi Securities Exchange
<b>OER</b>	Operating Expense Ratio

<b>OLS</b>	Ordinary Least Squares
<b>OPE</b>	Operation Efficiency Ratio
<b>P/E</b>	Price Earnings Ratio
<b>POLS</b>	Pooled Ordinary Least Squares
<b>ROA</b>	Return on Assets
<b>ROAA</b>	Return on Average Assets
<b>ROAE</b>	Return on Average Equity
<b>ROE</b>	Return on Equity
<b>ROI</b>	Return on Investment
<b>ROK</b>	Republic of Kenya
<b>SACCOs</b>	Savings and Credit cooperative Organization
<b>STATA</b>	Data Analysis and Statistical Software
<b>UK</b>	United kingdom
<b>VIF</b>	Variance Inflation Factor
<b>WB</b>	World Bank

## DEFINITION OF KEY TERMS

This study will adopt the following definition of key terms:

**Asset Quality-** It refers to the ability of bank assets (loans) to provide income; it is the timely manner in which, borrowers meet their contractual obligations. The ratio of non-performing loans to gross loans and advances is used as the indicator for asset quality (Sekar, 2014).

**Bank-** A financial Institution which offers loan and deposit products on the market, and caters to the changing liquidity needs of its borrowers and depositors (Mazlan, Ahmad, & Jaafar, 2014). It also means a body corporate or other body of persons, carrying on, whether on their own behalf or as agent for another, banking business within the meaning of the Banking Act, whether in Kenya or elsewhere (ROK, 2015).

**Bankruptcy-** Bankruptcy is the final phase in economic life of companies that affects all shareholders of a company since it is a normal phenomenon in the corporate life cycle and also an outcome of financial distress (Aghaei & Kazemi, 2013).

**Capital Adequacy-** Capital adequacy refers to the sufficiency of the amount of equity to absorb any shocks that the bank may experience (Olweny & Mamba, 2011).

**Commercial Bank-** It is a financial institution, which provides services such as accepting deposits, giving business loans and auto loans, mortgage lending and basic investment products

like savings accounts and certificates of deposit (Mazlan et al., 2014). A commercial bank means a company that carries on, or proposes to carry on, banking business in Kenya and includes the Co-operative Bank of Kenya Limited but does not include the Central Bank of Kenya (CBK, 2015).

**Financial distress-**

Financial distress of a company usually refers to the situation that operating cash flow of a company cannot supersede the negative net assets of the firm (Geng, Bose, & Chen, 2015). Financial distress is generally inability of a firm to pay its liabilities within appropriate time frame (Saleem, Muhammad, & Umara, 2013).

**Financial Distress Factors-**These are economic indicators and variables of financial distress that will affect performance or will have a distressing effect to profitability of an organization (Thorley, Perry, & Andes, 2012). These are causes or variables of financial distress and are classified as either endogenous or exogenous variables (Momba & Abuga, 2013).

**Financial Performance-**

Is a measure of company's policies and operations in monetary terms and it is a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation (Kang & Kinyua, 2016).

- Leverage-** Is the use of various financial instruments or borrowed capital to increase the potential return of an investment (Saleh, 2015).
- Liquidity-** Liquidity is a bank's capacity to fund increase in assets and meet both expected and unexpected cash and collateral obligations at reasonable cost and without incurring unacceptable losses (Mwangi, 2014).
- Operational Efficiency-** Is the capability of an enterprise to deliver products or services to its customers in the most cost-effective manner possible while still ensuring the high quality of its products, service and support (Olalere, Temitope & Oluwatobi, 2015).

## **ABSTRACT**

Commercial banks have continued using various financial models for determining financial distress. However, commercial banks have not identified all the factors influencing financial performance and to which extent they influence financial performance of commercial banks in Kenya. This study focused on the effect of financial distress factors on financial performance for commercial banks regulated by Central Bank of Kenya (CBK) since they provide an important contribution to the economy. The study was prompted by the increased number of commercial banks in the recent past facing financial difficulties. These difficulties resulted into low returns to the investors and in some cases commercial banks put under statutory management thus threatening the wellbeing of the country's economy. Research done relating to financial distress on performance do not show directly the effect of financial distress factors on financial performance of commercial banks. Specifically, the study sought to achieve the following objectives; whether liquidity has an effect on financial performance of commercial banks in Kenya, to establish whether leverage has an effect on financial performance of commercial banks in Kenya. To examine the extent to which operational efficiency has an effect on financial performance of commercial banks in Kenya, to establish the extent to which asset quality affects the performance of commercial banks in Kenya and the extent to which capital adequacy as a financial distress factor has an effect on financial performance of commercial banks in Kenya. The study adopted a descriptive research design where a census of 43 commercial banks regulated by CBK was carried out due to the small size of the units of analysis. Secondary data was used. Panel data was analyzed using STATA software version 13 or regression analysis and model specification tests. Correlation and multivariate panel regression approaches were used to test five hypotheses. Frequency tables were used to present the findings of the study. The study first sought to evaluate the financial distress factors in the performance of commercial banks in Kenya and subsequently determine the relationship between financial distress factors and financial performance of commercial banks. A balanced panel data for 43 out of the possible 44 commercial banks over the period 2005-2015

was collected, banks with more than 10% missing data were expunged to remain with 38 commercial banks that were then analyzed using STATA. The study used confirmatory factor analysis approach to select the suitable latent variable. Financial distress factors were regressed on financial performance using panel regression models. Feasible Generalized Least Squares method, random effect for models and fixed effect based on Hausman specification test were used. The study revealed a significant relationship between liquidity, leverage, operational efficiency, asset quality and capital adequacy as financial distress factors on financial performance with operational efficiency being the most significant determinant of financial distress on financial performance of commercial banks in Kenya. The study recommends that managers and regulatory bodies should concentrate on how to improve financial performance of commercial banks and how to put proper controls to mitigate the effects of financial distress factors on financial performance. Regulatory bodies should ensure that there is routine revision of their policies for the purpose of ensuring a level playing field for all commercial banks regardless of their size. Further, constant monitoring by regulatory bodies should be in place.

## **CHAPTER ONE**

### **INTRODUCTION**

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

The study sought to examine the effect of financial distress factors on financial performance of commercial banks in Kenya. Theoretical and empirical literature indicates that financial distress factors play a major role in determining the financing distress position of any institution (Bergman, Benmelech, & Ricardo, 2012). Banks play an important role in the economic development of every nation since they have control over a large part of the supply of money in circulation, foster liquidity and proper functioning of the financial system (Karim & Alam, 2013), Nasieku (2014), (Kamau & Oluoch, 2016). Financial sector faces several challenges among them being financial distress Kariuki (2013).

When a company experiences financial distress, operating conditions may deteriorate, heavy financial burdens become common place, wages are renegotiated downwards. If the situation continues, bankruptcy may become a reality (Garlappi & Yan, 2011), (Bergman et al., 2012). However, if appropriate management steps are taken and financial distress factors are used effectively, it can recover and experience a resurgence (Wang & Shiu, 2014).

##### **1.1.1 Commercial banks in Kenya**

According to Li, Madura and Richie (2013) commercial banks serve as key financial intermediaries to facilitate the flow of funds in the banking industry. Kenya's Banking industry is mainly governed by the Company's Act, the Banking Act, the Central bank of Kenya Act and Kenya capital markets authority regulations. The CBK and CMA are responsible for regulations, suspension, statutory management or receivership and liquidation of commercial banks in Kenya. However several and additional changes

have been developed by CBK especially on regulation and suspension (CBK, 2015; CMA, 2012).

Crawford (2011) argued that Commercial banks give credit to investment banks in order to offer investment opportunities for risky investments especially for financial securities while commercial banks give credit assistance using depositors' money. Raza and Farhan (2011) noted that many commercial banks are also providing major services of investment banking in the recent past. According to Crawford (2011) and Glass Steagall Act in the United States of America, there should be a separation between commercial and investment banks. Since commercial banks may cause loss of customer confidence in cases where the commercial banks use depositors' money to invest in risky securities, resulting in withdrawals of deposits by depositors which lead to reduced liquidity of banks causing financial distress (Crawford, 2011). Maretno and Mullineaux (2010) indicated that investment banks typically establish higher credit spreads and premiums decline when commercial banks join as syndicate co-arranger.

Goodhart and Schoenmaker (2016) noted that in the aftermath of the global financial crisis, the market share of US banks increased, while that of their European counterparts declined. According to Goodhart and Schoenmaker (2016) US banks are on the verge of taking over pole position in European banking. Since 2015, Chinese banks have overtaken the position of American and European commercial banks in the Asian-Pacific market.

In the mid-2008, Dubai Islamic bank, Kuwait finance house and al-Rajhi Bank in Saudi Arabia were severely affected upon the diminishing stocks of the bankers (Husna & Rahman, 2012). Husna and Rahman (2012) noted that in 1997, Malaysian banks were tremendously distressed when faced with a recession. Six domestic financial groups were instructed to merge in order to survive the onslaught of a greater competition and poor operational efficiency; these financially distressed banks especially the survivors might perform false financial statements in order to convince shareholders and

stakeholders. Husna & Rahman (2012) suggested that users might act differently upon being mis-represented by the false financial statements.

Kamau and Were (2013) noted that in financial sector; technological advancement and globalization have led to distress and significant transformation of the banking industry in Kenya over the last two decades. The author further argued that superior performance in the Kenyan banking sector is due to structure and collusive power and not operational efficiency. The Central Bank uses the capital adequacy, asset quality, management quality, earnings and liquidity (CAMEL) rating system in assessing the financial soundness of the commercial banks. According to CBK (2015) annual supervisory report, the banking sector was on overall rated satisfactory in 2015 as compared to a strong rating which was achieved in 2014.

### **1.1.2 Financial Performance in Banking Industry**

Kariuki (2013), Kang and Kinyua (2016) argued that financial performance is used to track and review a firm's progress against its strategic plan and goals. Their studies noted that financial performance can also be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. Steven and Gray (2015) noted that financial performance is a strong indicator that influenced perception of satisfaction and value.

Financial performance and measures of financial performance have been defined by various studies in the world. Based on accounting and strategic management literature review, Fauzi and Idris (2013) defined performance as the matching of business environment, strategy, internal structure and control system and therefore performance is usually affected by the factors that define it. Kang and Kinyua (2016) further argued that financial performance is a measure of company's policies and operations in monetary terms. Financial performance may also be defined as the extent to which entities achieve goals and objectives (Busch, Bauer, & Orlitzky, 2015). Busch et al., (2015) further

argued that economic goals and social goals are related, making financial performance inseparable with social goals.

Financial performance in banking industry has been of interest to academic research and to stakeholders in banking industry in Kenya. This is due to the fact that financial performance has a critical implication for economic growth in any country and its generally considered to be the reflector of financial and economic conditions of a country other than its intermediation role in an economy (Gatuhi, 2015; Ongore & Kusa, 2013). Financial performance is also important due to competitiveness in the world economy not only to stakeholders of a firm but also to firms within the same industry (Yalcin, Bayrakdaroglu, & Kahraman, 2012).

Busch, Bauer and Orlitzky (2015) suggested several measures of financial performance and classified them into three; marketing based measures, accounting based measures and survey based measures. The market based measures of financial performance reflect the degree of satisfaction of shareholders and they include; stock performance in security exchange, market returns, market value to book value among others (Busch et al., 2015; Homburg, Artz, & Wieseke, 2012; Huang & Sarigöllü, 2012). Accounting based measures deal with internal efficiency of the firm and use historical information of performance.

Accounting measures include return on assets (ROA), return on equity (ROE), earnings per share (EPS), assets utilization, assets turnover among others, while survey based measurement consist of survey respondents who provide subjective estimates for example an opinion on use of firms assets (Busch et al., 2015). market and accounting measures are the most widely used in research Marte, Temitope and Fagbemi (2012). Traditional measures are also referred to accounting measures of financial performance include ROA,ROE,EPS and price earnings ratio(P/E) while modern based financial performance measure include economic value added(EVA), market value added(MVA), cash flow return on investment (CFROI) and cash value added (CVA).

Wanyonyi and Olweny (2013) indicated that there is a positive correlation between ROA and ROE as financial performance measures of insurance firms and corporate governance factors. Nazir (2010) indicated that financial performance of banks could be measured using capital adequacy, asset quality, management capability and earning analysis as the CAMEL parameters. Nazir (2010) concluded that CAMEL parameter ratios are key in making decisions on financial performance of banks since higher ratios that are beyond the minimum requirements indicate that the trend of financial performance of banks is good.

Ongore and Kusa (2013) argued that the ultimate goal of banks is to make profits and further argued that ROA, ROE, net interest margin are major performance measures to measure profitability in banks. Marte et al. (2012) studied financial performance in developing countries and asserted that ROA and ROE are financial performance measures that show significant relationship with corporate social responsibility. The current study adopted ROA and ROE as major financial performance measures for commercial banks in Kenya. According to San and Heng (2011) this measures (ROA and ROE) involve productivity, growth or even customer satisfaction and they indicate financial strength, weaknesses, opportunities and threats.

### **1.1.3 Financial Distress Factors**

The study of financial performance of banks is enhanced by studying the environmental variables that are likely to influence performance. These environmental variables are financial distress factors that will have an influence on financial performance. A study in United Kingdom by Keasey, Pindado and Rodrigues (2014) defined financial distress as the probability of voluntary exit which increases with higher levels of debt and lower levels of cash resulting in inability to make payments for various financial costs for small and medium size enterprises in united kingdom.

Keasey, Pindado and Rodrigues (2014) further examined the likelihood of financial distress and noted that use of tangible assets, as collateral for short-term debt will reduce

financial costs that lead to financial distress. Other studies have defined financial distress as when creditors' agreements are broken or honored with difficulty and financial distress is directly related to the firm's leverage decision (Senbet et al., 2012). Adeyemi (2012) defined financial distress as a situation in which an institution is having operational, managerial and financial difficulties. On the other hand financial distress factors are costs that affect the performance of an organization leading to change of investment decision (Tshitangano, 2010). Christiano, Rostagno and Motto (2010) argued that factors are scorecards on the financial performance of an organization that reflects forces that may cause financial distress and financial performance fluctuations.

Thorley, Perry and Andes (2012) argued that financial distress factors are economic indicators, determinants and variables of financial distress that will affect performance of an organization as adopted by the current study. Thorley, Perry and Andes (2012) asserted that liquidity, profitability, leverage, firm's size, paying of dividends and quantified opinion are financial distress variables that measure a firm's performance. Financial distress factors may be broken down into micro and macro-economic distress factors (Khalid, 2017).

From the above review and analysis, the current study noted that identification of financial distress factors or indicators of financial distress had widely been identified by various studies globally and locally. The current study therefore identified main and common financial distress factors on banking sector as identified by various studies reviewed, this common financial distress factors for banking sector commonly identified include; liquidity, leverage, operational efficiency, asset quality and capital adequacy.

#### **1.1.4 Financial Distress and Financial Performance**

Interest in financially distressed firms has become widespread. John, Hilscher, Szilagyi and Link (2011) described financially distressed firms as losing market values because of poor performance and consequently becoming inefficient producers resulting in high leverage and cash flow problems. As argued by Tan (2014), Adeyemi (2012) and

Kariuki (2013) firms with low financial distress tend to perform better than firms with high financial distress and as a result, a negative relationship between financial distress and financial performance of firms develops. Kosikoh (2014) argued that financially distressed insurance companies contribute to contagion effect in the economy and negatively affect economic stability of other sectors in a country.

It is evident that a majority of banks have undergone financial performance fluctuations, liquidated or gone under statutory management, however, others are yet to go through financial distress. Geng, Bose, and Chen (2015) suggested that data mining techniques should be in place in building financial distress warning models. Geng, Bose, and Chen (2015) observed that the financial indicators, such as net profit margin of total assets, return on total assets, earnings per share and cash flow per share, play an important role in prediction of deterioration in profitability of all firms regardless of their financial distress status.

Arzish and Hina (2015) noted that required level of financial performance is one of the difficult tasks for companies in a given country to maintain improved global investment during an era of financial distress. According to WB (2016) sustained growth requires high levels of investment and this is an area where Kenya aims to achieve more high-growth economies as a result of high investments. However, Kenya's investment rate was below 25 percent of GDP during 2005–2014, making Kenya to have the lowest investment rate among the peer group, with the exceptions of Cambodia and Pakistan (WB, 2016).

A trend analysis in NSE indicates fluctuations of asset prices in banking industry. John, Hilscher, Szilagyi and Link (2011), Husna and Rahman (2012), Kamonye (2012), Petajisto (2013) and Steven and Gray (2015) noted that Share prices are positively related to financial performance, financial distress and investment switching behavior. It was noted that between June 2015 and December 2015, asset prices in banking sector, investment, and investment services declined by 8.9%, 9.5% and 7.1% respectively unlike in other sectors (NSE, 2015). In December 2015, financial institutions that rated

strong were 11 banks, satisfactory-19 banks, fair-8 banks and marginal-2 banks, registering in a decline from the ratings recorded in December 2014(CBK, 2015). The banks income increased by 9.1 per cent in 2015 compared to a higher increase of expenses of 16.3 per cent (CBK, 2015).

Despite the undeniable obvious effect of financial distress in explaining banking performance, the impact of financial distress factors on financial performance, is still a misunderstood area for two main reasons. It seems that there is a lack of adequate understanding about the key drivers of financial distress and their impact on financial performance in banking industry. In fact, most of the existing studies adopt a simplistic approach to the financial distress and performance relationship which does not take into account the key factors of distress like Kariuki (2013)'s study. There is a paucity of empirical studies on financial distress. Most of the existing empirical works have focused on the factors of financial performance in banking industry. Consequently, determining key corporate financial distress factors and a deeper understanding of the extent to which they affect financial performance in Kenyan banking industry is clearly a matter of considerable interest to scholars, managers, investors, regulators, creditors, employees and other stakeholders.

## **1.2 Statement of the Problem**

The banking sector is among the sectors expected to facilitate the realization of vision 2030, by ensuring that there is provision of efficient financial services and investment opportunities that will create a vibrant and global competitive financial services in Kenya (ROK, 2007). Global competitive financial services on banking sector will be achieved only if financial distress will be well managed by banks (Bariviera, Belén Guercio, & Martinez, 2014). As noted by Kamau (2011) and Mwege (2011) banking sector is the engine that drives economic growth through efficient allocation of resources to productive units in any economy resulting in global competitiveness. Nasieku (2014) noted that banks provides an efficient system and main source of liquidity in the finance systems.

In spite of this, more than ten financial institutions have either collapsed and liquidated or have been placed under receivership by Deposit Protection Fund Board in Kenya between 2005 and 2015 (CBK, 2015). This indicates that on average, one financial institution collapsed every year over the eleven-year period making it a worrying trend. In addition there was a decrease in the number of financial institutions that were rated strong, from 22 banks in 2014 to 11 banks in 2015 (CBK, 2015). Kenya's investment rate was below 25% of GDP during 2005 – 2014, indicating the lowest investment rate among the peer group, with the exceptions of Cambodia and Pakistan (WB, 2016). From this analysis, banking industry in Kenya seems to be experiencing performance fluctuations indicating financial distress (Khaliq, Hussein, Altarturi, Mohd, & Thaker, 2014).

Studies on financial distress in Kenya have focused on Local Authorities (Ntoiti, 2013; Ouma, 2011), insurance companies (Kosikoh, 2014) and non-financial firms (Muigai, 2016) and causes of financial distress (Memba & Abuga, 2013). Studies on financial institutions largely focused on financial performance of commercial banks. Specifically effect of; micro/macro-economic factors, financial factors, banking sectorial factors, innovation, internal controls and Central Bank regulatory requirements on financial performance of commercial banks (Kadocsa & Francsovcics, 2011; D. Kamau & Oluoch, 2016; Karagu & Okibo, 2014; Kariuki, 2013; Makini, 2010; Meeme, 2015; Mihaela, 2015; Muiruri, 2015; Ngumi, 2013b; Olweny & Mamba, 2011; Popa & Ciobanu, 2014; Surow, 2014). Determinants of financial Performance (Al-tamimi, 2010; Malik, 2011; Ongore & Kusa, 2013; Zamparo, Gatta, & Di Prampero, 2012). However, some of these studies were based on data from other countries and their findings may not be applied to the local banking context. On the other hand, local studies failed to show the extent to which financial distress factors affect financial performance of commercial banks in Kenya. This study therefore sought to bridge this research gap by ascertaining the effect of key financial distress factors on financial performance of commercial banks in Kenya.

### **1.3 Objectives of the study**

#### **1.3.1 General objective**

The general objective of the study was to examine the effect of financial distress factors on financial performance for commercial banks in Kenya.

#### **1.3.2 Specific objective**

1. To establish the effect of liquidity on financial performance of commercial banks in Kenya.
2. To determine the effect of leverage on financial performance of commercial banks in Kenya.
3. To Establish the effect of operating efficiency of the firm to performance of commercial banks in Kenya.
4. To examine the extent to which asset quality affects the performance of commercial banks in Kenya.
5. To Examine the extent to which capital adequacy affects financial performance of commercial banks in Kenya.

### **1.4 Research Hypotheses**

This study sought to address the following pertinent research hypotheses;

**H<sub>01</sub>:** Liquidity has an insignificant effect financial performance of commercial banks in Kenya.

**H<sub>02</sub>:** Leverage does not have significant effect on financial performance for commercial banks in Kenya.

**H<sub>03</sub>:** Operational efficiency has an insignificant effect financial performance of commercial banks in Kenya.

**H<sub>04</sub>:** Asset quality has insignificant effect on financial performance of commercial banks in Kenya.

**Hos:** Capital adequacy does not affect financial performance of commercial banks in Kenya.

## **1.5 Significance of the study**

The findings of this study will be of particular importance and benefit to various stakeholders; regulators, commercial banks, investors, scholars and stakeholders across the world.

### **1.5.1 Regulators**

The findings from the study will be used by various regulators in different jurisdictions to improve on their financial distress management approaches and create additional prudential guidelines and policies. This measures will help to avoid unnecessary declines, bursts in financial performance of commercial banks and unnecessary receivership of banks. Central banks as a regulatory body will understand the importance of adjusting their regulations actively and pre-emptively to offset incipient inflationary or deflationary pressures. The regulations will help to put financial distress effect to manageable levels and this can also help to avoid unnecessary bank runs by investors in the banking industry.

### **1.5.2 Commercial banks:**

The findings of this study will assist the banks to monitor the key financial distress factors and understand; the extent to which financial distress factors can affect financial performance of commercial banks. Commercial banks will easily determine the necessity of seriously taking into account the various market trends as far as financial distress factors are concerned in order to remain competitive in the world. To also help banks in understanding better the financial distress factors' relationship with financial performance and the courses towards the same. Further, to identify measures that can be put in place to avoid unnecessary financial performance fluctuations that may be brought about by financial distress factors.

### **1.5.3 Investors/customers**

Information acquired from this study will help the investors and customers understand key financial distress factors in banking industry, how they affect the financial performance of commercial banks in Kenya, likely strength in banking industry in overcoming the effect of financial distress factors and how financial distress may lead to the risk of default or otherwise. As a result, they will make informed investment decisions.

### **1.5.5 Scholars:**

This study sought to fill the gap that existed in the literature concerning the effect of financial distress factors on financial performance of commercial banks in Kenya. The findings add to the already existing body of knowledge in the field of financial distress. In addition, the study provides opportunities for further research in the area of financial distress in banking industry in Kenya.

### **1.5.6 Policy makers:**

The information acquired from this study will be useful to policy-makers in the banking sector especially commercial banks in Kenya to strengthen policy considerations and regulatory framework. Such policy improvement and regulations may come in handy in ensuring better financial performances in commercial banks and other financial institutions. As a result this will improve the management of commercial banks on financial distress management and also improve the investor's attitude.

## **1.6 Scope of the Study**

The study covered all the 43 out of the possible 44 commercial banks regulated by the Central Bank of Kenya. The commercial banks formed units of analysis in the study, while observations were from the annual financial statements of the commercial banks in Kenya that were in operation by 31st December 2015. The data collection covered an

eleven (11) year period from 2005 to 2015, this period of eleven years was selected for the study in order to establish the changes in commercial bank over time and to base the analysis on as recent data as possible.

This could also be important since several banking regulations for financial institutions had been put in place while there are many financial distress factors that can affect financial performance of a financial institution. The study only focused on the financial distress factors that have been used by earlier scholars, and those consistent with available theories and could be identified from the financial statement of commercial banks in Kenya. Financial distress factors that were used in the study therefore were; liquidity, leverage, operational efficiency, asset quality and capital adequacy while financial performance measures used were; Return on equity (R.O.E) and Return on assets (R.O.A). The study utilized secondary data.

### **1.7 Limitations of the Study**

The limitation of this study was that some of the commercial banks under study, were under statutory receivership and this led to missing of some secondary data of more than 10% over the eleven years for some commercial banks. Therefore, the researcher had to expunge some commercial banks with more than 10% missing data. As a result, only financial statements of 38 commercial banks were analysed. It is possible there are many other micro and macro-economic factors that may affect the financial performance of commercial banks. The current study only considered the distressing effect of liquidity, leverage, operational efficiency asset quality and capital adequacy. The study was conducted based on eleven years only from 2005 to 2015.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter reviewed related literature in the area of financial distress factors and financial performance as depicted in the conceptual framework. It starts by reviewing theories advanced in the area of financial performance, liquidity, leverage, operational efficiency, asset quality and capital adequacy. Subsequent of the literature review, a conceptual framework was developed which formed the basis and linkages in establishing existing relationships amongst the key variables in this study. The empirical review together with embedded critique existing in the literature was reviewed in this chapter, a summary and research gap on financial distress were filled by this study.

#### **2.2 Theoretical Framework Review**

This section reviews relevant theories in the area of financial distress factors and financial performance. A theory is a systematic explanation to an occurrence and a researcher should be conversant with those theories applicable to his area of research (Durham & Stokes, 2015; shapira, 2011). For firmly grounding the study theoretically, one or two theories were reviewed for each variable and at least one model for each variable under study. The theories reviewed relate to; financial performance, liquidity, leverage, operational efficiency, asset quality and capital adequacy.

Wacker (1998) argued that good theories should be established in order to support research, based on the relevant guidelines and each research guideline offered is based upon 'good' theories' virtues. "Since 'good' theory's virtues are weighed against each other, judgment is necessary to determine the relative importance of each virtue and each guideline. Still, theory-builders can use more than one theory guideline to increase their research's significance" (Wacker, 1998). Webster and Watson (2002) also argued

that theories in research should clearly articulate the paper's contributions and ways of demonstrating contributions may include providing a new theoretical understanding that helps to explain previously confusing results. This is possible by bringing together other different theoretical streams of work to help shed light on a phenomenon under study (Webster & Watson, 2002).

Key theories such as wrecker's financial distress theories, Agency theory, liquidity preference theory, trade off theory, theory of efficient market hypothesis, multiple discriminant analysis model, wrecker's theory of financial distress and buffer theory of capital adequacy were reviewed in respect to dependent and independent variables.

### **2.2.1 Agency theory**

This theory addresses the agency problem in which a party delegates work to another party. The party that delegates the work to the other is known the principal and the other party that performs that work is known as the agent. An agency relationship arises when the actions of an individual affect both his welfare and that of another person in an explicit or implicit contractual relationship (Jensen & Meckling, 1976). An agent is the individual who undertakes the actions while the principal is the person whose welfare is affected. If both parties are utility maxi misers then there is a good reason to believe that the agent will not always act in the best interest of the principal, (Jensen & Meckling, 1976).

Agency theory was useful in explaining the financial distress facing financial institutions, for instance, the theory could explain how the selfish actions of managers and directors (agents) affect the welfare of shareholders (principals) by engaging unfavorable levels of leverage, operational inefficiency due too poor management skills, poor asset management controls and poor liquidity management controls. According to (Kloha et al., 2005) actions of management include how they misappropriate the funds of financial institutions and also how they make non optimal decisions as far as

utilization of financial and non-financial resources are concerned. These actions finally leads to poor financial performance of organizations (Muthuva, 2016).

### **2.2.2 Liquidity Preference Model**

Keynes (1935) believed there were three motives to holding money; transactions motive, precautionary motive, and speculative motive. Under the speculative motive, money demand was negatively related to the interest rate consequently leverage. Holding money was one way of guarding against uncertainty. Hence, liquidity preference framework determines the equilibrium interest rate in terms of supply and demand for money. The model was developed by Keynes (1936) based on several assumptions. First, money pays no interest. Second, that there were only two kinds of assets for storing wealth: money and bonds.

The current study was anchored on liquidity theory, given its emphasis on Liquidity, and the other variables under study; leverage, efficiency and capital adequacy. The theory notes clearly that liquidity alone does not guarantee success. Financial institutions in Kenya such as Daima Bank, Trade Finance, Allied credit ltd, International Finance ltd, Nairobi Finance ltd, Inter Africa Credit and Finance ltd and Dubai Bank that collapsed and liquidated while imperial Bank was put under receivership and chase was under statutory management for a short while as at 31<sup>st</sup> December 2015. These institutions' liquidity was high in the year when their businesses went into liquidation or when they went into statutory management.

The theory through its concept of holding money as a precautionary motive explains the importance of capital adequacy and liquidity requirement of ensuring that any future financial distress is properly managed. In addition Modigliani (2011) defined liquidity as an asset in terms of the perfection of the market in which it is traded. An asset is liquid if a market is perfect thus an individual decision to buy or sell does not affect the price finitely since it is illiquid in the opposite case, it is riskless if the price at which it sells is constant or practically so and its risky if the price fluctuates widely (Modigliani,

2011). This theory therefore indicates that liquidity, capital adequacy, leverage and efficiency of the firm's liquidity are the key financial distress factors that may influence financial performance.

### **2.2.3 Trade off theory**

Modigliani and Miller (1963) argued that the tax code favors debt over equity financing by allowing the firm's interest expense to be deducted from gross income for corporate tax purposes, but disallowing deductibility of payments to equity holders (e.g., dividends are not tax deductible on the personal account). Since an additional dollar of debt generates the marginal benefit of a tax deduction without any offsetting cost in this framework, the firm value is maximized by utilizing as much debt as possible to finance corporate investment decisions. Other financial economists, such as (Kraus & Litzenberger, 1973), suggested that the costs of financial distress might provide reconciliation between the observed limits on the usage of debt and the predictions of the tax-adjusted Modigliani-Miller analysis of financial policy.

Eckbo (2008) suggested that an increase in the costs of financial distress reduces the optimal debt level, an increase in non-debt tax shields reduces the optimal debt level and an increase in the personal tax rate on equity increases the optimal debt level. At the optimal capital structure, an increase in the marginal bondholder tax rate decreases the optimal level of debt (Eckbo, 2008). The effect of risk is ambiguous, even if uncertainty is assumed to be normally distributed. Eckbo (2008) further concluded that the relation between the debt ratio and volatility is usually negative.

The intuition provided for the existence of finite, optimal capital structure is straightforward. Debt capacity is inadequate because corporations trade-off the tax savings generated by the deductibility of interest payments against the expected value of the costs incurred in the event of bankruptcy (Kraus & Litzenberger, 1973). Senbet (2012) suggested that if corporate bankruptcy was costly, then it filled an important void between the corner result of the Modigliani-Miller tax-adjusted model and the observed

limitations on the amount of debt financing employed in practice (Senbet et al., 2012). The trade-off theory asserts that leverage has potential benefits to the firm due to tax savings associated with use of debt. However other studies have noted that with higher leverage, volatility of share prices increases with respect to private information; the ultimate fate of the firm depends on issues unknown to the general public (Nyamboga, Omwario & Muriuki, 2014).

#### **2.2.4 Theory of Efficient market hypothesis (EMH)**

Operational efficiency deals with the cost of transferring funds. In the theoretical world of perfect capital markets, transaction costs are assumed to be zero and markets are perfectly liquid, implying perfect operational efficiency. According Fama (1973), there three efficiencies in a firm; operational efficiency, allocative and pricing efficiency. The basic idea underlying the EMH developed by Eugene Fama in 1970 is that asset prices promptly reflect all available information such that abnormal profits cannot be produced regardless of the investment strategies utilized. Fama (1973) distinguished between three forms of market/pricing efficiency based upon the level of information used by the market: weak form, semi-strong, and strong form market efficiency.

The weak form of the EMH stresses that asset prices today incorporate all relevant past information. The semi-strong form of the EMH states that current asset prices fully reflect all available public information (Fama,1973). Public information includes not only information about an asset's past price, but includes all information related to the company's performance, expectations regarding macroeconomic factors, financial distress indicators and any other relevant public information. The strong form of the EMH requires that asset prices fully incorporate more than past and public information. In particular, the strong form of the EMH declares that asset prices reflect private information, i.e. insider information related to the assets of a specific company.

The implications of the EMH are broad. From an investor's perspective, participants in the stock market should not be able to generate an abnormal profit regardless of the level of information they may possess (Fama,1973). In the literature, the three forms of the EMH are usually used as guidelines rather than strict facts (Fama, 1998). Gill, Singh, Mathur, and Mand (2014) suggested that in order to survive, prosper and reduce the effects of financial distress; firms have to produce their output from input efficiently.

Operational efficiency therefore, can be used as a proxy for competitive advantage, which affects the firm's current profitability and its future potential performance. This theory reflects efficiency as a key factor in financial performance of an organization, making investment choices by using all the available information reflected in the security prices. Further EMH indicates that poor operational efficiency may be costly to the firm, as a result, lead to financial distress due to high cash outflows for operational costs and this means that all forms of efficiency; operational, pricing and allocation efficiency are necessary for banks in order to reduce the effects of financial distress.

### **2.2.5 Wrecker's theory of financial distress**

The wreckers theory was developed initially by Campbell, Hilscher and Szilagyi ( 2005) suggested that stocks of distressed firms perform in a manner which is vastly inferior to stocks of financially healthy firms. The wreckers' theory of financial distress seeks to explain the benefits that may step out of financial distress to stakeholders (Kalckreuth, 2005). This theory contributes to an efficient-market interpretation of an important stock market and normally it links work on private benefits to the literature on the empirics of asset pricing and that the financial structure and the probability of default may be important for determining the size of private benefits of control (Kalckreuth, 2005). Kalckreuth (2005) argued that with an increasing probability of default, there is a greater incentive to withdraw resources from the firm as private and non-dividend benefits. Shareholders will feel the full opportunity costs only in states where default does not occur. If default is certain, withdrawing resources is a free lunch. In this theory, this is termed "wrecking".

The wrecker's theory of financial distress seeks to justify various benefits as a result of a financially distressed firm to stakeholders. It is not necessary to attribute the negative excess returns of distressed firms to inefficient or irrational markets; such negative excess returns can be shown to the equilibrium outcome under efficiency in a financially distressed firm, then the participants are able to draw return in kind. Wrecker's theory of financial distress paints an illusion of a firm being hit by a series of negative shocks, making losses and approaching a state of financial distress. Since shareholders expect withdrawal from the firm in form of dividend payments, loans, advances, and bank-runs, thus affecting the asset quality since there will be low deposits and high non-performing loan and advances resulting from high withdrawals.

According to Wrecker's theory therefore, asset quality is a significant factor of financial distress. With higher leverage, volatility of share prices increases with respect to private information; the ultimate fate of the firm depends on issues unknown to the general public (Nyamboga et al., 2014). Since investors or shareholders will start demanding for returns on their investments, there will be frequent withdrawals in terms of loans, advances and bank runs; consequently the firm will be financially distressed, as it will be required to make huge payments to the shareholders.

### **2.2.6 Buffer theory of capital adequacy**

As a consequence of financial distress, financial institutions may prefer to hold a 'buffer' of excess capital to reduce the probability of falling under the legal capital requirements, especially if their capital adequacy ratio is very volatile. Capital requirements are one of the main supervisory instruments in Kenya for financial institutions. According to this theory, capital is more reliable, dependable and can be used for long term planning. Ability of banks to mobilize enough deposits obviates the capital base from being eroded. The buffer theory of Calem and Rob (1996) predicts that a bank approaching the regulatory minimum capital ratio may have an incentive to boost capital and reduce risk in order to avoid the regulatory costs triggered by a breach of the capital requirements. However, poorly capitalized banks may also be tempted to take

more risk in the hope that higher expected returns will help them to increase their capital. This is one of the ways risks relating to lower capital adequacy affect banking operations in the event of bankruptcy of a financial institution (Calem & Rob, 1996).

Calem and Rob (1996)'s model suggested that there will be two aspects of the new regulatory environment may have unintended effects one being higher capital requirements leading to increased portfolio risk. The other aspect being that capitalized premier do not deter risk-taking by well-capitalized banks and tend to promote risk-taking by well capitalized banks which will tend to promote risk taking among the undercapitalized financial institutions. On the other hand, risk-based capital standards may have favorable effects provided the requirements are stringent enough (Calem & Rob, 1996).

This theory indicates that the firm will be in a stable condition in times of low liquidity since there will be some capital reserves that will ensure the firm meets its obligation when they fall due using the excess capital recognized as a buffer regardless of the performance thus reducing the effect of financial distress in a firm. This means that in the absence of a buffer of capital, firms are likely to fall into financial distress in the future. In addition Berger and Bouwman (2013) argued that capital helps small banks to increase their probability of survival and market share at all times (during banking crises, market crises, and normal times). Secondly, capital enhances the performance of medium and large banks primarily during banking crises. This therefore makes capital adequacy a significant factor of financial distress.

### **2.2.7 Multiple Discriminant Analysis Model**

Altman (1968) was the first researcher to apply the Multiple Discriminant Analysis (MDA) approach to the bankruptcy prediction domain. Altman's Z-Score model has become a popular and widely accepted measure of bankruptcy. The author used a sample of 33 solvent companies and 33 distressed companies. Altman (1968) developed a Z-score bankruptcy prediction model and determined a cut-off point of Z-score (2.675)

to classify healthy and distressed firms. The results showed that the Z-score model had sound prediction performance one year and two years before financial distress, but did not indicate good prediction utility three to five years before bankruptcy (Altman, 1968).

MDA is a technique that allows one to distinguish between two or more groups of objects with respect to several variables in this case, distinguish between failing and non-failing firms in respect to financial distress. This model uses five financial ratios weighted in order to maximize the predictive power of the model. The model produces an overall discriminate score, called a Z-score or zeta model (Altman, 1968). Altman's Z-score combined various measures of profitability or risk. The resulting model was one that demonstrated a company's risk of bankruptcy relative to a standard. The Altman's Z-score model is a linear combination of a number of ratios. Original Z score that is applicable to public manufacturing firms was as follows.

$$Z = 1.2T1 + 1.4T2 + 3.3T3 + 0.6T4 + .999T5$$

In a classification context, the essence of the MDA method is to assign a firm to the failing or the non-failing group based on its discriminant score. The firm will be assigned to the group it most closely resembles. In the original Z-score prediction model, the ratios are as follows.

T1 = Working Capital / Total Assets

T2 = Retained Earnings / Total Assets

T3 = Earnings before Interest and Taxes / Total Assets

T4 = Market Value of Equity / Total Liabilities

T5 = Sales/ Total Assets

Altman then further revised the Z-score model where the market value of equity was changed to the book value of equity where the model was applicable to private and non-manufacturing firms. He also came up with different coefficients for the ratio as shown below.

$$Z=0.717T1 + 0.847T2 + 3.107T3 +0.420T4 + 0.998T5$$

In 1995, this was further revised to include emerging markets where both manufacturing and non-manufacturing companies could use the model as well as public and private firms. The model indicates that lower Z-score values will give signals of financial distress in an organization and this may result to poor financial performance. However, the model only considered the prediction of financial distress or bankruptcy but did not consider the effect of the various key financial distress factors on financial performance of financial institutions. In addition the Altman Z-score model was mainly developed for manufacturing firms with assets of over \$ 1million (Acharya, Pierret, & Steffen, 2016). According to Mamo (2011) Altman Z-Score model cannot be a perfect measure of financial distress of commercial banks and the model cannot perfectly identify key financial distress factors that can influence financial performance of commercial banks.

This model indicates that key financial ratios that influence financial distress or bankruptcy namely; working capital, retained earnings, earnings before interest and tax and sales all divided by total assets are all related to operations efficiency of the firm (Aissa & Goaid, 2016; B. Baik, Chae, Choi, & Farber, 2013; Kortmann, Gelhard, Zimmermann, & Piller, 2014; Minh, 2013). This model therefore affirms that operational efficiency is a significant financial distress factor according to the MDA model.

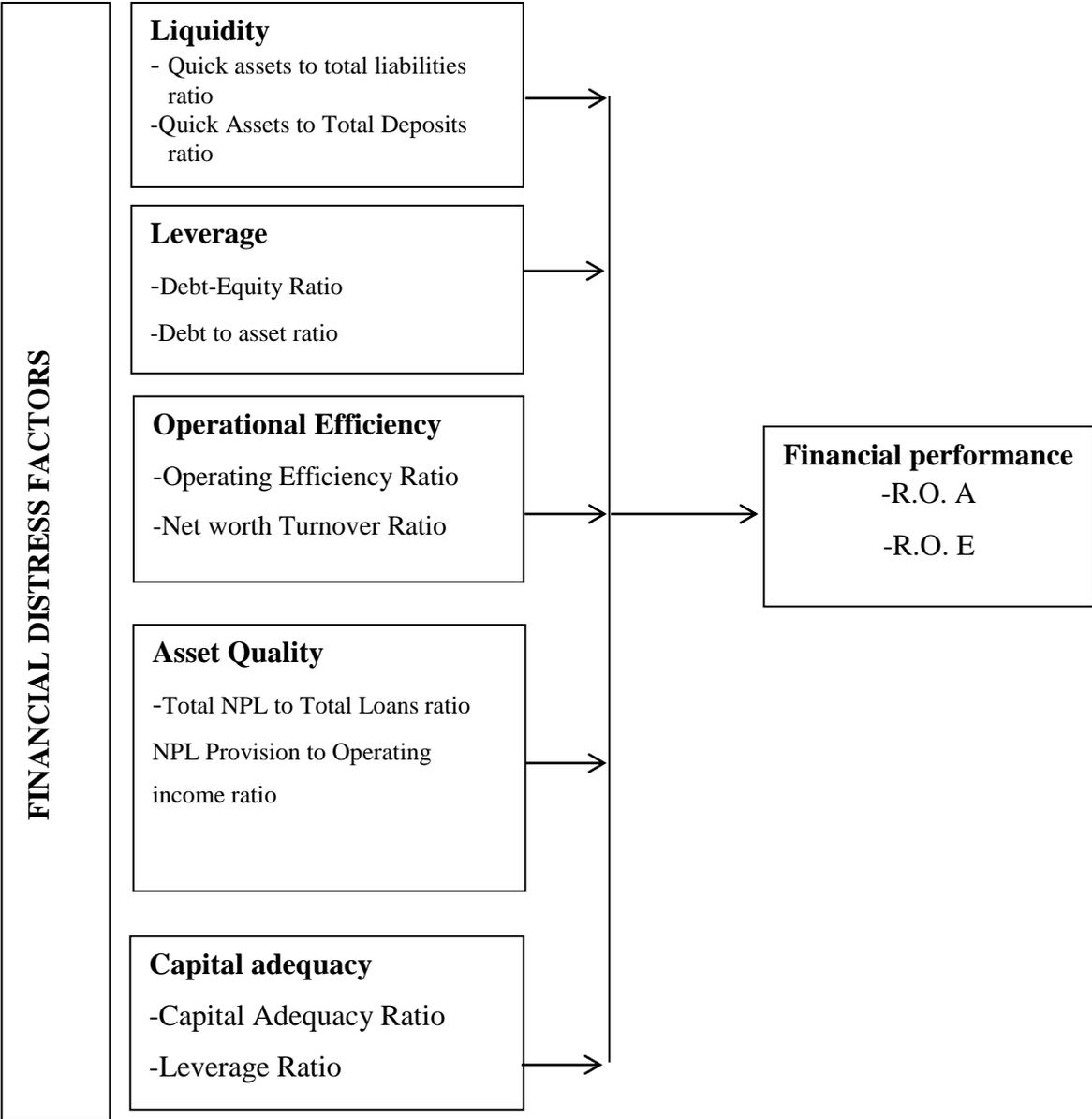
### **2.3 Conceptual framework**

A concept is an abstract or general idea inferred or derived from specific instances (Kombo & Tromp, 2009), unlike a theory, a concept does not need to be discussed to be understood (Durham & Stokes, 2015). A conceptual framework is a device that organizes empirical observations in a meaningful Structure (shapira, 2011). Childs (2010) argued a conceptual framework to be a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation.

When clearly articulated, a conceptual framework has potential usefulness as a tool to assist a researcher to make meaning of subsequent findings. It forms part of the agenda for negotiation to be scrutinized, tested, reviewed and reformed as a result of investigation and it explains the possible connections between the variables (Durham & Stokes, 2015). Conceptual frameworks are pivotal to research as they clarify and integrate philosophical, methodological and pragmatic aspects of doctoral thesis while helping the profession to be seen as a research-based discipline, comfortable with the language of meta-theoretical debate,(Sykes & Piper, 2015). A conceptual framework for the present study shows the effect of financial distress factors on financial performance of commercial banks in Kenya and has been depicted in Figure 2.1 below. Figure 2.1 conceptualizes that financial distress factors (liquidity, leverage, operational efficiency, asset quality and capital adequacy) influence on financial performance for commercial banks in Kenya.

**Independent Variables**

**Dependent Variables**



**Figure 2. 1 conceptual Framework**

### **2.3.1 Firm Liquidity**

Liquidity is one of the key financial stability indicators given that its shortage in one bank causes systemic crisis in the banking sub-sector due to interconnectedness. Liquidity held by commercial banks reflects their ability to fund increases in assets and meet their obligations (CBK, 2015). Mwangi (2014) noted that liquidity is a bank's capacity to fund increase in assets and meet both expected and unexpected cash and collateral obligations at reasonable cost and without incurring unacceptable losses. Cheluget, Gekara, Orwa, and Keraro (2014) suggested that liquidity and financial distress on an insurance firm's relationship exists and concluded that liquidity is an important factor of financial distress. The effects of liquidity to firm liquidity and solvency measures have a significant impact on improving cost efficiency, firms with larger expenditures on purchased inputs relative to capital were less likely to improve efficiency when liquidity and solvency were considered (Arif, 2012).

Liquidity and solvency measures have a significant impact on improving cost efficiency, firms with larger expenditures on purchased inputs relative to capital are less likely to improve efficiency when liquidity and solvency are considered (Levi, Russell, & Langemeier, 2013). Liang Fu (2016) suggested that corporate liquidity, also referred to as balance Sheet liquidity, measures the level of liquid asset holdings on the accounting book. Liquidity risk on family firms have lower financial distress risk appetite in their corporate investment behavior, which is confirmed in their substantially higher level of corporate liquidity (Liang Fu, 2016).

According to Kosikoh, (2014) liquidity ratios measure the ability of a company to pay its short term debt obligations. Examples of financial ratios include; current ratio, quick (or acid test) ratio, and working capital as percentage of sales. The difference between these ratios is the type of current asset used; a more conservative liquidity ratio (for example, the quick assets to total deposits ratio) will exclude those current assets that cannot be easily converted into cash. Stakeholders will normally prefer larger ratios of liquid assets to short term debt since it is an indication that the firm can pay off its short-term debts

and still fund its operations. Average liquidity ratios of healthy firms are higher than those of financially distressed firms (Cheluget et al., 2014).

On relating liquidity risk to bank's financial performance, Ariffin (2012) noted that the relationship between liquidity risk and financial performance is not always predicted by the conventional financial theory of "high risk-high return". Ariffin (2012) further noted that for the year 2006, the relationship between liquidity risk and ROA was positive whereas for 2007, it was a negative relationship for Islamic banks. This indicated that in the year of crisis, for example 2007, the liquidity risk, ROA and ROE behaved in an opposite manner. Ariffin (2012) concluded that liquidity risk always lowers ROA and ROE.

This study measured liquidity by use of quick assets to total liabilities ratio and quick assets to total deposits ratio, where quick assets to total liabilities ratio is the most liquid assets scaled by total liabilities, if a firm runs out of cash and cannot secure financing it will fail (Renato, 2010). Quick assets to total deposits ratio is obtained by dividing the most liquid assets by Customer deposits and the higher the ratio the less risky the firm is, (Renato, 2010). Here the study hypothesizes:

Ho<sub>1</sub>: Liquidity does not affect financial performance of commercial banks in Kenya.

### **2.3.2 Firm Leverage**

Leverage is a variable used to examine the effect of change in leverage on the firms' performance, and its defined as the use of various financial instruments or borrowed capital to increase the potential return of an investment (Saleh, 2015). Saleh (2015) argued that changes in leverage also have a significant effect on firm's performance; financial firms should use their debt financing more efficiently in order to maximize their returns and performance. Saleh (2015) suggested that financial leverage is the most important determinant of companies' performance after the crisis of between 2008 and

2012. Financial leverage affected companies' performance significantly and negatively for both, before and after the crisis periods. The increase of debt financing during the financial crisis period implies that the debt financing makes firms more susceptible to refinancing risks and borrowing at higher costs which in turn decreases their performance (Saleh, 2015).

Foong (2012) suggested that leverage is negatively associated with firm performance, however, there is a significant interaction effect between leverage and product diversity on firm performance. Foong (2012) noted that leverage could be beneficial or detrimental to the financial performance of general insurance firms, contingent on the extent of product diversity of the firm. Highly leveraged companies tend to invest less in employee-orientated activities which in turn lead to higher levels of leverage thus increasing the company's risk (Wieland, Scott, Wieland, & Flavel, 2015).

Kosikoh (2014) argued that highly leveraged firms are more likely to respond financially; through dividend cuts, debt restructuring, and bankruptcy thus there is high relationship between leverage and financial distress. Kosikoh (2014) further showed that highly levered firms respond faster to minimize implication of poor performance. This study considered leverage as one of the financial distress factors that influenced financial performance of financial institutions. According to Nyamboga, Ongesa, Omwario, Nyamweya, Muriuki and Murimi (2014) higher leverage ratio means a higher proportion of debt compared to equity in long-term financing. While higher leverage would boost return on investment in favorable business conditions, higher leverage would, on the other hand, adversely affect return on investment during unfavorable business conditions (Nyamboga et al., 2014).

The current study used debt to equity ratio (DER) and debt to assets ratio (DAR) to measure leverage, where DER for commercial banks is determined by total liabilities divided by total equity, DER reflects the company's ability to meet all its obligations, which is indicated by what proportion of equity capital is used to pay the debt. In other words, this ratio is used to determine what portion of any equity capital as collateral for

overall corporate debt or to assess the amount of debt used by the company (Heikal, Khaddafi, & Ummah, 2014). Debt to assets Ratio is determined by dividing total liabilities by total assets, the higher the ratio the more the financial distress in the firm (Fan, Titman, & Twite, 2012). Here the study hypothesizes:

Ho<sub>2</sub>: Leverage does not have significant effect on financial performance of commercial banks in Kenya.

### **2.3.3 Operational Efficiency**

Operational efficiency is defined by Olalere, Temitope and Oluwatobi (2015) as the capability of an enterprise to deliver products or services to its customers in the most cost-effective manner possible while still ensuring the high quality of its products, service and support. Operational efficiency tends to confirm the notion of increasing competitiveness and improving resource utilization by airports. In the literature on bank performance, operational efficiency is usually used to assess managerial efficiency in banks. Some external factors and characteristics may influence an airport manager's control over operations (Sarkis, 2000). According to research, firm's decision makers should increase the efficiency in using the tangibles assets to generate income (Saleh, 2015).

Pranowo and Manurung (2010) argued that firm's efficiency measures how productively the firm is using its assets and operations. The study further noted that operating ratio is a measure of how well a company sells its stock and the efficiency with which it converts sales into cash. Some examples of operating ratios (activity ratios) include; assets turnover (sales to total assets), stocks turn over, debtor's day (day's receivable outstanding) and working capital to sales ratio. Debtor's day shows the average number of days it takes customers to pay for credit sales. Low debtor's day benefits cash flow; an indication for probable saving for positive cash flows.

Olweny and Themba (2011) argued that higher expenses mean lower profits and vice versa, because the relationship between expenditure and profits may appear straightforward, however, this may not always be the case. The reason is that higher amounts of expenses may be associated with higher volume of banking activities and therefore higher revenues. Pranowo and Manurung (2010) suggested that firm efficiency could be measured in terms of its fixed assets turnover ratio, current assets turnover and net worth turnover ratio. These components indicate the firm's viability as well as speed of turning over its assets within the year, which determines the firm's financial distress. Another aspect of financial distress is that it triggers an effective change in the managerial control over the company, pushing the firm to alter its operational strategy in order to raise declined efficiency (Kosikoh, 2014).

This study used operating expense ratio (OER) and net worth turnover ratio (NWTR) to measure the operational efficiency as a financial distress factor on financial performance. OER was determined by dividing total operating expenses by Total revenue/ gross Income. A lower OER means that there is greater efficiency (Jeong & Phillips, 2001) and the NTWR was determined by dividing gross interest income by net worth/net assets (total assets-total liabilities), the net worth ratio indicates the return that shareholders could receive on their investment in a company. High ratio indicates that a company is funding its operations with a disproportionately high amount of debt and trade payables, this increases the risk of bankruptcy (Kosikoh, 2014). Here the study hypothesized that:

Ho<sub>3</sub>: Operational efficiency does not affect financial performance of for commercial banks in Kenya.

#### **2.3.4 Asset Quality**

A bank's assets comprise largely of its loans and advances to customers. These from a shareholders perspective are meant to earn returns through various investments but mainly through interests from loans to customers to ensure profitability of the entity

(Love, Matthews, Simpson, Hill, & Olatunji, 2014). Adeolu (2014) asserted that asset quality as an aspect of bank management entails the evaluation of a firm's asset in order to facilitate the measurement of the level and size of credit risk associated with its operation to ensure profitability resulting in improved financial performance.

According to Vigneswara (2015), financial stability of an economy is largely dependent on the stability of the banking system. Vigneswara (2015) asserted that to achieve banking stability, banks should ensure quality assets are maintained since quality assets result in high profitability. Vigneswara (2015) further noted that failure to ensure banking stability through asset quality can cause financial fragility and may lead to a crisis in the event of market illiquidity and the contagion effect of banks.

Klein (2013) carried out a study on non-performing loans (NPLs) in Central, Eastern and South- Eastern Europe (CESEE) in the period of 1998–2011. The study found out that the level of NPLs can be attributed to both macroeconomic conditions and banks' specific factors, though the latter set of factors was found to have a relatively low explanatory power. Klein (2013) further suggested that NPLs has an effect to macroeconomic conditions, such as GDP growth, unemployment, inflation and performance of firms. The analysis also indicates that there are strong feedback effects from the banking system to the real economy, thus suggesting that the high NPLs that many CESEE countries currently face adversely affect the pace of economic recovery.

Vigneswara (2015) noted that in reference to various literature of determinants of NPAs across countries, NPA levels and capital to assets ratio (CRAR), provisions to NPAs and return on assets (ROA) of developing and advanced countries explain the differences in levels approaches of NPA management in different countries. According to Vigneswara (2015) this ratios are normally used to measure assets quality. Ongore and Kusa (2013) noted that different types of financial ratios are used to study the performances of banks and noted that it is a major concern for banks to ensure lower amounts of non-performing loans.

According to Barus, Muturi, and Kibati (2017) and Nazir (2010) asset quality ratios should be NPA to total net loans and loan loss cover. And Nazir (2010) further asserted that high non-performing loans affects the profitability of the bank and low ratios indicate that the bank is in good health. Barus et al., (2017) noted that loans, advances and non-performing loans are major variables in determining asset quality of a bank's operations. According to Barus et al., (2017) improper credit risk management reduces bank profitability, affects the quality of its assets and increases loan losses and non-performing loans which may eventually lead to financial distress. This study therefore used total NPA to total loans ratio and loan loss provision to operating income ratio where lower values will be desirable.

Here the study hypothesizes that:

Ho<sub>4</sub>: Asset quality has insignificant effect on financial performance of commercial banks in Kenya.

### **2.3.5 Capital Adequacy**

Yahaya, Mansor, and Okazaki (2016) suggested that capital adequacy is an important factor that helps in determining the level of risk absorption of banking institutions in completing the bigger picture of banking performance. The researcher further argued that capital adequacy is also closely related to the economic performance of related countries. Olalekan and Adeyinka (2013) argued that capital adequacy has been a vital issue for financial institutions and defined capital adequacy as the percentage ratio of financial institution's primary capital to its assets used as a measure of its financial strength and stability. Olalekan and Adeyinka (2013) further argued that capital would be used to absorb an unanticipated abnormal loss in cases where such losses cannot be absorbed by earnings in financial institutions.

Buyuksalvarcı and Abdioglu (2011) also argued that the primary function of capital in a financial institution is to provide resources to absorb possible future losses on assets and

financial distress. This makes capital to play an insurance function, and therefore capital adequacy in banking is a confidence booster to customers even in times of financial distress. Capital adequacy provides the customer, the public regulatory authority with confidence in the continued financial viability of financial institutions (Olalekan & Adeyinka, 2013).

Olweny and Themba (2011) argued that capital adequacy refers to the sufficiency of the amount of equity to absorb any shocks that the bank may experience. CBK issued revised prudential guidelines on capital adequacy in 2013 (CBK, 2015). This entailed new capital requirement for banks, capital charge for market and operational risks and capital conservation buffer, the minimum regulatory capital adequacy requirement, measured by the ratio of core capital and total capital to total risk. Capital adequacy aims to measure capital sufficiency in relation to the Basel and CBK guidelines (Nasieku, 2014; ROK, 2015c).

Nasieku (2014) suggested two accounting ratios to be used in capital adequacy; leverage ratio and risk weighted assets ratio, leverage ratio was determined by total capital over total assets and will be used as a measure of regulatory capital. Nasieku (2014) further noted that risk weighted assets ratio was the core capital divided by total risk weighted assets and is used as a measure of risk-based capital. Sangmi (2010) noted that capital adequacy is one of the reflections of the inner strength of a bank, which was in good stead when banks are experiencing a financial crisis.

Acharya, Pierret, and Steffen (2016) Study was based on the impact of losses of banks in a stress test of bank capital. The study based in US banks assessed capital adequacy of banks using and incorporating leverage ratio, a measure of capital adequacy and the study found out that leverage ratio had a high negative correlation with capital adequacy of US banks in 2016. In addition Sangmi (2010) noted that capital adequacy which can be measured by capital adequacy ratio and leverage ratio has a bearing on the overall performance of a bank like opening of new branches, fresh lending in high risk and diversification of business.

The current study adopted capital adequacy ratio and leverage ratio to measure capital adequacy as a financial distress factor on financial performance of commercial banks. Capital adequacy ratio is determined by dividing tier one and tier two capital by risk weighted assets. Higher percentage on the ratio would be desirable as banks are assumed to have sufficient buffer against risk (Adeyemi, 2012; Nasieku, 2014; ROK, 2015; Sangmi, 2010). While Leverage Ratio is determined by dividing total Capital by Total Assets, Leverage ratio was used as the measure of regulatory capital, higher percentage on the ratio would be desirable as firms are assumed to have sufficient buffer against risk (Muiruri, 2015; Nasieku, 2014; Sangmi, 2010). Here the study hypothesized that:

H<sub>05</sub>: Capital inadequacy does not affect financial performance of commercial banks in Kenya.

### **2.3.6 Financial Performance**

Maditinos (2011) argued that financial performance of an organization can be measured by growth revenues that will also indicate the growth of an organization. ROE that measures an organisation's profitability by revealing how much profit a company generates with the money shareholders have invested will also be used. Maditinos (2011) further noted that financial performance can also be measured by ROA which is an indicator of how the company is in relation to its total assets and it gives an idea as to how efficient the management uses assets to generate earnings. Sangmi (2010) suggested that earnings ratio determined by earnings divided by profits is a conventional parameter used to measure financial performance of a bank. Sangmi (2010) further noted that higher income generally reflects a lack of financial difficulties and so would be expected to reduce the likelihood of failure in banks.

Almazari (2011) studied the financial performance of seven Jordanian commercial banks between 2005 to 2009. The study used ROA as a measure of banks' performance and the bank size, asset management and operational efficiency as three independent variables affecting ROA. Using a simple regression analysis, the results of the analysis revealed a

strong negative correlation between ROA and banks' size. While on the hand a strong positive correlation between ROA and asset management ratio, and a negative weak correlation between ROA and operational efficiency. Kang and Kinyua (2016) argued that financial performance is a measure of company's policies and operations in monetary terms. According to Ongore (2013) capital adequacy, asset quality, management efficiency and liquidity management are the internal determinants of bank performance and significantly affect performance except for liquidity management. Ongore (2013) indicated that ROE, ROA are the appropriate measures of financial performance in banks.

Olweny and Themba (2011) argued that financial performance is measured by use of ROA as profitability ratio and that higher ROA indicates good performance and international comparisons of banks can easily be made. Olweny and Themba (2011) further argued that capital adequacy, asset quality, liquidity management, operational cost efficiency, income diversifications are the banking sectorial factors with a significant relationship with profitability as a financial performance measure.

All the cited studies above show that the key factors in predicting financial performance are ROA, ROE and ROI. It can be argued that financial performance is important and strongly influences the decision making process in every institution and in the country's economy. Further it can be argued that the financial health of a banking industry in a developing country such as Kenya largely depends on the financial performance of the banking industry. In order to get a picture of the financial performance of the banking institutions, the current study employed two measures of financial performance, ROA and ROE. ROA reflects the ability of a bank's management to generate profits from the bank's assets and it is calculated as profit after tax divided by total assets. While R.O.E indicates the percentage of profits relative to equity (Schneider et al., 2003).

## **2.4 Empirical Review**

### **2.4.1 Financial Distress factors and Financial Performance**

Many studies found a significant relationship between financial performance and financial distress, macro and micro economic variables in various sectors such as manufacturing, insurance, and other corporate sectors. Shaukat and Hina (2015) studied the impact of financial distress on financial performance of Pakistani corporate sectors mainly on non financial companies listed in Karachi Stock Exchange over six years. Using the Altman Z-score Model Shaukat and Hina (2015) asserted that there exists a significant relationship between financial performance and financial distress and further, financial performance of companies in Pakistan increased with an increase in Z-score values and with a decrease in financial distress. Shaukat and Hina (2015) only identified the impact of financial distress on financial performance in Pakistan but not the effect of financial distress factors on financial performance of commercial banks in Kenya. In addition, the study used Z-score model whereas Liao and Mehdian (2016) argued that the Z-score model cannot identify key financial distress factors and determine the extent of financial distress on performance more correctly and reasonably as in the case of other models.

Kostopoulos, Papalexandris, Papachroni and Ioannou (2011) examined the relationship of absorptive capacity, innovation and financial performance. The study used path analysis in a sample of 461 Greek enterprises participating in the third community innovation survey; it demonstrated and argued that financial performance and innovation are positively related and also further innovation survey and absorptive capacity as factors of financial distress contributes directly and indirectly, to innovation and financial performance but in different time spans. This study was carried out in Greek firms and did not address the effect of key financial distress factors on financial performance of banking sector in Kenya.

Ogilo (2012) analyzed the impact of credit risk management on the financial performance of commercial banks. Ogilo (2012) identified determinants of credit risk management as the CAMEL indicators for banks. A causal research design facilitated by use of secondary data obtained from CBK publications on banking sector survey. A multiple regression analysis was used and the findings indicated a strong impact between the CAMEL components on the financial performance of commercial banks. The study also established a weak relationship between capital adequacy, asset quality, management efficiency and liquidity with financial performance as measured by ROE, whereas earnings had a strong relationship with financial performance. Ogilo (2012) study failed to contribute on whether there is a relationship between the risk management factors, financial distress factors and financial performance in Kenyan banking industry.

Ngumi (2013) studied the effect of financial innovation on financial performance of commercial banks in Kenya. Using descriptive design on primary and secondary for 20 selected commercial banks, Ngumi (2013) argued that there is a positive significant effect of financial innovation on financial performance of commercial banks in Kenya. Kinyua (2015) examined the relationship between internal control systems on financial performance of companies quoted in NSE; the study adopted a descriptive design and used both quantitative and qualitative approach for 62 companies. The study adopted descriptive research design using both quantitative and qualitative approach. Using a target population of 372 senior managers in 62 companies quoted in NSE, argued that internal control system is a positive predictor of financial performance of companies quoted in the NSE, that the company's financial performance is measured by profitability, ROE, and EPS.

Baimwera and Muriuki (2014) examined the determinants of corporate financial distress as postulated by Altman (1968) which are liquidity, leverage, growth and profitability in relation to financial distress for non-financial firms listed in the Nairobi Securities Exchange. The study adopted a descriptive research design with financial data being gathered from financial statements for a three-year period 2007 to 2010. It analyzed

univariate and multivariate accounting based distress prediction approaches. The Pearson product moment correlation and regression analysis were used to examine the degree and nature of relationship between determinants of corporate financial distress and corporate financial distress itself. Liquidity and leverage were found to have no significant influence in determining corporate financial distress. Growth and profitability, on the other hand, had a significant influence. However, the study failed to determine the effect of these determinants on the financial performance of Kenyan banking sector.

Muigai (2016) studied the effect of capital structure on financial distress of non-financial companies listed in NSE. The study considered financial leverage, debt maturity, equity structure and asset structure as independent variables while using firm size as a moderating variable on the relationship between capital structure and financial distress of the firms. Secondary data was used on the study from ten year audited financial statements covering 2004-2013. The study used a census from 41 listed companies and quantitative research design. Muigai (2016) noted that financial leverage, asset tangibility and external equity do not have a positive influence on financial distress of non-financial firms. The study found out that internal equity and long-term debt help in reducing the effects of financial distress in non-financial firms, the study further indicated that the firm size and the listing sector significantly moderate the effect on the relationship between capital structure and financial distress.

Kariuki (2013) examined the impact of financial distress on commercial banks performance in Kenya. From a population of forty-four banks, a sample of twenty-two banks was selected. The sample included eleven listed banks at the NSE and eleven non listed banks. Data was obtained from the financial statements of the banks and the Central Bank of Kenya. Altman's Z-score model was used to measure financial distress while return on assets ratio was used to measure financial performance. The study found out that most of the banks under study suffered financial distress where the non-listed banks suffered more from financial distress as compared to the listed banks. Kariuki (2013) also established that financial distress had a significant effect on financial

performance of banks where performance was negatively affected. The study used Altman Z-score model that was mainly developed for public manufacturing firms with assets of over \$ 1million. The study however did not identify key financial distress factors and the extent to which each factor affects financial performance of commercial banks in Kenya.

Ouma (2011) sought to establish if Kenyan local authorities suffer from financial distress and if so, the extent of such distress. It further sought to determine the level of dependency of the local authorities on external financial support from central government. Based on a sample of 59 local authorities in the country Ouma (2011) established that 22% of all Kenyan local authorities are financially distressed, 71% are non-distressed while another 7% are in the grey area. The highest level of financial distress was observed among the town councils.

Ntoiti (2013) examined the determinants of financial distress facing local authorities in service delivery in Kenya, the study population comprised of 175 local authorities in Kenya and found out that that the causes of financial distress include financial management practices, corporate governance practices, human resource management practices, information technology and government regulation. The studies of Ouma (2011) and Ntoiti (2013) however failed to link the effect of the causes of financial distress and financial performance of other firms other than the local authorities that were faced out later in the implementation of the new constitution in Kenya.

Meeme (2015) examined the relationship between adherence to Basel III accord and financial distress status of commercial banks in Kenya. The study adopted a descriptive research design and used a census to collect secondary data from financial statements of all the 43 commercial banks between year 2013 and 2014. A multiple regression model was adopted to determine the relationship of Basel III accord and financial distress. The study found that capital requirements, leverage requirements and liquidity requirements have a positive relationship with financial distress status of commercial banks. The study concluded that the adoption of base III influences the financial distress status of

commercial banks in Kenya and recommended that it will be necessary for commercial banks to develop effective policies to ensure that they implement the Basel accord since its implementation would help the banks reduce the probability of financial distress.

Kosikoh (2014) sought to establish determinants of financial distress in the insurance companies in Kenya; specifically the study examined profitability, liquidity, efficiency leverage and firm size. The study adopted descriptive research design using 45 insurance companies registered with the regulatory authority in Kenya as at 31<sup>st</sup> December 2013. Purposive sampling was used to select a sample of 15 companies from the strata. Kosikoh (2014) argued that there is a positive relationship between independent variables and dependent variable being financial distress on insurance companies in Kenya. Kosikoh (2014) noted that the biggest determinant of financial distress in Kenya is lack of efficiency and low liquidity. According to Kosikoh (2014) profitability ratios are designed to evaluate the firm's ability to generate earnings as a financial performance measure. Analysis of profit is of vital concern to shareholders since they derive revenue in the form of dividends. Profits are also important to creditors because they act as a source of funds to debt coverage and management uses profit as a profit measure. A review of the literature indicates that there has been inadequate study of the interaction between financial distress factors and financial performance of commercial banks in Kenya.

#### **2.4.2 Firm's Liquidity and Financial Performance**

Theories have so far suggested and concluded that liquidity problems affect financial performance. Han (2013) noted that the loss in liquidity and downward price pressures are more severe for the defaults that occurred during the 2008-2009 financial crisis than defaults in other periods. Mwangi (2014) studied the effect of liquidity risk management on financial performance of commercial banks in Kenya. The study adopted a descriptive study design, the population for this research was the 43 listed commercial banks in Kenya analyzed for a period from 2010-2013. Mwangi (2014) concluded that liquidity risk management has a significant negative relationship with financial

performance of commercial banks. The study did not link liquidity as financial distress factor in the banking industry but studied liquidity as a risk management factor on commercial banks only and the findings could not be generalized for all financial institutions in the banking industry in Kenya.

Ahmed (2014) sought to establish the effect of liquidity and leverage on financial performance of commercial state corporations in the tourism industry in Kenya noting that borrowings from banks by commercial banks to meet shorter liquidity needs do have the greatest impact on liquidity. The study adopted descriptive research design of ten (10) Commercial State Corporations in the tourism industry in Kenya during the period 2008-2012. Ahmed (2014) found out that the profitability of the Commercial State Corporations in the tourism sector in Kenya are negatively affected by increases in the liquidity gaps and leverages. The study did not take into account liquidity as a financial distress factor on financial performance in the Kenyan banking industry instead the study focused on the tourism industry in Kenya.

Said and Tumin (2011) investigated on the impact of bank-specific factors on performance in China and Malaysia. Bank-specific factors included liquidity, credit, capital, operating expenses and the size of commercial banks that was measured by return on average assets (ROAA) and return on average equity (ROAE). The study concluded that liquidity and size of banks do not have any influence on the performance of banks for both countries. In general, the ultimate effect of financial ratios on banks performance varies across sample countries and may be critically influenced by other country-specific factors (Said & Tumin, 2011). However, the study did not link liquidity as a financial distress factor on bank performance, in addition, the study was carried out in China and Malaysia and not in the Kenyan banking industry.

Kibuchi (2015) carried out a study on the relationship between liquidity risk and financial performance of commercial banks in Kenya. The study adopted descriptive research design, data was gathered over the period 2010 to 2014, and as such, a causal study was undertaken in a non-contrived setting with no researcher interference.

Multiple regressions were applied to assess the impact of liquidity risk on banks' profitability. The study concluded that liquidity risk not only affects the performance of a bank but also its reputation and this might result in the loss of confidence among the depositors if funds are not provided to them in time.

Njeru (2016) examined the effect of liquidity management on financial performance of deposit taking saving and credit co-operative societies in Kenya. Njeru (2016) used descriptive design and used a stratified random technique to choose a sample size; the study concluded that effective liquidity management required a well-regulated sector and liquidity decisions were statistically significant in explaining financial performance of deposit taking SACCOs in Kenya. However, Njeru (2016) used SACCOs in Kenya but not commercial banks in Kenya, the study further used liquidity as management factor but not as a financial distress factor.

Ongore and Kusa (2013) examined the determinants of financial performance of commercial banks in Kenya between the periods 2001 to 2010. A linear multiple regression model and generalized least square on panel data to estimate the parameters were used. The findings showed that bank specific factors significantly affect the performance of commercial banks in Kenya, except for liquidity variable. According to Ongore and Kusa (2013) liquidity has lesser effect on financial performance of commercial banks in Kenya.

Omondi and Muturi (2013) examined the factors affecting the financial performance of listed companies at NSE in Kenya, their study adopted an explanatory research design and 29 listed firms. The study concluded that liquidity has significant positive effect on financial performance. This study was only based on listed companies in NSE and not banking industry and the findings could therefore not be generalized for all companies especially in the banking industry. In addition, factors affecting financial performance is a too general term unlike the use of financial distress factors that is specific and incorporates distress.

Muiruri (2015) examined the effects of central bank regulatory requirement on financial performance of commercial banks in Kenya; the study focused on various variables and liquidity management being one of them and adopted a descriptive study on all 43 commercial banks licensed under the Banking Act and operational as at 31<sup>st</sup> December 2009 in Kenya. Muiruri (2015) revealed that there was a significant variation on the financial performance due to changes in liquidity management and other factors. The study examined liquidity management as a regulatory requirement on financial performance and not liquidity as a financial distress factor.

Ndirangu (2013) examined the effects of working capital management on profitability of manufacturing firms in Kenya, liquidity being one of the variables under study. The study sought to establish whether liquidity management practices have an influence on profitability of manufacturing firms in Kenya. Ndirangu (2013) used both primary data through a questionnaire and secondary data in the study with a target population of 413 manufacturing firms in Nairobi industrial area and its environs. Ndirangu (2013) concluded that liquidity and other variables have a significant effect on performance and can be used to predict profitability. The study identified liquidity as a working capital management factor on financial performance of manufacturing firms in Kenya and not liquidity as a financial distress factor in banking industry.

Cheluget et al. (2014) examined liquidity as a possible determinant of financial distress in insurance companies in Kenya, a survey design and stratified random sampling was applied, the target study covered 45 insurance companies registered with the insurance regulatory authority as at 31<sup>st</sup> December 2012. Cheluget et al., (2014) used primary data and concluded that liquidity has a significant relationship with financial distress and therefore they concluded that liquidity is a potential cause of financial distress in insurance companies in Kenya. The fact that the study was based on insurance and not in the banking sector, it also failed to show clearly the extent on the effect of liquidity as a financial distress factor on financial performance in banking industry in Kenya.

From the above review its evident that studies mainly focused on the effect of liquidity on financial performance of other industries like tourism, insurance, SACCOs, firms in NSE and manufacturing firms other than commercial banks in Kenya; (Ahmed, 2014; Cheluget et al., 2014; Ndirangu, 2013; Njeru, 2016; Omondi & Muturi, 2013). Other studies were based on other countries (Said & Tumin, 2011), and other studies were carried out for shorter period and further did not link liquidity as a distress factor financial performance of commercial banks in Kenya; (Kibuchi, 2015) and (Ongore & Kusa, 2013) therefore findings from this studies could not be generalised for the current study that is based on the effect of financial distress factors on financial performance of commercial banks in Kenya.

#### **2.4.3 Firm's Leverage and Financial Performance**

The studies which discuss the relationship between corporate financial distress and leverage ratios and financial performance have frequently contradicted their findings. Some studies have concluded a positive relationship, for example Opler & Titman (1994) while others indicated a negative or lack of a relationship, for example Pranowo and Manurung (2010).

Anjum and Malik (2013) examined determinants of corporate liquidity and size of the firm, net working capital; leverage, cash conversion cycle and sales growth affect the cash holdings of corporate organizations. The study evaluated the financial difficulties of Pakistani firms that were listed on Karachi Stock Exchange (KSE). The non-financial companies from 2003 to 2010 were used as the sample and the analysis was done by using Z-score model. The findings concluded that the leverage is positively significant to the financially distressed firms in Pakistan's stock exchange and it suggests that the use of a high level of leverage contributes to the bankruptcy. The study argued further that leverage is a key financial distress factor. However Anjum and Malik (2013) did not determine the effect of leverage as a financial distress factor on financial performance and in addition it was mainly based on Pakistanis firms and not the Kenyan banking industry.

Tan (2012) examined financial distress and firm performance evidence from the Asian financial crisis. Using a sample of 277 firms from eight East Asian economies, the relationship between financial distress and firm performance during the Asian Financial Crisis of 1997-1998 was tested. This was because the crisis provided an exogenous shock, which reduced the endogeneity issues between firm performance and leverage. The results from the study established that firms with low financial leverage tend to perform better than firms with high financial leverage. Additionally, the study established that the Asian Financial Crisis of 1997-1998 magnified the negative relationship between financial distress and firm performance. High leverage firms were found to experience worse performance during a crisis. The study however was mainly based on the Asian financial crisis and findings could not be generalized for the Kenyan banking industry.

Razak (2012) examined the effect of leverage on the financial performance of general insurance companies in Malaysia and investigated whether the leverage-performance relationship is a function of contingent on the extent of product diversification. The study used the entire population of authorized general insurance companies operating during the period 2006 to 2009 in Malaysia. Ninety four (94) observations were analyzed. All the data used was sourced from the Malaysian Central Bank's (BNM) database.

Razak (2012) found that leverage is negatively associated with firm performance. However, there is a significant interaction effect between leverage and product diversity on firm performance. The finding indicates that leverage could be beneficial or detrimental to the financial performance of general insurance firms, contingent on the extent of product diversity of the firm. This study did not link leverage as a financial distress factor and was based on insurance companies in Malaysia and therefore the findings cannot be generalized for the banking sector in Africa and specifically Kenya.

Kosikoh (2014) sought to establish determinants of financial distress factors on insurance companies in Kenya. The study used a descriptive design on 45 insurance companies registered by Insurance Regulatory Authority in Kenya as at 31<sup>st</sup> December 2013. Kosikoh (2014) concluded that there exist a positive relationship between leverage and financial distress on Insurance companies in Kenya. However, the study only emphasized on the relationship between leverage and financial distress for insurance companies in Kenya. The current study takes into account the effect of leverage as a financial distress factor on financial performance in the banking industry specifically commercial banks in Kenya.

Nyamboga, Ongesa, Omwario, Nyamweya, Muriuki and Murimi (2014) examined the determinants of corporate financial distress of non-financial firms in Nairobi security exchange, among them was leverage being a determinant of financial distress. The study used descriptive research design and quantitative data was collected from the financial statements of 38 non-financial companies. According to the study, leverage was found to be having no significant influence on corporate financial distress, however, the study was based non-financial firms listed in NSE and not financial firms especially commercial banks in Kenya.

Okello (2015) examined the determinant of financial risk of listed companies on the NSE in Kenya, questionnaires and interviews were used to capture both qualitative and quantitative data from management of the listed companies under consideration. Okello (2015) concluded that leverage was the strongest determinant of the financial risk of the listed companies and could easily influence financial distress in listed companies in Kenya since more debt financing implies higher possibilities of default hence higher risk. Okello (2015) only linked leverage as a risk factor on the listed companies in NSE and not on the banking industry while Omondi and Muturi (2013) noted that leverage has significant negative effect on financial performance. The current study therefore considered leverage as a key financial distress factor and was used to determine its distressing effect on financial performance of the Kenyan banking sector, specifically commercial banks.

#### **2.4.4 Operational efficiency and Financial Performance**

A stream of prior research has used simple financial statement ratios (e.g. asset turnover) as proxies for efficiency to examine the relation between efficiency and performance; these studies show that changes in asset turnover improve forecasts of changes in future profitability (Bok & Farber, 2013). Operational efficiency studies in financial institutions can be used as a tool by managers to improve performance, as long as there is information in the study on the characteristics or identities of the relatively efficient and inefficient institutions (Berger & Humphrey, 2013).

Chortareas, Girardone and Ventouri (2012) investigated the dynamics between bank regulatory and supervisory policies associated with Basel II's three pillars and various aspects of banks' cost efficiency and performance for a sample of European Union's (EU) commercial banks over the period 2000-2006. The study used frontier analysis and traditional accounting ratios to measure efficiency. Findings suggested that interventionist supervisory and regulatory policies such as empowering capital restrictions, fortifying official supervisory powers, private sector monitoring and restricting bank activities, can impede the efficient operation of banks.

Chortareas, Girardone and Ventouri (2012) further noted that high operating efficiency reduces the effect of financial distress. The produced evidence also suggested that banks from countries with more open, competitive and democratic political systems are more likely to benefit from higher operating efficiency levels. From this study it can be argued that operational efficiency is a key factor of financial distress and financial performance. However, the study of Chortareas, Girardone and Ventouri (2012) was mainly based on a sample of EU commercial banks and findings cannot be generalized for the Kenyan banking industry being a developing country.

Klingenberg, Timberlake, Geurts and Brown (2013) examined the relationship between operational innovation and financial performance, the study also took a critical look at the appropriateness of the profitability ratios return on asset (ROA), Return on Equity

(ROE) and basic earning power (BEP) in determining the impact of a given operations strategy on firm performance. Focusing on just in time (JIT)/lean manufacturing, the relationship between these ratios and inventory management ratios were analyzed. Fixed-effect regression noted that no consistent relationship between ROA, ROE, BEP and inventory management ratios exists.

Klingenberg, Timberlake, Geurts and Brown (2013) noted that, profitability of a firm is affected by at least two factors: results from its operations, and how these are financed (e.g. usage of cheap debt, which enhances profitability). The study further suggested that the impact of an individual operations strategy is difficult to isolate from other firm activities, such as its financial management. The study was based on manufacturing firms in developed countries and the findings did not link operational efficiency and financial distress factors to financial performance of the Kenyan banking industry. However, the researcher noted that operational efficiency is a factor of performance.

Ongore and Kusa (2013) concluded that efficiency is one of the key internal factors that determine bank profitability. However, Ongore and Kusa (2013) argued that operational efficiency is one of the complex subjects to capture with financial ratios. Moreover, operational efficiency in managing the operating expenses is another dimension for management quality. The management has the capability to deploy its resources efficiently, income maximization; reducing operating costs can be measured by financial ratios. Ongore and Kusa (2013) further suggested that the ratio of operating expenses to total asset is expected to be negatively associated with profitability. The study did not link operational efficiency as a factor of financial distress and the findings could not be generalized to indicate distress in banking industry.

#### **2.4.5 Firm's Asset Quality and Financial Performance**

Adeolu (2014) carried out a study on asset quality and bank performance on commercial banks in Nigeria and with the use of the Pearson correlation and regression tool of the SPSS for data analysis and concluded that that asset quality had a statistically strong

positive relationship and influence on bank performance. However, he also shows that there exists no relationship between bank loans and its profitability, though this contradicts Chisti (2012) which reported that asset quality and profitability are negatively correlated in the banking industry.

Vigneswara (2015) carried out a study on the determinants of bank's asset quality and profitability for banks in India. The study used panel data techniques between 1997-2009 and the research findings revealed an inference contrary to the established and expected outcome. It was found established that non-performing assets do not affect the profitability of commercial banks and further, the research asserted that asset size has no significant impact on profitability of commercial banks. The study was based in India's commercial banks over eleven years between 1997 and 2009. The current study will fill a research gap in determining the effect of asset quality as a financial distress factor on financial performance of commercial banks in Kenya for eleven years between 2005 and 2015.

Akhtar and Hayati (2016) used an empirical Study on Islamic banking system of Pakistan in assessing the effect of asset quality, income structure and macroeconomic factors on insolvency risk to determine the insolvency risk in Islamic banking system of Pakistan for the years 2007 to 2015. To determine the insolvency risk in Islamic banks of Pakistan, a variety of bank specific and macroeconomic variables were used to estimate the impact. The results were obtained using OLS estimation. The results reveal that asset quality of Islamic banking system does not significantly impact insolvency, whereas, interaction with capital asset ratio significantly impact asset quality.

Olweny and Mamba (2011) carried out a study on the effect of bank sectorial factors on bank performance and asset quality was one of the bank specific factors under study. The study adopted an explanatory approach by using panel data research design. The study used annual financial statements of 38 Kenyan commercial banks from 2002 to 2008 and data analyzed using multiple linear regression method. The findings indicated that there is a negative and strong relationship between poor asset quality and

profitability. According to Olweny and Mamba (2011) the findings further meant that banks which fail to monitor their credit loans tend to be less profitable than those which pay particular attention to assets quality. Olweny and Mamba (2011) noted that small and medium banks that had the highest ratio of non-performing loans to gross loans are associated with low profitability. The findings are in line with the theory that increased exposure to credit risk which is normally associated with decreased bank profitability.

Barus, Muturi and Kibati (2017) carried out a study to establish the effect of asset quality on the financial performance of savings and credit societies in Kenya. The study employed an explanatory research design with a target population of 83 registered deposit taking SACCO's in Kenya that had been in operation in the period 2011-2015. The study used a census to collect both primary and secondary data. Multiple linear regression models were used to analyze the data using statistical package for social sciences (SPSS) and STATA. The findings of the study concluded that asset quality influenced the financial performance of savings and credit societies in Kenya. This was explained by the regression results that showed that the influence was positive and showed the magnitude by which asset quality influenced the financial performance of savings and credit societies. The univariate regression results showed that asset quality influenced the financial performance of savings and credit societies in Kenya.

The above studies on firm's asset quality were based on results of other countries; Adeolu (2014), Vigneswara (2015), Akhtar and Hayati (2016), others were based on SACCOs. Studies by Barus, Muturi and Kibati (2017) and Olweny and Mamba (2011) whose were mainly based on banks sectorial factors and not Financial distress factors. Findings did not link the effect of assets quality of commercial banks as a financial distress factor on financial performance of Kenyan banking industry. However, the researchers identified asset quality as a factor of performance.

#### **2.4.6 Capital Adequacy and Financial performance**

Several studies have been done in the area of capital adequacy on performance of various firms, Ikpefan (2013) examined the impact of bank capital adequacy ratios, management and performance in Nigerian commercial banks between 1986 to 2006. The study captured performance indicators and employed cross sectional and time series of bank data from the central bank of Nigeria, the study concluded that shareholders fund/total assets that measures capital adequacy of bank have negative impact on ROA. This study was carried out using data in Nigeria and in addition it did not link capital adequacy with financial distress in the Kenyan banking industry and therefore the current study will try to bridge this gap.

Buyuksalvarcı and Abdioglu (2011) investigated the determinants of Turkish banks' capital adequacy ratio and its effects on financial positions of banks covered by the study, data in the study was obtained from banks' annual reports for the period 2006 to 2010. Panel data was used to analyze the relationship between the variables. Buyuksalvarcı and Abdioglu (2011) established that loan, return on equity and leverage have a negative effect on capital adequacy ratio while loan reserve and return on assets positively influence capital adequacy ratio.

Adeyemi (2012) examined bank failure in Nigeria as a consequence of capital inadequacy, lack of transparency and non-performing loans. The aim of the study was to establish the main factors responsible for bank failure in Nigeria, to assess the extent to which these identified factors are accountable for this failure and to ascertain other factors that may be responsible for it. The study identified capital inadequacy, lack of transparency, and huge non-performing loans as a major cause of failure in Nigerian banks. Adeyemi (2012) claimed that financial institutions are expected to maintain adequate capital in order to meet their financial obligations, operate profitably and contribute as a result a sound financial system.

The study by Adeyemi (2012) adopted a structured questionnaire and covered all banks in Nigeria. Adeyemi (2012) concluded that capital inadequacy, lack of transparency and huge non-performing loans were established as the main causes of bank's poor performance in Nigeria. The study indicated that capital adequacy is a factor of financial performance. However, the study did not link capital adequacy as a financial distress factor on financial performance, further the study was based on data in Nigerian commercial banks.

Mathuva (2012) examined capital adequacy, cost income ratio and performance of commercial banks as a Kenyan scenario. The study was informed on provision of evidence that supports the central bank of Kenya's move to gradually raise bank capital level requirement and to also ensure proper and tight monitoring of banks operations. Mathuva (2012) used return on assets and the return on equity as a measure of bank profitability and consequently bank performance for the period between 1998 and 2007, Mathuva (2012) concluded that bank profitability is positively related to core capital ratio.

In Kenya, the core capital and total capital to total risk weighted assets ratios as at December 2014 were 15.9 percent and 19.2 percent respectively. This was due to increase of capital levels by various financial institutions through retained earnings and additional new capital, financial institutions are therefore required to maintain a core capital to deposit ratio of not less than 8 percent (CBK, 2015). According to Mathuva (2012), an increase in capital will raise the expected earnings by reducing the expected costs of financial distress. Mathuva (2012) linked capital adequacy to financial distress but the study did not determine the extent of capital adequacy as a financial distress factor to financial performance of commercial banks.

Nzioki (2011) examined the relationship of capital adequacy and asset quality on performance. A simple random sample of five listed commercial banks were used to collect data for six years (2004 to 2009) and a descriptive design used. The study described the relationship between asset quality and banks performance and the

relationship between capital adequacy and the financial performance. The study concluded that capital adequacy influences performance of commercial banks in Kenya, and greater bank capital reduces the probability of financial distress.

Ongore and Kusa (2013) examined the determinants of financial performance of commercial banks in Kenya. The study used a linear multiple regression model and generalized least square on panel data and established that specific factors significantly affect the performance of commercial banks in Kenya except for liquidity variable influenced performance, and specifically noted that capital adequacy significantly affect the performance of commercial banks in Kenya. The study however failed to determine the effect of capital adequacy as a financial distress factor on financial performance of the Kenyan banking industry.

The above studies on capital adequacy and financial performance mainly focused on results of foreign countries like; Ikpefan (2013) and Adeyemi (2012) for Nigeria and Buyuksalvarcı and Abdioglu (2011) for Turkey. Mathuva (2012) and Nzioki (2011) were based on the relationship between financial performance and capital adequacy, while Ongore and Kusa (2013) was mainly based on determination of capital adequacy as determinant of financial performance of commercial banks in Kenya. Findings of this studies did not link the effect of capital adequacy of commercial banks as a financial distress factor on financial performance of the Kenyan banking industry. However, from the above studies it can be argued that capital adequacy is a factor of performance.

## **2.5 Critique of existing literature**

A number of researches have been done relating to financial performance, financial distress and financial factors. Specifically, several authors have discussed the relationship of various variables and financial performance, but not on the effect of financial distress factors on financial performance of commercial banks in Kenya. Ntoiti (2013) sought to establish determinants of financial distress in local authorities in Kenya yet in the new constitution, the local authorities were abolished. Kosikoh (2014) sought

to establish determinants of financial distress on insurance companies. Shaukat and Hina (2015) sought to determine the impact of financial distress on financial performance of the corporate sector in Pakistani. Memba and Abuga (2013) examined causes of financial distress and its effects in firms funded by Industrial and Commercial Development, a Survey of Firms Funded by Industrial and Commercial Development in Kenya.

Studies have concluded that there is a positive relationship between liquidity and performance, specifically; (Cheluget et al., 2014; Ndirangu, 2013; Njeru, 2016; Omondi & Muturi, 2013) while other studies concluded that liquidity had a negative relationship on financial performance; (Ahmed, 2014; Kibuchi, 2015; Mwangi, 2014; Ongore & Kusa, 2013). However, the study conducted in China and Malaysia found that liquidity level of banks has no relationship with the performances of banks (Said & Tumin, 2011).

Opler and Titman (1994) and Pranowo and Manurung (2010) studied the relationship of leverage and distress and found out that leverage had a positively significant relationship with distressed firms but not for Kenyan banks. Anjum and Malik (2013) evaluated the financial difficulties of Pakistani firms that were listed on Karachi Stock Exchange (KSE) and not Kenyan firms. The study noted that leverage is positively significant to the financially distressed firms in Pakistan's stock exchange. However, Zeitun and Saleh (2015), Razak (2012), Tan (2012), Omondi and Muturi (2013) found that leverage is negatively associated with firm performance.

Okello (2015) concluded that leverage was the strongest determinant of the financial risk of the listed companies and could easily influence financial distress in listed companies in Kenya since more debt financing implies higher possibilities of default hence higher risk. Kosikoh (2014) concluded that there exist a positive relationship between leverage and financial distress on Insurance companies in Kenya and not on commercial banks in Kenya. Nyamboga, Ongesa, Omwario, Nyamweya, Muriuki and Murimi (2014) found out that leverage does not have significant influence on corporate

financial distress. Other studies reviewed largely focused on micro/macro-economic factors, intellectual capital in the Greek business, absorptive capacity, financial factors, banking sectorial factors, innovation, internal controls and Central Bank regulatory requirements on financial performance of commercial banks (Kariuki 2013; Kinyua, 2015; Kostopoulos et al., 2011; Maditinos, 2011; Ngumi, 2013; Shaukat & Hina, 2015; Tan, 2012). These studies failed to show the contribution of financial distress factors on financial performance of commercial banks in Kenya.

Further studies like those of Shaukat and Hina (2015), Kariuki (2013), Baimwera and Muriuki (2014) used Altman Z-score model which was mainly developed for public manufacturing firms with assets of over \$ 1 million (Acharya et al., 2016). According to Mamo (2011) Altman Z-Score model cannot be a perfect measure of financial distress of commercial banks and the model cannot perfectly identify key financial distress factors that can influence financial performance of commercial banks in Kenya. Other studies that linked financial distress and commercial banks were based on foreign financial institutions that limit the application of research to Kenyan banking industry.

## **2.6 Research Gaps**

In the last few decades, numerous studies have been examined on financial distress in various countries all over the world. Altman in 1968 studied financial distress and corporate failure and developed models of determining whether a manufacturing firm is facing bankruptcy or not. Previous studies carried out were on macro-economic variables in identification of financial distress in United Kingdom (UK) for manufacturing firms (Lee & Yeh, 2011), and not on banking industry in developing countries, effect of financial distress on performance of Malaysian manufacturing firms and prediction of financial distress and identification of potential mergers and acquisition targets in UK. Studies on financial distress in Kenya have largely focused on local authorities, insurance companies, and non-financial firms listed in NSE and causes of financial distress. Studies on financial institutions have mainly focused on financial performance of only commercial banks specifically on the effect of; micro/macro-

economic factors, financial factors, banking sectorial factors, innovation, internal controls and Central Bank regulatory requirements on financial performance of commercial banks.

From the foregoing review of relevant literature, it is evident that research in the area of financial distress had been done but not in a comprehensive approach for developing countries. In addition, there were inadequate studies on the effect of key financial distress factors in banking industry. This study therefore sought to fill the knowledge gap of identifying key financial distress factors from the literature review and their effect on financial performance of commercial banks in Kenya

## **2.7 Summary of Literature**

This chapter identified and discussed both the literature and empirical review that is relevant to financial distress factors and financial performance of commercial banks in Kenya. The literature review indicated that liquidity, efficiency, leverage, operational efficiency, asset quality and capital adequacy all of which are the specific objectives of the study are financial distress factors, this chapter examined their role as financial distress factors on financial performance of Commercial banks in Kenya, this chapter developed and presented a conceptual framework.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter discussed research design and methodology. These are the steps to be taken in the data collection and analysis. The section contains the research instruments which the researcher used in the study. It therefore described the research design, target population, data collection techniques, data processing and analysis and ethical considerations.

#### **3.2 Research Philosophy**

This research proposal was based on the positivism paradigm. The research paradigm of a study reflects the nature and approach taken when conducting research. Research paradigms can be identified by their research philosophy and research methods. Research philosophy relates to the development of knowledge and the nature of that knowledge (Saunders, Lewis, & Thornhill, 2009). New paradigms offer new ways to think about the world, new questions to ask and new ways to pursue them. This is the essential nature of paradigms as “worldviews,” and those who value the possibilities that come from combining qualitative and quantitative methods need to promote a worldview that encourages others to share beliefs (Morgan & Morgan, 2007). Research methods on the other hand are the techniques used to gather and analyze data in a study.

Two research paradigms underpin a research, that is, positivism and social constructivism. The positivism stance was appropriate for this study based on the underlying assumptions of this paradigm relative to social constructivism. Positivism assumes in its understanding of the world that the environment and the events of interest are objective, external and independent of the researcher (Saunders et al., 2009). Social constructivism, however, assumes that the understanding of the environment and events of interest in it are socially constructed and subjective from the researcher's point of

view (Peter, Artur, & Peter, 2005). This study followed the principle of deduction as elucidated by positivism: hypotheses were first derived from a theory after which data was collected and tested empirically to support or reject the hypotheses. As a result of these methodological considerations, the research proposal relied on quantitative research methods.

### **3.3 Research Design**

This study adopted descriptive research design. Polit, Beck, and Owen (2003) describes a research design as the overall plan for obtaining answers to the questions being studied and for handling some of the difficulties encountered during the research process. Ngumi (2013) asserts that, a research design is the structure or blue print of research that guides the process of research from the time of formulating the research questions and hypothesis up to the time of reporting the research findings. The choice of research strategy according to (Saunders et al., 2009) is guided by the research question(s), objective(s), the extent of existing knowledge, amount of time and resources available as well as the philosophical underpinning. Muthuva (2016) suggested that descriptive design enables the researcher to obtain information about the status of the phenomena and it explains its association with the variables in the study.

Descriptive research design is suitable because it provided the basis of collecting data in order to determine and describe the financial distress levels for firms relating the Z-score values to stock returns and financial risk premium (Nyamboga et al., 2014). The study used secondary data that was generated from financial statements of commercial banks in Kenya, the secretariat of the Central Bank of Kenya and the Capital Markets Authority.

Descriptive research design has been used before in other studies like Ngumi (2013) in analyzing the effect of bank innovation on financial performance of commercial banks in Kenya, while Okoth (2014) used descriptive research design to determine the effect of interest rate and inflation on growth of collective investment schemes in Kenya.

Otwoma (2013) as well used descriptive research design to analyze the effect of interest rates on property prices in the Kenyan real estate market. In view of the above definitions, descriptions and strengths, descriptive research design was therefore the most appropriate design for this study. Data relating to financial distress factors and financial performance for commercial banks in Kenya for the current study was collected from the financial statements of commercial banks in Kenya. This was done by extracting, computing the necessary ratios and analyzing all the variables in the study.

### **3.4 Target population**

Target population comprised of all the 44 commercial banks in the Kenya licensed as at 31<sup>st</sup> December, 2015 (Appendix II) the list of these companies was obtained from the secretariat of CBK, out of which information for 43 was accessible. A population is any finite or infinite collection of individual elements (Lavrakas, 2014). Hyndman and Booth (2009) argued a population to be the entire collection of ‘things’ in which we are interested, on the other hand, Dawson (2009) defined a target population as the population in research to which the researcher can apply their conclusions. Dawson (2009) further asserted that a target population is a universe of the study as all members of a real or hypothetical set of people or events to which an investigation wishes to generalize results.

The current study had both accessible and target population. Accessible population refers to the population in the research to which the researcher can apply their conclusions (Johnson, 2012). Target population refers to the entire group of individuals or objects to which researchers are interested in generalizing the conclusions (Johnson, 2012). Scheiber and Scheiber (2014) refers to the target population as the group of actors most negatively affected by the problem that initiatives are attempting to overcome, they are the intended direct recipients and in some cases indirect recipients of an initiatives. The study used a census of all the forty three (43) commercial banks in the Kenya licensed as at 31<sup>st</sup> December, 2015 (Appendix II) the list of these companies was obtained from the secretariat of CBK.

### **3.5 Sampling Frame**

For this study, the sampling frame for the target population was all the registered commercial banks regulated by central bank of Kenya. Lavrakas (2014) defines a sampling frame as a list of the target population from which the sample is selected and that for descriptive survey designs, a sampling frame usually consists of a finite population. Polit, Beck, and Owen (2003) refer to a sampling frame as the technical name for the list of the elements from which the sample is chosen. Kothari (2010) argued a sampling frame to be a list that contains the names of all the elements in a universe. A sample is a list of selected participants from a population (Polit & Beck, 2010).

The sampling frame for this study consisted of all the licensed commercial banks in operation in Kenya as at 31<sup>st</sup> December, 2015 as they appear in the database of Central Bank of Kenya, this has been laid in the appendix II. CBK supervision report also provides the list, physical address and contact details of all the commercial banks in Kenya. The study carried out a census on all the items in the target population. A census should be used where necessary if it is possible to collect and analyze data from every possible case or group member (Saunders et al., 2009). In addition all the five sampled commercial banks Kariuki (2013)'s study experienced financial distress and that made the current study to have an additional reason of using a census, however, out of 44 commercial banks data could only be accessible for 43 commercial banks.

### **3.6 Sample Design and Technique**

A census was used since there are 43 commercial banks whose data was accessible; the population was small and therefore manageable for a census. Sampling design is a definite plan for obtaining a sample from a given population. It refers to the technique or the procedure the researcher would adopt in selecting items for the sample (Kothari, 2004). It should be representative of the whole target population. This study used financial statements of commercial banks regulated by CBK as at 31<sup>st</sup> December 2015.

Kothari (2004) describes a sample as a collection of units chosen from the universe to represent it, a census was used since there are a total of 43 commercial banks whose data was accessible, the population was small and therefore manageable for a census. Saunders, Lewis and Thornhill (2009) argued that sampling will only be necessary if; it will be impracticable to survey the entire population, there is budgetary constraint, there is expected time constraint and the population size is unmanageable. In addition, according to Kariuki (2013)'s study that used a sample of five commercial banks, argued that all commercial banks usually experience financial distress interchangeably and therefore a census was unavoidable for the current study.

### **3.7 Data Collection Procedures**

Data on the dependent and independent variables was collected by use of secondary data, mainly from financial statements between 2005-2015 of individual commercial banks in Kenya under study (Appendix II). Miles, Huberman and Johnny (2014) defined data collection in research as the process of gathering and measuring information on targeted variables in established systematic fashion which enables the interviewee to draft relevant questions and determine the expected outcome. According to Johnston (2014), a quantitative research prefers a secondary data analysis to primary source of analysis. The author noted that secondary analysis of the existing research has become an increasing popular method unlike primary analysis due to its enhanced overall efficiency. Johnston (2014) further argued that secondary data has much clearer categorization because it avoids confusion.

Hui and Phillips (2014) argued that use of secondary data analysis is viable since it utilizes the process of inquiry especially in studies that are prone to biasness. Secondary data is data that was collected by someone else for another primary purpose; the existing data provides a viable option for researchers who may have inadequate time resources or researchers with other limiting factors (Hui & Phillips, 2014).

Research indicates that secondary analysis is an empirical exercise that applies the same basic research principles as studies utilizing primary data and has steps to be followed just as any research method (Arain, Campbell, Cooper, & Lancaster, 2010; Johnston, 2014). Saunders, Lewis and Thornhill (2009) defined secondary data as reanalyzing data that has already been collected for some other purpose and it will include both primary and published data. Dawson (2009) argued that secondary research data involves the data collected using information from studies that other researchers have made of a subject.

The data collection covered an eleven (11) year period from 2005 to 2015, this period of eleven years was selected for the study in order to establish the changes in commercial bank over time and to base the analysis on as recent data as possible. This could also be important since several banking regulations for financial institutions had been put in place. Kosikoh (2014) argued that a period of more than five years could help in the computation of various ratios of both the independent and dependent variables for several years for better analysis. Therefore, data about the dependent and independent variables was collected from the financial statements of various financial institutions using secondary data collection guide/form. The secondary data collected was assets, equity, liabilities and other financial information that was necessary for data analysis.

Various studies have relied on secondary data to collect data especially where quantitative data is required, Olweny and Themba (2011) examined the effects of banking sectorial factors on the profitability of commercial banks in Kenya and adopted an explanatory approach by using panel data research design for collecting secondary data from 38 Kenyan banks from 2002 to 2008. Ongore (2013) used explanatory study that was based on secondary data obtained from published statement of accounts for ten years and thereby ignoring the use of primary data. Panel data has more variability and less collinearity among the variables than cross-sectional or time series data.

It also controls heterogeneity and can identify and estimate effects that are not easily detectable in pure cross section and pure time series data, in particular therefore, panel data sets are better able to study complex issues of dynamic behavior (Baltagi, 2005; Greene, 2002; Gujarati, 2012).

### **3.8 Data Processing and Analysis**

According to Blumberg, Donald Cooper and Schindler (2014) data processing involves editing, coding, classification, tabulation and graphical presentation. The study extracted data containing quantitative details from financial institutions, the panel data collected was analyzed quantitatively through a mathematical and regression equations and this was solved by using a statistical tool (STATA). Olweny (2012) argued that multiple regression techniques give both quantitative and qualitative result that is conclusive and robust as well. STATA analyzed descriptive statistics and multiple linear regression analysis between dependent variables (financial performance) and independent variables.

According to Polit and Beck (2006), the amount of data collected in a research study cannot be analyzed and answered by use of simple numeric information, the data collected need to be processed and analyzed in an orderly manner. Quantitative information is usually analyzed through statistical procedures; whose procedures cover broad range of techniques. However some methods are computationally formidable, the underlying logic of statistical tests are important and basically computers are used to make the analysis become friendly rather than use of complex mathematical and detailed operations in analysis (Polit & Beck, 2006). The results will be presented using tables, charts and graphs for easy understanding.

Confirmatory factor analysis (CFA) was adopted to determine the relationship between observed measures and latent variables based on existed theories that were used to formulate the constructs and objectives. Gay, Mills, and Airasian (2013) argued that confirmatory factor analysis allows the exploration of underlying constructs, which

cannot be measured directly, through items thought to be reflective measures of the construct. CFA helped confirm that the observed measurements belonged to the study variables they measured.

### **3.9.1 Regression analysis**

Despite using descriptive analysis, the study used multiple regression model to test for statistical significance of the various independent variables, that is; Liquidity, leverage, operational efficiency and asset quality, while the dependent variable was return on equity and return on assets. According to Ambrosius (2007), multi-linear regression model is a statistical tool used to describe the simultaneous associations of several variables with one continuous outcome. Ambrosius (2007) suggested that important steps in using this approach include estimating and inferencing, variable selection in model building and assessing model fit, the special cases of regression with interactions among the variables, polynomial regression and regression with categorical variables and separate slopes models are usually covered in regressing (Ambrosius, 2007). Ambrosius (2007) further concluded that a multiple linear regression model is an extension of the simple regression model for data with multiple predictor variables and one outcome.

Anghelache, Manole and Anghel (2015) argued that a simple linear regression method is usually an extension of two sets of variables to more variables by multiple linear regression method. In multiple linear regression, method there is a dependent variable and many factor variables known as independent variables. According to Anghelache, Manole and Anghel (2015), using multiple linear regression model offers a more detailed analysis than the analysis performed using simple linear models.

### 3.9.2 Multivariate models:

This statistical model determined the effect of independent variables on the dependent variable. The multiple regressions used had the following form:

$$ROE_{it} = a + \beta_1 LIQ_{1it} + \beta_2 LEV_{2it} + \beta_3 OPE_{3it} + \beta_4 ASQ_{4it} + \beta_5 CAD_{5it} + e \quad (\text{Equation 1})$$

$$ROA_{it} = a + \beta_1 LIQ_{1it} + \beta_2 LEV_{2it} + \beta_3 OPE_{3it} + \beta_4 ASQ_{4it} + \beta_5 CAD_{5it} + e \quad (\text{Equation 2})$$

Where;

ROE=Return on equity to measure financial performance of Commercial banks in Kenya.

ROA= Return on assets to measure financial performance of Commercial banks in Kenya.

a= Constant

$\beta_1, \beta_2, \beta_3, \beta_4,$  and  $\beta_5,$  = coefficients of determinants on financial distress for commercial banks in Kenya.

LIQ<sub>1</sub>= Liquidity

LEV<sub>2</sub>= Leverage

OPE<sub>3</sub>= Operational Efficiency

ASQ<sub>4</sub>= Asset Quality

CAD<sub>5</sub>=Capital Adequacy

e = error term

### **3.9.3 Operationalization of Study Variables**

Operationalization is the process of strictly defining variables into measurable factors. The process defines fuzzy concepts and allows them to be measured, empirically and quantitatively (Ardelt, 2004). Literature review identified various independent variables identified as financial distress factors that needed to be operationalized for the current study. These financial distress factors included; liquidity, leverage, operational efficiency, asset quality and capital adequacy as independent variables while the dependent variable is financial performance.

**Table 3.1: Tabulation of Independent Variables and Their Specific Measures**

Variable	Proxy definitions	How to measure
<b>Independent</b>		
Liquidity	LIQ	Quick Assets to Total liabilities ratio (QAL) =Cash and Cash equivalents(quick assets)/Total Liabilities
Leverage	LEV	Quick Assets to Total deposits (QAD) =Cash and cash equivalent(quick Assets)/Total Customer Deposits Debt equity ratio (DER) =Debt/Equity Debt to assets ratio (DAR) =Debt/Total Assets
Operational Efficiency	OPE	Operating expense ratio (OER)= OE/Gross Interest Income; Net worth turnover ratio (NWTR)= Gross Interest Income/Net worth(net assets)
Asset Quality	ASQ	NPL to Total loans ratio=Total Non-Performing Loans/Total Loans; Loan loss provision to income ratio=Loan loss provision/Operating income.
Capital adequacy	CAD	Capital adequacy ratio (CAR) =Core Capital/TRWA Leverage ratio (LR) =Total Capital/Total Assets
<b>Dependent</b>		
Financial performance	FP	Return on equity (R.O.E) =Net Profit after tax divided by Total Equity Capital Return on asset (R.O.A) =Net Profit after tax divided by Total Asset

### 3.9.4 Panel Model Specification

The study used panel data to carry out the research analysis for 11 years starting from 2005 to 2015. Panels are very important and increase precision as they contain detailed information as compared to cross sectional data (Blundell & Bond, 1998) and (Hoechle, 2007). According to Cheng Hsiao (2004), panel data usually gives the researcher a large number of data points, it therefore increases the freedom in one hand and decreases the collinearity on the other hand, these means that efficiency of econometric estimates will be achieved or improved. Further, Cheng Hsiao (2004) concluded that longitudinal data allows a researcher to analyze a number of important economic issues that can be addressed using cross sectional or time series data sets with ease. Gujarati (2012) has suggested various estimating techniques that can be used in estimation of the panel data that is pooled OLS, Random effect (RE) and Fixed Effect (FE).

First, Pooled OLS simply combines or pools all the time series and cross-sectional data and estimates the underlying model by utilizing ordinary least squares (OLS).

The model is presented in equation 3;

$$Y_{it} = \alpha + \beta X_{it} + \epsilon_{it} \quad \text{(Equation 3)}$$

Where  $\epsilon_{it}$  = error term

$Y_{it}$  = Financial performance for  $i^{th}$  firm in  $t^{th}$  year.

$X_{it}$  = vector representing independent variables for firm  $i$  in year  $t$ ,

$\beta$  = Vector of Coefficients of the independent variables,

$\alpha$  = the intercept for each entity,

$i = 1, 2 \dots 44$  (individual commercial banks),

$t = 1, 2 \dots 11$  (time indicator).

Fixed effect model (FEM) is due to the fact that although the intercept may differ across individuals, FEM will assume the slope coefficients of the regressions do not vary across individuals or over time and whenever the study is analyzing the impact of variables that vary over time within an individual. FEM is used when the panels that are specific

correlate with the predictors. Fixed effect intercept may be allowed between companies by creating a dummy variable technique, this fixed effect model involves recognition that omitted variables may lead to changes in cross-sectional and time series intercepts (Gujarati, 2012).

FEM model assumes that differences across units can be captured in differences in the constant term (Greene, 2002). Since dummies will be used to estimate the fixed effects, then the fixed effects will also be referred as the least square dummy variable (LSDV) models and fixed effects can be used interchangeably (Gujarati, 2012). However, Gujarati (2012) argued that use of fixed effects model may have some limitations. Use of many dummy variables may run up against or bring about the degrees of freedom problem. Many variables always brings multicollinearity and this makes precise estimation of one or more parameters difficult, FEM may not be able to identify the impact of time-invariant variables and the error term according to Gujarati (2012) the error term may not follow the classical assumption as it may have been assumed.

The model is presented in equation 4;

$$Y_{it} = \beta_1 i + \beta X_{it} + \mu_i \quad (\text{Equation 4})$$

$\beta_{1i}$  = fixed effect

Where  $\mu_t$  = error term

Finally the third model is the random effect model, which introduces the disturbances term U as a result ignoring the dummy variables that represent lack of knowledge, this approach was suggested by the proponent of the so called error components model; instead of treating one variable or the other as fixed or constant, its assumed to be random (Gujarati, 2012). The rationale behind random effects model is that unlike fixed effect model, the variation across entities is assumed to be random and uncorrelated with the predictor or independent variable included in the model:

“...crucial distinction between fixed and random effects is whether the unobserved individual effects embodies elements that are correlated with the repressors in the model not whether those effects are stochastic or not”(Greene, 2008). Greene (2008) further argued that if there is reason to believe that differences across entities have some influence on the dependent variable then random effects should be used.

Random Effect model is as shown in equation (5);

$$Y_{it} = \beta_1 + \beta X_{it} + \mu_{it} + \epsilon_{it} \quad (\text{Equation 5})$$

Where

$\beta_1$ =Random Effect

$\epsilon_{it}$  =Error term

$\mu_{it}$  = Disturbance term

### **3.9.5 Model Specification Tests**

To determine the nature of the panel data and determine the best model for analysis, diagnostic test for heteroskedasticity, serial correlation, fixed effects and autocorrelation among other were carried out. A summary of the test to be carried out and the criteria for making the decision is presented in Table 3.1.

**Table 3.2: Panel Data Diagnostic Tests**

<b>Test</b>	<b>Test Used</b>	<b>Conclusion</b>
Use of pooled or random effects model Time Fixed Effects	Breusch-Pagan Lagrange multiplier (LM) Testsparm test	If P value >0.05, use pooled effects model.  If p value >0.05, there are no time fixed effects do not use two-way model or introduce dummy variables so we fail to reject the null that the coefficients for all years are jointly equal to zero, therefore no time fixed-effects are needed in this case.
Heteroskedasticity Serial correlation	Wald Chi-square test Wooldridge Drukker test	If P value <0.05, presence of Heteroskedasticity If P>0.05, no serial correlation, and the study will fail to reject the null and conclude the data does not have first-order autocorrelation.
Random or fixed effects	Hausman test	If P value>0.05, use random effects model.
Unit roots/stationarity	Levin-Lin-Chu Unit test for icfs/ Harris-Tzavalis test for icfs	If p-value<0.05 use stationary alternative; null hypothesis of a unit root is rejected in favor of the stationary alternative in each case if the test statistic is more negative than the critical value.
Cross-sectional dependence/contemporaneous correlation	Pasaran CD test/ Breusch-Pagan Lagrange multiplier (LM)	If P>0.5 there is no cross sectional dependency thus the null hypothesis is that residuals are not correlated. According to Baltagi and Griffin (1997) cross-sectional dependence is a problem in macro panels with long time series (over 20-30 years). This is not much of a problem in micro panels (few years and large number of cases).
Normality	Jacque Bera test	If P>0.05 then this implies normality.

### **3.9.6 Panel Data Analysis Plan**

The study used three main steps in panel data analysis. Firstly exploratory data analysis was carried out (Greene, 2002). The exploratory analysis used visual plots for financial performance as a dependent variable only and this stage involved within and between commercial banks analysis. In case of within banks, the study used growth plots where a trend plot was established for each commercial bank. This output helped to determine whether to use POLS or panel data models (FE and RE). While between commercial banks overlain or spaghetti plots was used to check if the intercept is the same for firms or varies over firms (Greene, 2002).

A correlation matrix for study variables were drawn and since it was a linear regression methodology, the study ensured very high correlation does not occur in any two variables of the study; this was done in order to preclude the multicollinearity problem by use of Collin 'varlist command. Other specifications in the panel data set such as the presence of unit root/stationarity and serial correlation in the panel data. Levin–Lin-Chu unit-root test and Harris-Tzavalis unit-root test was carried out for unit root/stationarity and Wooldridge drukker test was used for Serial Correlation.

Secondly; diagnostics analysis was carried out, specifically this step checked the appropriate model to use between the use of POLS or panel data models (FE or RE); where Hausman test was used to choose between RE and FE models and B-P LM test (to check for RE effects) was used to choose between RE and POLS Model. Existence of time-related fixed effects was checked using testparm test (Greene, 2002).

Finally other diagnostics after fitting the FE models were carried out to test for heteroskedasticity through the use of modified Wald test, and since heteroskedasticity existed then robust standard error for the model were used to report the results and thereafter a check was carried out to determine if the residuals were normally distributed and plot the normality plots. However, the model fitted violated most of the OLS classical assumptions and therefore feasible generalised least squares (FGLS) was used.

Kumbhakar, Lien and Hardaker (2014) argued that when violations of the OLS classical assumptions exist in the model fitted, an alternative robust model are normally used instead. FGLS estimators were used as it was considered efficient (Park, 2009). According to Rasheed, Adnan and Saffari (2016) the regression model estimator is considered efficient if it is robust and resistant to the presence of heteroscedasticity variance, multicollinearity or unusual observations called outliers.

### **3.8 Ethical Issues**

In conducting the study, the researcher strived to adhere to research ethical guidelines. Consent from entities therefore was the basis for a bank to be the unit of analysis in the study. Information was treated with confidentiality and data collected was used for the purpose of the research alone and therefore not revealed to any other party with need to carry out a similar study. To avoid plagiarism, all sources cited in the study were acknowledged. Data collected was presented and analyzed as accurately as possible. Furthermore, the researcher acknowledged all persons who contribute to the success of the study.

## CHAPTER FOUR

### RESEARCH FINDINGS AND DISCUSSIONS

#### 4.1 Introduction

This chapter contains the findings and discussions of the study and test of the hypothesis depicted in the study. It begins with providing a general description of the study objects and necessary tests for regression analysis were carried out. Ultimately, hypothesis testing was carried out and the model fitted.

#### 4.2 Response Rate

The study targeted 44 commercial banks that are licensed and regulated by CBK out of which two were under statutory management as at 31<sup>st</sup> December 2015. The study sought to explore the effect of financial distress factors on the financial performance of commercial banks in Kenya. The researcher used the census technique and considered the entire population, secondary data was collected for various financial ratios used to measure financial performance across a period of 11 years yielding a panel data.

According to Table 4.1, the researcher managed to collect data from 43 commercial banks out of 44 banks yielding 98% response rate. The response rate was considered adequate given that Beauvais, Stewart, Denisco and Beauvais (2014) argued that a response rate of between 50% and 70% is a good response rate and Runnels and Thomas (2006) argued that a response of more than 75% will give rise to best analysis. Runnels and Thomas (2006) further noted that a response rate of 30%-40% should be considered sufficient.

Past studies on commercial banks have reported a response rate lower than 80% including Muiruri (2015) with a response rate of 78% Ngumi (2013) recording a response rate of 62%, Kamau and Ngari (2014) with a response rate of 71.6% except Kosikoh (2014) whose response rate on insurance companies was above 80% translated

to approximately 94%. Based on these studies a response rate of 98% due to statutory management of Charter House Bank in tier III was considered adequate.

**Table 4.1: Response Rate**

<b>Bank Category</b>	<b>No. of Banks</b>	<b>Response</b>	<b>Response rate</b>
Tier I	6	6	100%
Tier II	8	8	100%
Tier III	13	12	96%
Tier IV	16	16	100%
Total	44	43	98%

#### **4.2.1 Missing Data Analysis and Data Cleaning**

The researcher used Microsoft-excel 2016 to process the data collected and review for missing entries. Those banks that had more than 10% missing data were removed from the study. Tabachnick and Fidell (2007) argued that cases that have more than 10% missing responses should not be allowed for further analysis subject to dealing with missing responses empirically. Little and Rubin (2014) suggested that firms with missing data in research should be expunged. From the analysis as shown in Table 4.2, five entities were dropped due to missing more than 10% of the required information leaving 38 entities with data for analysis. 38 entities still formed 88% of the original population included in the sample. Some of the five commercial banks dropped due to missing more than 10% of required information were under statutory management. Other than Charter House Bank, there was Dubai bank, Imperial bank and chase Bank in receivership as at 31<sup>st</sup> December 2015, and other financial institutions were licensed as commercial banks but had been in operation for less than 7 years like Jamii Bora Bank licensed on 2<sup>nd</sup> March 2010 and UBA Kenya Ltd 25<sup>th</sup> September 2009 (CBK, 2017).

**Table 4. 2: Missing Data Analysis**

<b>Missing Response</b>	<b>Commercial Banks</b>	<b>Percentage</b>	<b>Cumulative Percentage</b>	<b>Action</b>
2%	35	81%	81%	Retained
5%	3	7%	88%	Retained
20%	5	12%	100%	Expunged

### **4.3 Factor Analysis**

Bartholomew, Knott and Moustaki (2011) noted that factor analysis operates on the notion that measurable and observable variables can be reduced to fewer latent variables that share a common variance and are unobservable, which is known as reducing dimensionality. Bartholomew, Knott and Moustaki (2011) further argued that unobservable factors known as latent variables are not directly measured but are essentially hypothetical constructs that are used to represent variables.

Latent variables can also be said to be variables that cannot be seen or directly measured but the researcher wants to know about them, latent is a Latin word for hidden (Chandrasekaran, Parrilo, & Willsky, 2012). Newsom (2017) argued that the latent variable concept can also be explained in terms of classical test theories, this theory notes that any measure in the conceptualization of a concept is always a function of two components, one component to represent true score variation and the other to represent error variation. Anandkumar, Ge, Hsu, Kakade and Telgarsky (2014) also noted that latent variables can be measured indirectly by use of observed variables, and this is similar to that technique for finding planets orbiting distant stars where the exo-planets are usually not directly seen but are observed indirectly.

The study conducted a factor analysis to assess the validity of the observed measurements used to measure the constructs and for dimension reduction of the measurements to latent variables that formed the basis of the objectives. Factor analysis is a dimension reduction technique used to reduce the dimensions of multivariate data collected using several observed variables into fewer manageable latent variables. Confirmatory factor analysis (CFA) was adopted as it looked at the relationship between observed measures and latent variables based on existed theories that were used to formulate the constructs and objectives. According to Gay, Mills, and Airasian (2013) confirmatory factor analysis allows the exploration of underlying constructs, which cannot be measured directly, through items thought to be reflective measures of the construct.

According to Schmitt (2011), confirmatory factor analysis can be used to specify which variables load into which factors, the loadings for all variables not related to a given factor are then set to zero and measures with factor loading of less than 0.4 are expunged from consideration. Table 4.3 shows the factor loadings used in factor analysis. Factor loadings were computed and variances extracted from each observed measure loading a factor and assessed. The measurements are said to belong to the variables if it loads the construct by more than 0.4, therefore, measurements that had factor loading less than 0.4 were expunged.

All the observed measurements of the study had factor loadings greater than 0.4 and were therefore all retained. From factor analysis, factor scores were also computed and were used as weights to compute latent variables for the inferential analysis. From Table 4.3 all measures had a factor loading of more than 0.4 and this was a strong indicator that the measures strongly belonged to the respective variables according to Schmitt (2011). The measures were thereafter used to determine latent variables for analysis using STATA.

**Table 4. 3: Factor Loadings Table**

<b>Variable</b>	<b>Factor1</b>	<b>Factor2</b>	<b>Factor3</b>	<b>Factor4</b>	<b>Factor5</b>	<b>Factor6</b>
Quick Assets to Total liabilities ratio	0.479					
Quick Assets to total Deposits ratio	0.479					
Debt equity ratio		0.689				
Debt asset ratio		0.689				
Operating expense ratio			0.594			
Net worth turnover ratio			0.594			
Non-performing assets to total loans				0.7543		
Loan loss provisions to operating income				0.7543		
Capital adequacy ratio					0.5703	
Leverage Ratio					0.5703	
Return on assets						0.426
Return on equity						0.426

Table 4.4 shows variables, conceptualized variables and the selected latent variable labeled as component 1, 2, 3, 4, 5 and 6 according to CFA.

**Table 4. 4: Selected Measures of Independent Variables Independent**

<b>Variable</b>	<b>Conceptualized Measures</b>	<b>Selected Latent /component using CFA</b>
Liquidity	Quick Assets to total liabilities ratio (QAL) =cash and cash equivalents/Total Liabilities	Component 1
	Quick Assets to Total Deposits ratio (QAD) =cash and cash equivalents/Total Customer deposits	
Leverage	Debt equity ratio (DER) =Debt/Equity	Component 2
	Debt to assets ratio (DAR) =Debt/Total Assets	
Operational efficiency	Operating expense ratio (OER)= OE/Gross Interest Income; Net worth turnover ratio (NWTR)= Gross Interest Income/Net worth	Component 3
Asset Quality	NPL to Total loans ratio=Total Non-Performing Loans/Total Loans;	Component 4
	Loan loss provision to income ratio=Loan loss provision/Operating income.	
Capital Adequacy	Capital adequacy ratio (CAR) =Core Capital/TRWA	Component 5
Financial Performance	Leverage ratio (LR) =Total Capital/Total Assets Return on equity (R.O.E) =Net Interest Income after Taxes divided by Total Equity Capital Return on asset (R.O.A) =Net Interest Income divided by Total Asset	Component 6

## **4.4 Descriptive Analysis of Study Variables**

### **4.4.1 Liquidity**

Liquidity held by commercial banks depicts their ability to fund increases in assets and meet obligations as they fall due. According to CBK (2014), liquidity is one of the important financial stability indicator since a shortfall in one bank can cause systemic crisis in the banking sector due to their interconnected operations. The banking sector's average yearly liquidity has been above the statutory minimum requirement of 20 per cent, with all the banks meeting the minimum requirement. However, the average liquidity ratio gradually declined since 2013.

The marginal decline in the liquidity ratio is attributable to the increased lending as reflected in the increase in loans to deposits ratio that was from 53% in 2005 to 83% in 2014 (CBK, 2005, 2015). This study measured liquidity using quick assets (cash and cash equivalents) to total liabilities ratio and quick assets (cash and cash equivalents) to total deposits ratio, where quick assets are those assets that are either in cash form or can quickly be converted into cash form and this include treasury bonds and bills, short-term marketable securities and other cash-holdings.

#### **Quick Assets to total liabilities ratio**

Quick assets to total liabilities ratio was obtained by dividing the current assets (being the assets considered to be most liquid) over the total liabilities (being the liabilities that are considered to be the most liquid). Table 4.5 shows the descriptive analysis of quick assets to total liabilities ratio across the 11 years. The banks kept low quick assets to total liabilities ratio below 10% or less than one across the period. The mean seemed to be decreasing gradually with an exception of year 2011. Result also show lowest minimum almost to zero, indicating that there more liabilities that quick assets over time. Table 4.5 indicates the lowest decline of liquidity between 2008 and 2010. This findings concur with Nasieku (2014) whose study attributed the downturn of liquidity in

2008 to economic development and increased non-performing loans and loan loss provision during the post-election violence and global financial crisis while the standard deviation increased initially in 2006 and later started decreasing. This results also concurs with financial distress theory by Muller, Steyn and Hamman (1986) that there is a relationship of deterioration or failure of performance that indicates a form of financial distress and liquidity.

**Table 4. 5: Quick Assets to Total Liabilities Ratio**

<b>Year</b>	<b>Obs</b>	<b>Mean</b>	<b>Std.</b>	<b>Min</b>	<b>Max</b>
2005	38	0.03213	0.05671	0.00025	0.13242
2006	38	0.07254	0.10258	0.00120	0.26419
2007	38	0.05246	0.10102	0.00031	0.31437
2008	38	0.02827	0.02641	0.00042	0.09249
2009	38	0.02702	0.02278	0.00005	0.06932
2010	38	0.02081	0.01233	0.00017	0.03996
2011	38	0.03651	0.07721	0.00020	0.36003
2012	38	0.02075	0.01316	0.00203	0.05019
2013	38	0.02129	0.01264	0.00325	0.0461
2014	38	0.01948	0.01096	0.00333	0.0396
2015	38	0.01820	0.00906	0.00306	0.03369

**Quick Assets to Total Deposits Ratio**

The second indicator of liquidity was the measure of the quick assets (cash and cash equivalents) to total deposits ratio. Quick assets to total deposits ratio was obtained by dividing the assets considered to be most liquid over the total deposits. The banks kept high quick assets to total deposits ratios across the periods with some years showing mean ratios above 100% or above 1.0. This implies that the banks tried to stay solvent in trading by investing more in liquid assets over total deposits, as a result, banks were able to control the effects of financial distress in the said periods. This indicates that

commercial banks value liquidity as a factor of financial distress and their levels should always be considered. This results were supported by Ndirangu (2013) and Abuzayed (2012). Specifically Ndirangu (2013)'s study noted that high ratios of above 1.0 (100%) indicated lack of liquidity problems and at the same time the firm is able to maximize profits.

The findings were also consistent with the previous studies of Waemustafa and Sukri (2016) whose study noted that Islamic banks adopted conservative strategy in managing liquidity problem by maintaining sufficient liquidity ratios of average of 0.4 and above to ensure profitability.

**Table 4.6: Quick Assets to Total Deposits Ratio**

<b>Year</b>	<b>Obs</b>	<b>Mean</b>	<b>Std.</b>	<b>Min</b>	<b>Max</b>
2005	38	0.974	0.303	0.638	2.314
2006	38	1.262	1.769	0.667	10.905
2007	38	0.924	0.131	0.647	1.232
2008	38	1.175	1.255	0.711	8.016
2009	38	1.228	1.396	0.656	8.665
2010	38	1.203	1.501	0.553	9.392
2011	38	1.230	1.699	0.529	10.652
2012	38	0.862	0.200	0.531	1.284
2013	38	0.816	0.221	0.085	1.227
2014	38	0.818	0.144	0.489	1.154
2015	38	1.023	1.108	0.492	7.029

### **Overall Descriptive Analysis for Liquidity**

The overall mean quick assets to total liabilities ratio for all the firms for all the years combined was found to be 2.609 percent lower than the average ratio of 20 percent as per the prudential guidelines of the regulatory body, while the overall standard deviation was found to be 0.041. There is a larger variation of quick assets to total liabilities ratio within the panels with a standard deviation of 3.4% compared to the variations between the panels that was only 2%. The overall mean quick assets to total deposits ratio was 1.0454 as shown in Table 4.7 below. Commercial banks seemed to keep more liquid

assets in terms of short-term assets as compared to liabilities across the 11 years. The mean quick assets to total deposits ratio is very low compared to the mean quick assets to total liabilities ratio. The variability of quick assets to total deposits ratio was also higher within the panels than between the panels, this is implied by the standard deviation of within which was 1.042 while that of between was only 0.336.

The study sought to determine the influence of liquidity as a financial distress factor on financial performance hence a dimension reduction on the dimensions of liquidity to an overall latent measure for liquidity from the two indicators by factor analysis. The overall latent variable for liquidity had a low mean of  $-1.870E-10$  that was exhibited by high variability as shown in Table 4.7. The overall standard deviation for liquidity was found to be 0.585 which is high and was found to have been contributed to by high dispersion of liquidity within the panels than between the panels. It is also important to note that there exists a significant difference in between the commercial banks (standard deviation=0.217) and within the same commercial banks over the years (standard deviation=0.523).

The findings implies that there exists some elements of instability in the liquidity and shows that the commercial banks were more homogenous considering liquidity and kept rather non-variant levels of liquidity across the commercial banks but the liquidity levels kept had high variations and fluctuations with time.

This study found out that liquidity levels were lower in some years especially 2012, 2013 and 2014. The decline in liquidity levels must have been influenced by financial distress that might have caused by liquidity problems of Dubai and Imperial Bank which were thereafter put under liquidation and receivership respectively. The results therefore was supported by CBK (2015) banking supervision report, whose report noted that liquidity challenges towards 2013, 2014 and 2015 were primarily caused by liquidity segmentation in the inter-bank market. The result disagreed with regulatory body report that reported an average liquidity ratio as at December 2015 of 43 commercial banks was 41 per cent as compared to 37.7 per cent registered in December 2014 according to

CBK (2015) bank supervision report. The increase in the ratio can mainly be attributed to a higher growth in total liquid assets compared to the growth in total short-term liabilities.

The banking sector's average liquidity in the twelve months to December 2015 was above the statutory minimum requirement of 20 per cent. This result concurs with ROK (2015) whose economic survey report noted that a decrease of liquidity in some years was attributed to the increase in liabilities, that increased by 9.2 per cent in December 2014 and 14.4 per cent in 2013. Major items that contributed to the increase in liabilities included demand deposits, quasi money banks, and treasury bill holding which rose by 22.1, 23.8 and 50.7 percent respectively (ROK, 2015).

**Table 4. 7 Overall Descriptive Analysis for Liquidity**

		Mean	Std. Dev.	Min	Max	Observations
Quick Assets to Total Liabilities Ratio	Overall	2.609E-02	0.041	0.000	0.360	N=418
	Between		0.020	0.003	0.091	n=38
	Within		0.034	0.056	0.304	T=11
Quick Assets to Total Deposits ratio	Overall	1.045352	1.093	0.085	10.905	N=354
	Between		0.336	0.626	2.057	n=33
	Within		1.042	0.448	10.154	T-bar=10.7273
Liquidity	Overall	-1.870E-10	0.585	-0.482	5.824	N=418
	Between		0.217	-0.321	0.734	n=38
	Within		0.523	-0.997	5.090	T=11

#### **4.4.2 Leverage**

##### **Debt to Equity ratio**

The first indicator of the companies' leverage was the measure of the debt equity ratio. The debt to equity ratio used in the study was determined by total liabilities divided by total market value of assets. DER reflects the company's ability to meet all its obligations, which is indicated by what proportion of equity capital is used to pay the debt. Table 4.8 shows the descriptive analysis of debt to equity ratio, there is an increasing trend of mean over time and lowest mean being 0.004 of 2006 and the highest mean being 0.312 of 2014, this indicates that commercial banks in Kenya engaged less debt to equity in their capital structure mix. Similarly, the standard deviation was generally on an increasing trend over time, except in 2011 which had the lowest risk, these findings indicate that the higher the debt to equity ratio the higher the risk.

These findings indicate that the higher the leverage the higher the risk, this might also influence financial distress of commercial banks of Kenya. This result was consistent with previous study conducted by Heikal et al. (2014). The results noted that debt to equity ratio is a financial ratio that indicates the proportion of relationship with financial distress and companies will always maintain it at lower levels. Betz (2013) whose study concurs with the current study however noted that a high dependency on long-term borrowing is estimated to increase profitability and bank's financial distress.

**Table 4. 8: Debt to Equity Ratio**

<b>Year</b>	<b>Obs</b>	<b>Mean</b>	<b>Std.</b>	<b>Min</b>	<b>Max</b>
2005	38	0.007	0.039	0.012	0.226
2006	38	0.004	0.023	0.001	0.130
2007	38	0.006	0.022	0.010	0.115
2008	38	0.032	0.085	0.011	0.314
2009	38	0.050	0.128	0.107	0.497
2010	38	0.041	0.129	0.101	0.658
2011	38	0.157	0.009	0.000	1.676
2012	38	0.251	0.552	0.013	2.316
2013	38	0.281	0.631	0.003	2.467
2014	38	0.312	0.566	0.021	2.708
2015	38	0.200	0.302	0.008	1.219

**Debt to Asset Ratio**

Debt to asset ratio was the other measure of leverage considered in the study. The debt asset ratio was determined by dividing total liabilities by total assets, the higher the ratio the more the financial distress in the firm, this measure shows the solvency of the firm. From the results, the firms also kept high debt to asset ratios. Table 4.9 indicates year 2008 to be showing the lowest average of 0.768 accompanied with the highest risk of 0.404.

This findings concur with Nasieku (2014) and Christina and Mykland (2014) whose study attributed the downturn of 2008 to the post-election violence and global financial crisis. In addition, their studies noted that both tangible and intangible assets are associated with debt and bank's profits flow from assets. Further, commercial banks ensure a proper balance of debt to assets ratios since very high or negative debt to assets ratios indicates high business risk and commercial banks with low debt ratio will often have opportunities for profitability. A study by Gebreslassie (2015) noted that the debt

to asset ratio impacts high-performing firms and low-performing firms in differing magnitudes with low-performing firms weathering a more harmful and distressing impact.

**Table 4. 9: Debt to Asset Ratio**

<b>Year</b>	<b>Obs</b>	<b>Mean</b>	<b>Std.</b>	<b>Min</b>	<b>Max</b>
2005	38	0.835	0.151	0.074	1.076
2006	38	1.039	1.398	0.080	8.763
2007	38	1.065	1.380	0.017	8.735
2008	38	0.768	0.404	0.088	0.918
2009	38	1.000	1.376	0.085	8.572
2010	38	0.805	0.159	0.081	0.922
2011	38	0.812	0.172	0.084	0.937
2012	38	1.075	1.345	0.098	8.551
2013	38	1.064	1.262	0.079	8.086
2014	38	0.845	0.041	0.063	0.930
2015	38	0.841	0.039	0.036	0.922

### **Overall Descriptive Analysis for Leverage**

As shown in Table 4.10, the overall mean debt to asset ratio was 0.1219 with a standard deviation of 0.361. The minimum debt to asset ratio ever kept by any firm across the years 2005 to 2015 was significantly. The maximum possible debt to asset ratio ever kept by any of the firms in study was 2.708 in 2014. Debt to asset ratio has a high standard deviation within panels than between panels. This indicates that there is a high risk preference on debt to equity ratio as a financial distress factor for every commercial bank over years as compared to financial distress risk as caused by leverage across the 38 commercial banks, since higher standard deviation indicates high risk.

The overall mean debt to asset ratio for all the firms in all the 11 years combined was found to be 0.9225 while the overall standard deviation was found to be 0.913. There is a larger variation of debt to asset ratio within the panels with a standard deviation of 0.871 as compared to the variation between the panels which was only 0.279. This indicates that there is high financial distress risk in each firm over years as compared financial distress risk as measured by debt asset ratio across commercial banks in Kenya.

Considering the overall leverage of the firms which was measured as a latent factor of the two indicators; debt to equity and debt to asset ratios, the overall mean leverage was found to be 4.830E-11 with slightly high variability. The overall standard deviation of the latent leverage measure was found to be 0.025 which was a contribution of a higher variation within panels than between panels. The standard deviation between panels was 0.011 while within the panels the standard deviation was found to be 0.022, the findings were consisted with the results when the researcher used the two indicators separately. These findings indicate that there is a high financial distress risk caused by leverage across the commercial banks in Kenya over time but not as high as financial distress risk caused by leverage within each commercial bank over time. This is due to different levels of leverage kept by individual commercial banks as argued by the findings of Mian and Sufi (2010).

The results in Table 4.10 further show a high dispersion of leverage levels between and within commercial banks as signified by the standard deviation have low minimum values. These values were attributed to high leverage levels by some commercial banks that may result to high finance cost. The current study's results describes clearly that leverage has a significant distressing negative effect. This results concur with Ongore (2011) whose study examined whether firms adopted a pecking order theory in financing activities of the firm, the author noted that firms will use internal sources of finance over leverage due to high cost of obtaining external financing (leverage) from Kenya's financial markets. The current study also concurs with Muigai (2016) whose studies also found out that firms will prefer internal equity since use of leverage could result to

financial distress, however, Muigai (2016) carried out the study on non-financial firms listed in NSE.

**Table 4. 10: Overall Descriptive Analysis for Leverage**

		Mean	Std. Dev.	Min	Max	Observations
Debt Equity ratio	Overall	1.219E-01	0.361	0.001	2.708	N=418
	between		0.196	0.011	0.881	n=38
	Within		0.305	0.759	1.949	T=11
Debt Asset ratio	Overall	9.225E-01	0.913	0.080	8.763	N=418
	between		0.279	0.477	1.569	n=38
	Within		0.871	0.493	8.181	T=11
Leverage	Overall	4.830E-11	0.025	0.128	0.159	N=418
	Between		0.011	0.009	0.019	n=38
	Within		0.022	0.089	0.144	T=11

#### 4.4.3 Operational Efficiency

The two measures used to measure operating efficiency of the banks in this study were operating expense ratio (OER) and net worth turnover ratio (NWTR). Operational efficiency tends to confirm the notion of increasing competitiveness and improving resource utilization.

#### Operational Expense Ratio

OER was determined by dividing total operating expenses by Total Income, a low OER is an indicator that there was greater efficiency. From the Table 4.11 operating expenses for commercial banks increased highly specifically starting year 2010, 2011, 2012, 2013, 2014 and 2015 with 2013 being the highest. While the standard deviation indicates a

declining trend over time, this implies a sufficient variation in efficiency measures to test the hypotheses. From the findings, cost of operation for commercial banks in Kenya is the biggest hurdle that many commercial banks go through. Even after getting started, getting sufficient finance to sustain business growth is another problem.

The current study indicates that operational efficiency keeps on increasing over time. These results further confirm that low operational efficiency as a financial distress factor could have a distressing influence on financial performance of commercial banks in Kenya. According to CBK (2015), the banking sector expenses rose by 16.3 per cent from Ksh. 277.6 billion in December 2014 to Ksh. 322.8 billion in December 2015. This slightly differed with the findings of the current study, however, the CBK findings were based on the entire banking sector. According to CBK (2015), the increase in total expenses was largely attributed to a rise in loan loss provisions and interest expenses. According to the current study the increase reflects the effect of operational efficiency as financial distress factors. This study was in agreement with the findings of (Baik, Chae, Choi, & Farber, 2012) whose findings noted that when operational efficiency changes, the standard deviation changes and profitability changes.

**Table 4. 11: Operating Expenses**

<b>Year</b>	<b>Obs</b>	<b>Mean</b>	<b>Std.</b>	<b>Min</b>	<b>Max</b>
2005	38	0.3347	0.1654	0.0426	0.7193
2006	38	0.3304	0.1457	0.0777	0.5890
2007	38	0.3349	0.1371	0.0926	0.5879
2008	38	0.3549	0.1305	0.0769	0.6119
2009	38	0.3773	0.1613	0.1097	0.7016
2010	38	0.4093	0.3764	0.0851	2.3214
2011	38	0.4345	0.3869	0.0536	2.3942
2012	38	0.5343	0.2155	0.1102	0.9829
2013	38	0.4136	0.1472	0.1145	0.6747
2014	38	0.4352	0.1585	0.0000	0.6697
2015	38	0.4720	0.1478	0.1928	0.7357

### **Net Worth Turnover Ratio**

The study also measured operations efficiency by the net worth turnover ratio. The net worth turnover ratio was measured as the Sales/Revenue/Gross Income divided by net worth (total assets-total liabilities). The net worth ratio indicates the return that shareholders could receive on their investment in a company. Net turnover ratio indicates the firm's viability as well as speed of turning over its assets within the year, which plays a role in determination of firm's financial distress levels and financial performance of commercial banks.

Table 4.12 shows negative values this indicates that there was more liabilities than assets in determining net assets. This implies that the assets were not sufficient to cover for the liabilities in those periods under study. From the Table 4.12 operational efficiency levels hit the lowest in 2009 at -2.184 average on commercial banks in Kenya, and the same

year had the highest standard deviation, the results also indicates that as the operational efficiency levels increased, standard deviation declined; in addition, the operational efficiency increased over the eleven-year period as standard deviation declined. This result concur with Kosikoh (2014) whose findings established that the efficiency in company operations had the most significance over the long run. The scholar further indicated that efficiency in the utilization of assets should be improved over time for sustainable growth and profitability of companies in the long run.

**Table 4. 12: Net Worth Turnover Ratio**

<b>Year</b>	<b>Obs</b>	<b>Mean</b>	<b>Std.</b>	<b>Min</b>	<b>Max</b>
2005	38	0.4538	0.6320	-2.2096	1.2193
2006	38	0.5661	0.2711	-0.1050	1.2349
2007	38	0.5170	0.2795	-0.1339	1.0064
2008	38	0.5126	0.2871	-0.0118	1.0371
2009	38	-2.1845	1.5619	-89.1759	1.0367
2010	38	0.7035	0.9880	0.0583	6.0569
2011	38	0.5995	0.2981	-0.1116	1.1785
2012	38	0.9359	0.6607	-0.1632	3.3958
2013	38	0.7198	0.3330	-0.0158	1.8817
2014	38	0.8987	1.4721	-0.0966	8.8304
2015	38	0.7295	0.2312	0.3710	1.2915

**Overall descriptive analysis for operational efficiency**

The overall mean operating expenses ratio was 0.4028 as shown in Table 4.13 below. The financial institutions seemed to keep average expenses ratios. The overall variation of this ratio was 0.222 which was found to be almost of equal contribution from variations within and between panels which were 0.158 and 0.159 respectively. The overall mean net worth turnover ratio was 0.6522 as shown in Table 4.13 below. This

ratio is relatively higher than the operational expenses ratio which was also used to measure operational efficiency. The variability of net worth turnover ratio was found to be higher within the panels than between the panels, this is implied by the standard deviation within which was 0.595 while that between was only 0.273.

The overall measure of operation efficiency was a latent factor of both operating expenses ratio and net worth turnover ratio. The latent measure of operational efficiency was found to have an overall mean of 1.11E-9 for all the firms across all the 11 years. Given the very low mean, operational efficiency had a high variability of 0.397 which explains the minimum operational efficiency of -1.494 and maximum of 3.226. The variation was slightly higher within the panels than between the panels. Further, the results show an average of a 0.11 with an overall standard deviation of 0.397. This indicates that commercial banks in the sample incur 11.1% more than their total income.

These findings are consistent with Nsambu (2015) whose findings indicated that operating expenses have a significant impact on the performance of domestic commercial banks in Uganda over the period 2000-2011. These findings deferred with Karim and Alam (2013). Karim and Alam (2013) noted that operational efficiency did not explain economic value and financial performance of five commercial banks in Bangladesh.

**Table 4. 13: Overall Descriptive Analysis for Operating Efficiency**

		Mean	Std. Dev.	Min	Max	Observations
Operating expenses ratio	Overall	4.028E-01	0.222	0.000	2.394	N=418
	Between		0.159	0.139	0.812	n=38
	Within		0.158	-0.058	1.985	T=11
Net worth turnover ratio	Overall	6.522E-01	0.653	-2.210	8.830	N=418
	Between		0.273	0.186	1.488	n=38
	Within		0.595	-1.787	7.995	T=11
Operational efficiency	Overall	1.110E-09	0.397	-1.494	3.226	N=418
	Between		0.240	-0.438	0.513	n=38
	Within		0.319	-1.103	3.041	T=11

#### 4.4.4 Asset Quality

##### Non-performing Assets to Total Loans

The measures for asset quality used were non-performing loans and loan loss provisions. Non-performing assets to total loans ratio was measured as the sum of the non-performing loans divided by the total loans of the firm. As noted from Table 4.13, there was a decline in the level of non-performing assets to total loans over time especially between 2005 to 2012, but an increase in 2013 and later a decline in 2014 and 2015. This could be as a result of a decline in Non-performing loans due to enhanced corporate governance and risk management as well as the enforcement of strict provisioning policy by the Central Bank. This finding of the current study indicates that asset quality is a factor of financial distress and this might have an effect to financial performance.

The current study found out a decline of asset quality in banking sector and this was in agreement with (CBK,2015) banking supervision report that also registered a decline in asset quality with the non-performing loans (NPLs) ratio increasing in December 2015. According to CBK (2015), the increase in NPLs was attributed to delayed payments to contractors and suppliers, enhanced reclassification and provisioning of loans and challenges in the business environment in 2015. However, the sector recorded strong capitalization levels as a result of additional capital injections (CBK, 2015).

**Table 4. 14: Non-performing Assets to Total Loans**

<b>Year</b>	<b>Obs</b>	<b>Mean</b>	<b>Std.</b>	<b>Min</b>	<b>Max</b>
2005	38	16.4758	16.8595	0.9000	70.4200
2006	38	14.8967	15.9708	0.5700	64.6900
2007	38	12.4255	15.1334	0.3100	70.7900
2008	38	10.0455	9.2485	0.3700	40.0500
2009	38	8.0448	6.4911	0.0000	22.4800
2010	38	7.4294	7.0364	0.0000	29.4400
2011	38	5.0009	6.9897	0.0000	40.6000
2012	38	4.5345	3.3561	0.0000	10.8100
2013	38	20.9394	12.7302	1.0000	42.0000
2014	38	7.5845	7.0476	0.0000	30.0000
2015	38	9.6358	7.7373	0.0000	32.5700

#### **Loan Loss Provision Ratio**

Loan loss provision ratio was determined by loan loss provision divided by Operating income. Loss provisions made to cater for non-performing assets loans which are referred to as loan loss provisions. This study considered the ratio of these provisions to operating income as a measure for asset quality. This measure was determined by dividing the bank's loan loss provisions by the operating income for the period. Considering the descriptive analysis of this indicator, the commercial banks in Kenya kept high provisions for non-performing loans high above their operating income. From

Table 4:15 the mean ratio however high seemed to have a decreasing trend with time the highest mean being in the year 2005 which was 69.6279 and the lowest mean being 8.6613 in the year 2014.

The variations of the ratio also seemed high in the earlier years but declined with the decline in the mean ratio of loss provisions. This could mean that the firms that kept high provisions in the earlier years that caused high means and standard deviations improved thus normalizing the ratio since the ratio was observed to be generally decreasing over the eleven years. The current study contradicts with Nazir (2010) whose study on banks indicated an increasing loan loss provision over ten years.

**Table 4. 15: Loan Loss Provisions**

<b>Year</b>	<b>Obs</b>	<b>Mean</b>	<b>Std.</b>	<b>Min</b>	<b>Max</b>
2005	38	69.6279	132.3048	5.1200	719.9700
2006	38	60.0064	99.0819	3.8700	494.0700
2007	38	37.7964	53.6845	2.8200	266.0200
2008	38	31.7103	42.1656	-16.7100	193.0500
2009	38	26.3785	34.2778	-7.8300	152.8000
2010	38	21.3149	20.8021	0.0000	83.3900
2011	38	18.5830	16.6225	0.0000	74.0100
2012	38	18.9594	19.4915	0.0000	94.9400
2013	38	21.2424	12.4148	1.0000	43.0000
2014	38	8.6613	12.0263	-2.5900	63.1700
2015	38	13.3658	13.6535	1.5800	59.1900

## **Overall Descriptive Analysis for Asset Quality**

The overall mean ratio for non-performing assets to total loans was found to be 10.064, this was accompanied by a high dispersion with a standard deviation of 11.681 that is even higher than the mean. This implies that the banks are very heterogeneous with respect to this measure. Despite the mean being 10.064, there is a high risk of a firm having a ratio of non-performing assets to total loans more than twice as high as the mean or more than 2 times lower than the mean. This is confirmed by the minimum of 0.000 and maximum of 70.79. The high dispersion of this ratio is a contribution of differences both across the years and across the panels but the variation within the panels have a higher contribution. The standard deviation between and within panels are 7.788 and 8.802 respectively.

The overall mean loss provisions to operating income was found to be 29.84 which is high above one for all the firms all the years combined. The figure could be high due to the high variation implying heterogeneity with regard to this ratio across firms and across years depicted by the high standard deviation of 58.427. The variation seems to be as a result of differences in the years within the panels than across the panels. From the observed ratios of non-performing loans to total loans and of loan loss provisions to operating income, the unobserved latent factor was computed from factor analysis as the measure of asset quality. The overall mean asset quality for all the firms across the years was found to be 8.550E-11 which was low but with a relatively high dispersion. The overall high standard deviation was 0.824 and this is also depicted by the range with a minimum of 0.750 and a maximum of 7.607. The large variation is caused by differences both within panels and between panels but more by the differences within panels.

Asset quality as measured by the ratio of non-performing loans to gross loans and loan loss provision to income resulting to an overall mean of 0.0086 with an overall standard deviation of 0.084. This indicates that only 0.08% of all loans granted by commercial banks in Kenya are likely to default. It is also important to note that there exists

significant difference in between the Commercial banks in Kenya (standard deviation=0.054) and within the same commercial banks over the years (standard deviation=0.063). This implies that there exist some elements of instability in the asset quality of commercial banks over years and as compared to other commercial banks in Kenya. The difference might be attributed by the size of commercial banks and this indicates further that asset quality as a financial distress factor could greatly influence the financial performance of commercial banks especially those of low levels and poorly managed asset quality.

Table 4.16 further indicates that asset quality is a key financial distress factor and those commercial banks that do not properly manage their credit loans tend to be less profitable than those which pay particular attention to assets quality. These results is in agreement with Olweny and Mamba (2011) whose study found that small and medium banks that had the highest ratio of non-performing loans to gross loans are associated with low profitability.

According to CBK (2015), delayed payments, challenges in the business environment, enhanced reclassification and provisioning of loans, and high interest rates led to downgrading of loan accounts by banks thus impacting negatively on the quality of assets. As a result, non-performing loans (NPLs) and gross NPLs to gross loans fluctuated over the years (CBK, 2015). This confirms that asset quality is a financial distress factor according to the current study and may have an effect on financial performance or have a strong relationship with financial performance of commercial banks in Kenya. This results slightly concurs with Wangombe (2016) whose findings indicated that asset quality of Deposit Taking SACCOs has an intermediation effect and financial performance of SACCOs.

**Table 4. 16: Overall Descriptive Analysis for Non-performing Assets to Total Loans**

		Mean	Std. Dev.	Min	Max	Observations
Non-performing Assets to total loans	Overall	1.064E+01	11.681	0.000	70.790	N=418
	Between		7.788	0.351	33.009	n=38
	Within		8.802	15.142	52.000	T=11
Loan loss provisions to operating income	Overall	2.984E+01	58.427	16.710	719.97	N=418
	Between		34.155	2.425	176.26	n=38
	Within		47.720	130.510	573.55	T=11
Asset Quality	overall	8.550E-11	0.824	0.750	7.607	N=418
	between		0.537	0.067	1.834	n=38
	within		0.630	1.933	5.773	T=11

#### 4.4.5 Capital Adequacy

##### Capital Adequacy Ratio

From Table 4.17, the results indicate that commercial banks had slightly higher capital adequacy ratios as compared to the minimum regulatory capital adequacy ratios in average over the eleven years. The capital adequacy result indicate that commercial banks use shareholders' funds to finance between 18% and 31% of the total assets while the remaining balance is financed by deposit liabilities generally higher than the stipulated core capital of not less than 8%. This results concur with Olweny and Mamba (2011) whose study on the banking sector indicated that about 18% of the total assets of

the sector were financed by shareholders funds while the remaining 82% was financed by deposit liabilities.

According to CBK (2015), minimum capital adequacy ratios which are measured by the ratio of core capital and total capital to total risk weighted assets, are 0.105 and 0.145 respectively. However, there seems to be a slight gradual decline in capital adequacy especially from 2012 and 2014; this might have been attributed to amendments that were effected in the Banking Act and the prudential guidelines in 2013 that continued to take root in the years and institutions aligned their banking practices to the enhanced framework. Notably, institutions continued to build their capital adequacy frameworks through various means in order to meet the new capital adequacy requirements which were to become effective on 1st January 2015. From Table 4.17, the lowest mean is 18% while the highest is 31% between 2005 and 2015, this result slightly differs with Olweny and Mamba (2011) whose result found an average mean of 18% and 20.66% between 2002 and 2008.

In the revised prudential guidelines of 2013, institutions were required to maintain a capital conservation buffer of 2.5% above the capital adequacy ratios (CBK, 2014). According to CBK (2015) the banking sector's capital adequacy decreased from 20% in 2014 to 18.8% in 2015 mainly due to higher increase in risk weighted assets as compared to increase in capital. This results differs with Nazir (2010) whose introspection of ten years revealed that the capital adequacy ratio of the commercial banks had an increasing trend year after year; 10.24% in the year 2001 and 14.78% in the year 2010.

**Table 4. 17 Capital Adequacy Ratio**

<b>Year</b>	<b>Obs</b>	<b>Mean</b>	<b>Std.</b>	<b>Min</b>	<b>Max</b>
2005	38	0.2519	0.1837	0.0961	0.7910
2006	38	0.2454	0.1643	0.1147	0.7580
2007	38	0.2538	0.1617	0.1303	0.7775
2008	38	0.2575	0.1622	0.1095	0.7791
2009	38	0.2621	0.1955	-0.0502	0.9401
2010	38	0.3125	0.2833	0.0219	1.4714
2011	38	0.2467	0.1838	0.1093	1.1017
2012	38	0.2512	0.1505	0.0573	0.8281
2013	38	0.2318	0.1453	0.0749	0.8725
2014	38	0.1891	0.0781	0.0694	0.3853
2015	38	0.2615	0.4504	0.0777	2.7356

**Leverage Ratio**

Leverage ratio as an observed measure for capital adequacy was computed as function formed by dividing the total capital by total assets. Leverage ratio is the measure of regulatory capital and a higher leverage ratio is desirable. Table 4.18 indicates that variability was high in the first years until 2010 when it dropped to below 0.1, implying that from 2010, the firms became more homogeneous with respect to leverage ratio with a very low chance of any firm having leverage ratios high above the averages.

In addition, total capital to asset ratio was highest in 2005 at 20.6%, this shows that most of the assets of the commercial banks in Kenya are financed through debt and bore the highest risk of 21.9%. Table 4.18 also indicates the leverage ratio as being between 15% and 20% indicating high leverage, this result concur with Olweny and Mamba (2011) whose study on the banking sector noted that high leverage in the banking sector was not surprising because the business of banking is to mobilize more deposits from customers.

This result is also consistent with studies by Maina and Mwasia (2014) whose findings indicated that capital to Asset ratio was 29.416%, indicating that most of the assets of the firms listed at the NSE are financed through use of leverage and are tangible to an extent of 51.38 %.

**Table 4. 18: Leverage Ratio**

<b>Year</b>	<b>Obs</b>	<b>Mean</b>	<b>Std.</b>	<b>Min</b>	<b>Max</b>
2005	38	0.2061	0.2194	0.0754	1.0092
2006	38	0.1887	0.1851	0.0823	0.8861
2007	38	0.1593	0.1123	0.0713	0.5618
2008	38	0.1871	0.1561	0.0814	0.7658
2009	38	0.1661	0.1193	-0.0197	0.6802
2010	38	0.1531	0.0580	0.0712	0.3236
2011	38	0.1508	0.0593	0.0777	0.3725
2012	38	0.1503	0.0656	0.0150	0.3842
2013	38	0.1508	0.0408	0.0771	0.2216
2014	38	0.1568	0.0398	0.0869	0.2285
2015	38	0.1545	0.0449	0.0169	0.2482

### **Overall Descriptive Analysis for Capital Adequacy**

Considering the low mean ratios over the years, the overall mean capital adequacy ratio was found to be 0.2512 with a relatively low standard deviation of 0.216. This implies homogeneity of capital adequacy with similarity over the years and across the firms. This is also depicted with relatively almost equal standard deviations within and between panels of 0.163 and 0.144 respectively. The standard deviation within is slightly higher than that between. As noted from Table 4.19, results revealed that some commercial banks in Kenya reported almost to zero capital adequacy ratio (Min 0.050). This may be due to the fact that some commercial banks are considered small being in

tier IV while others are considered large being at tier one. As noted by Wangombe(2016), low capital adequacy ratio indicates that some institutions are financing their operations through deposit liabilities. According to (Nasieku, 2014) a company operating with a negative capital ratio has an aggressive financing policy and may be highly profitable but inefficient.

The overall mean leverage ratio was found to be 0.1658 with a low standard deviation of 0.117. The low variation is also depicted by the range which is only 1.029 between the maximum and the minimum leverage ratio. The low variation in the leverage ratio is a component of low variations within the panels and between the panels. The variations within and between the panels are 0.089 and 0.076 respectively. Table 4.19 shows the overall descriptive statistics of the latent factor capital adequacy which was computed as a factor of both observed variables leverage ratio and capital adequacy ratio. This variable was found to have a low mean of 3.350E-10 and a relatively high standard deviation of 0.670. The variation of this unobserved latent variable is an equal component of both variations between panels and within panels. The standard deviation within and between panels were found to be 0.460 and 0.494. The variation between panels is slightly higher than the variation within panels.

The results in Table 4.19 also revealed that some commercial banks reported negative capital adequacy ratio (Min -1.176). This can be attributed to size of commercial banks and the period some had been in existence since some commercial banks were initially micro-finance institutions that were upgraded to commercial banks. It can also be noted that commercial banks had the negative capital adequacy within as compared to between. Negative capital adequacy ratio also indicates that some commercial banks were issuing more risky loans and advances and some banks were financing their operations through customer deposits.

Negative capital adequacy means that such commercial banks are debt financed and have no capital buffer to cover up any financial distress shocks. Nasieku (2014) noted that those banks with a negative capital ratio have an aggressive financing policy and

may be highly profitable but inefficient. This may be mainly because use of short-term sources of funds will be less costly as compared to long-term sources and as a result commercial banks will experience better performance in the short-run. These results contradicts with findings of previous literature either in developed or transition economies which documented negative capital adequacy means on commercial banks (Maina & Mwasa, 2014).

**Table 4. 19: Overall Descriptive for Capital Adequacy**

		Mean	Std. Dev.	Min	Max	Observations
Capital adequacy ratio	Overall	2.512E-01	0.216	0.050	2.736	N=418
	between		0.144	0.131	0.748	n=38
	Within		0.163	0.343	2.473	T=11
Leverage ratio	overall	1.658E-01	0.117	0.060	1.009	N=418
	between		0.076	0.092	0.474	n=38
	Within		0.089	0.175	0.938	T=11
Capital Adequacy	overall	3.350E-10	0.670	-1.176	4.703	N=418
	between		0.494	-0.467	1.949	n=38
	within		0.460	-2.222	4.105	T=11

#### **4.4.6 Financial performance of commercial banks in Kenya**

Financial performance was considered by the researcher as the dependent variable which the study sought to find out the level of its influence from financial distress factors. Financial performance was measured based on; return on assets (ROA) and return on equity (ROE).

### Annual Mean Returns on Equity

Table 4.20 presents the descriptive statistics for the measure of return on equity as the mean ROE for each year across the 11 years. Across the period, the maximum annual mean returns on equity ranged from 0.6088 (lowest) for the year 2011 and 4.644 (highest) in 2012. The mean ROE thus seem to have no linear trend against time with means between 0.344 (lowest) in 2010 and 0.5251 (highest) in 2013. The mean ROE seems to have low variability of below 0.2 indicating their dispersion is very close around the mean unlike 2012 and 2013 that had standard deviations of 0.7588 and 0.6784 respectively.

**Table 4. 20: Annual Mean Returns on Equity**

<b>Year</b>	<b>Obs</b>	<b>Mean</b>	<b>Std.</b>	<b>Min</b>	<b>Max</b>
2005	38	0.3936	0.1828	0.0221	0.9984
2006	38	0.4000	0.1871	0.0475	1.0265
2007	38	0.3776	0.1543	0.0549	0.6747
2008	38	0.3628	0.1563	0.0763	0.6847
2009	38	0.3458	0.13743	0.05563	0.6100
2010	38	0.3444	0.1138	0.1288	0.6402
2011	38	0.3843	0.1249	0.0701	0.6088
2012	38	0.4881	0.7588	0.0221	4.6439
2013	38	0.5251	0.6784	0.1725	4.2266
2014	38	0.3739	0.1536	0.0000	0.7959
2015	38	0.3584	0.1232	0.0514	0.6308

### Annual Mean Returns on Assets

Considering return on assets which was also used to measure the financial performance of the banks, the descriptive statistics results are shown in Table 4.21. Commercial banks in Kenya seemed to have lower returns on assets compared to the returns on

equity as seen earlier. The mean returns on assets ranged between 0.0517 and 0.0604 which were the mean ROA for the years 2012 and 2013. This shows a possibility that the financial institutions do not invest a lot in the assets or realize very little returns from investments in assets. The variability of the returns on assets were also very low with all the standard deviations ranging between 0.0136 and 0.0245. The minimum possible return on asset realized by a firm in study across the 11 years was 0.0000 in 2014 and the maximum possible ROA realized by a firm was only 0.1093 which was in 2006.

**Table 4. 21: Annual Mean Returns on Assets**

<b>Year</b>	<b>Obs</b>	<b>Mean</b>	<b>Std.</b>	<b>Min</b>	<b>Max</b>
2005	38	0.0539	0.0214	0.0052	0.0988
2006	38	0.0551	0.0167	0.0221	0.1093
2007	38	0.0535	0.0136	0.0265	0.0795
2008	38	0.0550	0.0166	0.0196	0.0888
2009	38	0.0565	0.0171	0.0258	0.0993
2010	38	0.0538	0.0166	0.0274	0.0908
2011	38	0.0550	0.0161	0.0260	0.0983
2012	38	0.0517	0.0245	0.0014	0.1024
2013	38	0.0604	0.0161	0.0244	0.0995
2014	38	0.0541	0.0172	0.0000	0.0867
2015	38	0.0524	0.0183	0.0054	0.0864

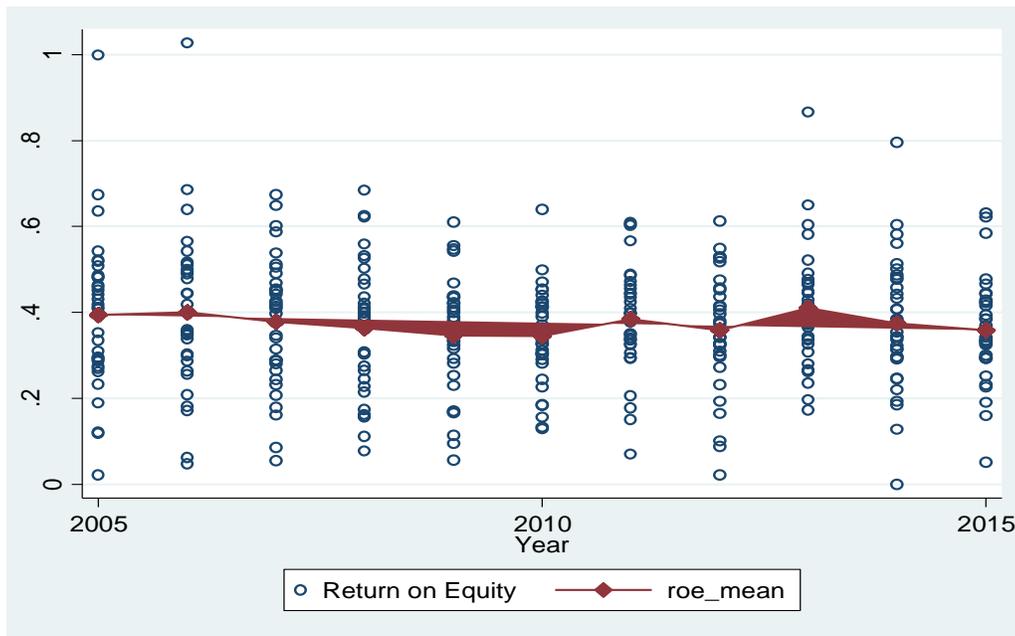
### **Overall descriptive analysis for ROE**

The overall mean for all the firms for all the years combined was found to be 0.3717. The overall standard deviation of ROE was found to be 0.144. The variation of ROE is larger across the 38 panels of the banks with a standard deviation of 0.11 as compared to the variation across the years within the panels which was only 0.093. In addition, from Table 4.23, the overall mean of ROE of 3.72 % and overall standard deviation of 14.4

%, for between 11% and 9% for within is an indication that banks are competing among themselves for making profit. However, their standard deviations are evidence that their profit making capacity is divergent from each other, this may be as a result of the different levels of financial distress effect on financial performance of commercial banks in Kenya. From Table 4.23 the minimum mean is -12.3% for within commercial banks. This indicates some commercial banks' financial performance were influenced by financial distress factors and as a result they made losses over the period and this result concurs with Kosikoh (2014) who noted that insurance companies that collapsed due to financial distress had lower Return on Asset (ROA) when compared to the average mean of the regulatory body.

#### **A scatter Plot**

Figure 4.1 below shows the virtual presentation of the return on equity across the entities for against time for the years 2005 to 2015. The scatter plot of ROE against time depicts a distribution with virtual low variability across the years. The plots of the mean ROE Plotting the mean ROE for each year, the line shows a trend line curve that does not depict any increasing or decreasing trend of mean ROE with time implying possible stationarity across time.



**Figure 4. 1: Return on Equity against Time**

A further analysis used for the performance indicator ROE against time was the one way ANOVA to determine if there is a significant change in mean ROE across time. The ANOVA statistics in Table 4.22 show that the P-value of the F statistic is 0.338 which is greater than 0.05. This implies that at 0.05 level, the mean ROE is not significantly different across time. The changes of ROE with time does not necessarily imply a linear trend of mean ROE with time.

**Table 4. 22: ROE One way ANOVA against Time**

	Sum of Squares	Df	Mean Square	F	Sig.
<b>Between Groups</b>	23.827	10	2.3827	1.13	0.338
<b>Within Groups</b>	744.271	407	1.82868		
<b>Total</b>	768.098	417			

## **Overall Descriptive Analysis for Financial Performance**

Considering the overall mean ROA as shown in Table 4.23, commercial banks in Kenya had a mean return of 0.05469 for all the 11 years jointly. The overall standard deviation was found to be 0.018 which was a contribution of variability between and within panels. Both measures of dispersion for variations between and within panels were found to be low for ROA with standard deviations of 0.013 and 0.012 respectively. Low standard deviations imply homogeneity of the banks with regards to the returns on assets realized. This implied that generally all banks had low ROE with no banks expected to realize high ROA in any of the years. In addition, from the Table 4.23, the overall mean of ROE of 5.47 per cent and standard deviation 13 percent for between and 12 percent for within is an indication that banks are competing among themselves for making profit, however, their standard deviations are evidence that their profit making capacity is divergent from each other.

Considering the overall financial performance of the firms which was measured by latent factor of the 2 indicators namely ROE and ROA, as shown in Table 4.23, the overall mean financial performance was found to be 0.007 with slightly high variability as compared to the observed components ROA and ROE. The overall standard deviation of the latent financial performance was found to be 0.229 which was a contribution of a higher variation across panels than within panels. The standard deviation between panels was 0.177 while within the panels the standard deviation was found to be 0.147.

Table 4.23 shows return of equity (ROE) had an average of 0.03717 with overall standard deviations of 0.144. On the other hand Table 4.23 also shows that profitability as measured by return on assets (ROA) had an average of 0.05469 with overall standard deviations of 0.018. The minimum ROA within commercial banks was -0.123 indicating some commercial banks reported losses in some years in between 2005-2015. Evidently, ROE was more volatile compared to ROA. This might have been as a result of the effect of financial distress factors to ensure that there are considerable levels of equity in commercial banks. This results are consistent with the studies carried out by Muriithi

(2016) who noted that a positive average mean of ROE is an indication that banks are competing amongst themselves for making profit, however, their differing standard deviations of between and within is an evidence that their profit making capacity is volatile.

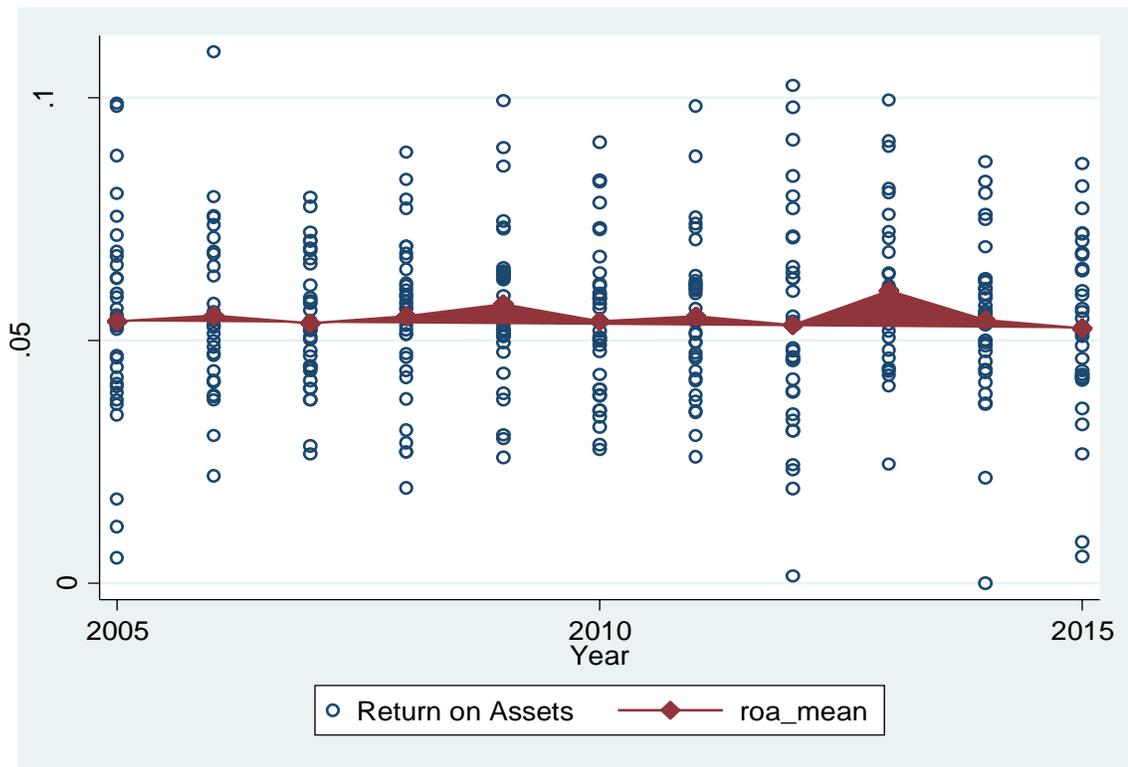
In addition Table 4.23 indicated that, an average ROE over the 11year period was 3.717E-01 with a minimum of 0.000, a maximum of 0.998 and a standard deviation of 0.144 shows that on average commercial banks a had appositive return on equity and most commercial banks are to the right of the distribution just like ROA. The mean ROA was 5.469E-02 with a standard deviation of 0.018 and minimum and maximum of 0.00 and 0.109 respectively. This shows that firms were generally profitable towards their investments. The fluctuation of returns in ROA were however marginally greater than ROE as shown by standard deviation. This results was in disagreement with Muchiri (2016) and Wamugo, Muathe and Makau (2014), Muchiri (2016) results for NSE companies indicated that fluctuations of ROE were marginally higher than ROA.

**Table 4. 23: Overall Descriptive Analysis for Financial Performance**

		Mean	Std. Dev.	Min	Max	Observati ons
<b>ROE</b>	Overall	3.717E-01	0.144	0.000	0.998	N=418
	Between		0.111	0.110	0.549	n=38
	Within		0.093	-0.123	0.821	T=11
<b>ROA</b>	Overall	5.469E-02	0.018	0.000	0.109	N=418
	between		0.013	0.024	0.080	n=38
	Within		0.012	-0.020	0.092	T=11
<b>Financial Performance</b>	overall	7.776E-03	0.229	-0.732	0.653	N=418
	between		0.177	-0.399	0.338	n=38
	within		0.147	-0.988	0.450	T=11

**A scatter Plot**

A scatter plot of returns on assets with time including the plots for mean ROA shown in Figure 4.2 also shows a possible white noise similar to that of ROE in figure 4.2 rather than a decreasing or increasing trend of ROA with time. Both had virtually constant non increasing trends with uneven decreases and increases across the period. The highest ROA is virtually seen to have been in 2013 as it also was with ROE. However, low returns of assets was in comparison to the returns on equity, the trends are similar with increases of ROA in the same years as the increases realized on ROE and drops also in the same years. This implies that the factors influencing and causing improvements in ROE could also be the same factors that influence ROA.



**Figure 4. 2: Return on Assets against Time**

Considering the similarity in the trend of ROE and ROA based on the graphical presentations, ROA however showed no significant changes in means across the years. The p-value of the F statistics from the anova shown in table 4.24 is 0.705 which is greater than 0.05 implying that at 0.05 level, there is no significant differences in mean ROA across time. This could be attributed to the very low amounts of ROA realised by all firms across the years.

**Table 4. 24: ROA One way ANOVA against Time**

	Sum of Squares	Df	Mean Square	F	Sig.
<b>Between Groups</b>	0.002	10	0.0002	0.7204	0.7054
<b>Within Groups</b>	0.113	407	0.00028		
<b>Total</b>	0.114	417			

### Overall Performance one way ANOVA against time

Table 4.25 shows the ANOVA for the overall financial performance measured as an unobserved latent variable from the indicators ROA and ROE. The anova for financial performance with time shows that financial performance do not exhibits significantly different means across time at 0.05 level of significance. This is implied by the p-value of 0.692 which is greater than 0.05. This is an implication of plausible stationarity in financial performance

**Table 4. 25: Overall Performance One way ANOVA Against Time**

	<b>Sum of Squares</b>	<b>Df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
<b>Between Groups</b>	0.7	10	0.070	0.734	0.692
<b>Within Groups</b>	38.794	407	0.095		
<b>Total</b>	39.494	417			

The current study was in agreement with CBK (2015) report that reported a slight decline in profitability in recent years since commercial banks had a high mean of about 0.054 in 2005 but declined to about 0.052 in 2015 mean. According to CBK (2015) banking supervisory report, the banking sector registered improved financial strength in 2015, with total net assets recording an increase of 9.2% per cent. This was attributable to growth in investments, loans and advances, which increased by 23.2 per cent and 15.12 per cent respectively.

Despite the improved financial strength, the banking sector registered declined financial performance in 2015. The sector recorded a 5.03 per cent decline in pre-tax profits during the year. The decline in profitability in 2015 could be explained by a faster growth in expenses compared to the growth in income. The banks income increased by 9.1 per cent in 2015 compared to a higher increase of expenses of 16.3 per cent. The current study attributes the decline in financial performance as the consequences of financial distress factors influencing profitability.

## Unit Root Test

Given the changes in mean financial performance with groups of time in years as shown by the analysis of variance, it is key to determine that the changes are not due to an increasing or decreasing trend of financial performance with time. Being the dependent variable, significance in a linear trend of financial performance would imply non-stationarity and the need to de-trend the data before further panel model analysis. To determine whether financial performance exhibits a trend, the study used a unit root test. The stationarity unit-root test was done to confirm whether there is stationarity in all panels. The LLC bias-adjusted test statistic  $t * \delta = -24.9766$  is significantly less than zero ( $P < 0.05$ ), so we reject the null hypothesis of a unit-root that there is presence of a unit root and favor the alternative that panels are stationary.

**Table 4. 26: Unit-Root Test for Panel Stationarity**

	<b>Statistic</b>	<b>p-value</b>
<b>Unadjusted t</b>	-23.5520	
<b>Adjusted t*</b>	-24.9766	0.000

## 4.5 Panel Data Estimation Model

The study used panel data to carry out the research analysis for 11 years starting from 2005 to 2015. Panels are very important and increase precision as they contain detailed information as compared to cross sectional data (Blundell & Bond, 1998) and (Hoechle, 2007). Gujarati (2012) suggested various estimating techniques that can be used in estimation of the panel data that is pooled OLS, Random effect (RE) and Fixed Effect (FE).

First, Pooled OLS simply combines or pools all the time series and cross-sectional data and estimates the underlying model by utilizing ordinary least squares (OLS).

Fixed effect model (FEM) is due to the fact that although the intercept may differ across individuals, FEM will assume the slope coefficients of the regressions do not vary across individuals or over time and whenever the study is analyzing the impact of variables that vary over time within an individual. FEM is used when the panels that are specific correlate with the predictors. Fixed effect intercept may be allowed between companies by creating a dummy variable technique, this fixed effect model involves recognition that omitted variables may lead to changes in cross-sectional and time series intercepts (Gujarati, 2012).

FEM model assumes that differences across units can be captured in differences in the constant term (Greene, 2002). However, Gujarati (2012) argued that use of fixed effects model may have some limitations. Use of many dummy variables may run up against or bring about the degrees of freedom problem. Many variables always brings multicollinearity and this makes precise estimation of one or more parameters difficult, FEM may not be able to identify the impact of time-invariant variables and the error term according to Gujarati (2012) the error term may not follow the classical assumption as it may have been assumed.

Finally the third model is the random effect model, which introduces the disturbances term  $U$  as a result ignoring the dummy variables that represent lack of knowledge, this approach was suggested by the proponent of the so called error components model; instead of treating one variable or the other as fixed or constant, its assumed to be random (Gujarati, 2012).

#### **4.5.1 Exploratory Analysis of Financial Performance**

According to Yong and Pearce (2013), exploratory analysis summarizes data in graphs so that relationships and patterns can be easily interpreted and understood. It is normally used to regroup variables into a limited set of clusters based on shared variance. Hence, it helps to isolate constructs and concepts. Exploratory factor analysis tries to uncover complex patterns by exploring the dataset and testing predictions and also exploratory

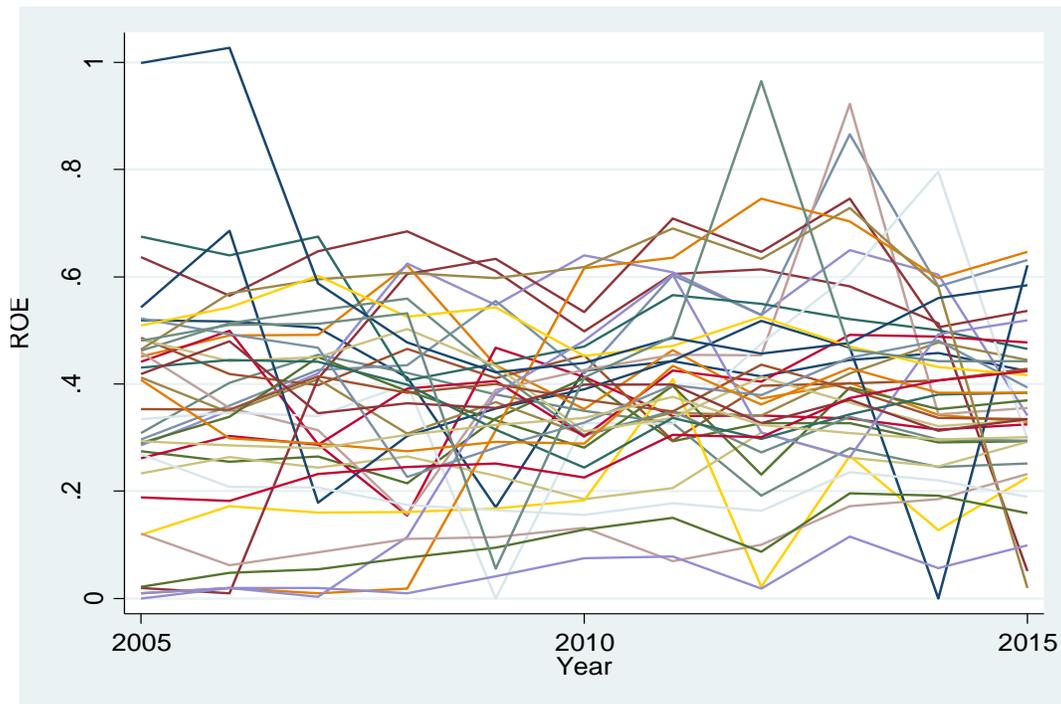
tests provide visual impression of the nature of panel data through graphical presentation. Exploratory tests like spaghetti plot graph, box plot and Mean CI plot were used to establish the presence of outliers as presented by figures 4.3 to 4.11.

### **Return on Equity**

Before examining the relationship between financial distress factors and financial performance of commercial banks as measured by return on equity, the study explored the financial performance among different commercial banks in Kenya over the eleven year period; 2005-2015. The study used the Spaghetti plots, a lowness smoothed plot, box plot and mean plot as shown in Figure 4.3 to Figure 4.7.

### **Spaghetti Plot Graph**

Figure 4.3 below shows the virtual presentation of the return on equity across the entities for against time for the years 2005 to 2015. The line spaghetti plot is an overlay of each entities trend ROE over time. The plot gives a general indication of the behavior of ROE across the entities; it shows a possible heterogeneous nature of commercial banks in Kenya. From the findings, it can be inferred that all commercial banks had different intercept. It can however be observed that the slopes are not significantly different from each other. However, there were variations in financial performance as measured by ROE among the commercial banks in Kenya under consideration. This preliminary result confirms the absence of time related effects indicating that the appropriate model may be fixed effects model. This type of panel model has non-constant slopes and intercepts that differ according to the cross-sectional (group) meaning there are no temporal effects.



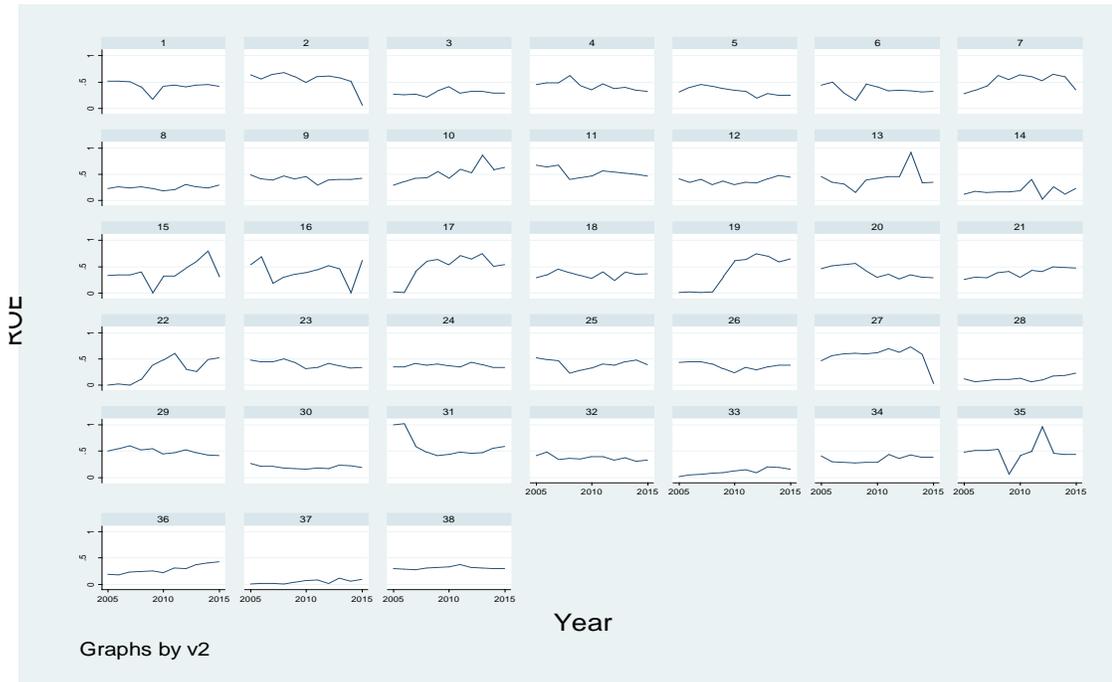
**Figure 4. 3 Roe over time Spaghetti plot**

### **Growth Trend Plot**

Before examining the relationship between financial distress factors and financial performance of commercial banks in Kenya, the study explored financial performance as measured by ROE within commercial banks in Kenya in different commercial banks in Kenya over the eleven year period; 2005-2015. According to figure 4.4 the result used the empirical growth plots and indicated that there were variations in financial performance among commercial banks of Kenya.

However, some commercial banks in Kenya had almost the same financial performance with slight variations across the period under investigation. It can also be observed that there was an almost constant performance of other commercial banks in Kenya over a few numbers of years for some commercial banks in Kenya. In addition, it can also be observed that some commercial banks' financial performance declined towards 2015.

The Growth trend plot concurs with CBK (2015) annual supervisory report which noted that the banking sector was on overall rated satisfactory in 2015 as compared to a strong rating which was achieved in 2014.



**Figure 4. 4 Growth trend plot**

**A lowess Smoothed Plot**

A lowess smoothed plot of the mean ROE with time shows that the return on equity was a decreasing function from the beginning of the period in 2005 followed by a slight increase from year 2010. This shows that return on equity as a financial performance measure must have been influenced by financial distress factors, as a result there was a decrease and later an increase which thereafter started dropping again. This graph indicated a deterioration of performance as measured by return on equity and concurs with financial distress theory by Muller et al., (1986) whose theory noted that deterioration and failure affect the profitability as a measure of financial performance of a company. According to financial distress theory, the outcome of each interval can be positive, implying that the company breaks the downward trend, or negative indicating

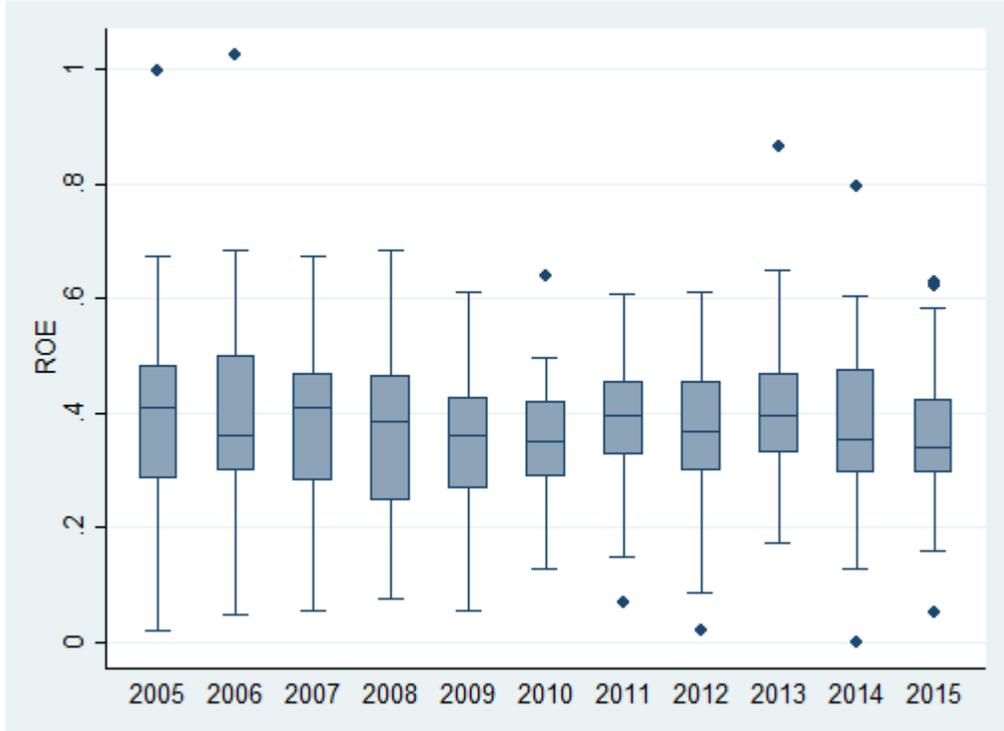
the continuing deterioration of the banks' performance and a movement downwards from one sub-interval of the spiral to another in many real cases, when entering financial distress, a firm traverses all the stages of decline.



**Figure 4. 5 A lowess smoother plot**

### **Box Plot Graph**

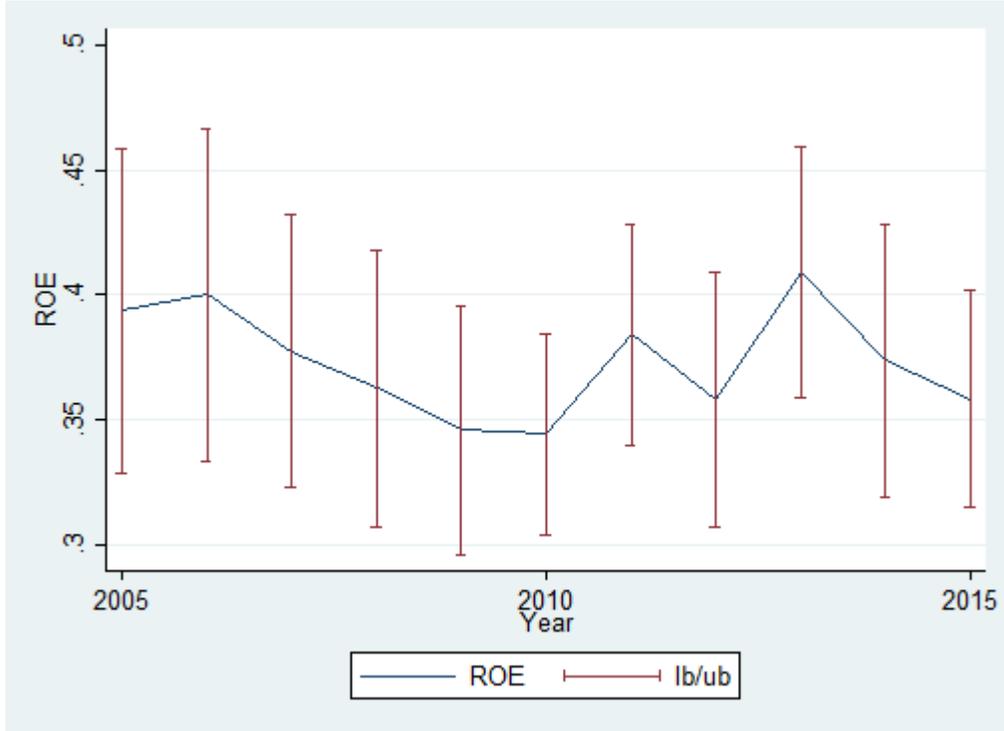
The line in the box represents the median observation while the whiskers shows the largest and least non-outlier observations; the observations near the whisker were the near outliers, while those at the extreme are the far outliers. A plot of box plots over time for the variable return on equity shows varying distributions of ROE over time. The ROE on the first year shows a distribution skewed to the left. The median is above the center of the box and closer to the upper quartile and the lower tail is longer than the upper tail. Year 2005 and 2006 however are probably skewed to the right; they have the median being below the center and the upper tail longer than the lower. Across the years, ROE seem to have varying distributions. In order to obtain a relatively normally distributed data-set, all the potential far-outliers were eliminated.



**Figure 4. 6 ROE over time box plot**

### Mean Plots

A further graphical analysis of the distribution of ROE over time using the mean plots with confidence intervals shows that the indicator probably exhibits heteroscedasticity. Heteroscedasticity of a variable implies constant variance. The confidence intervals (CI) over the periods are varying in with some years showing shorter CI than others implying varying standard deviations over time.



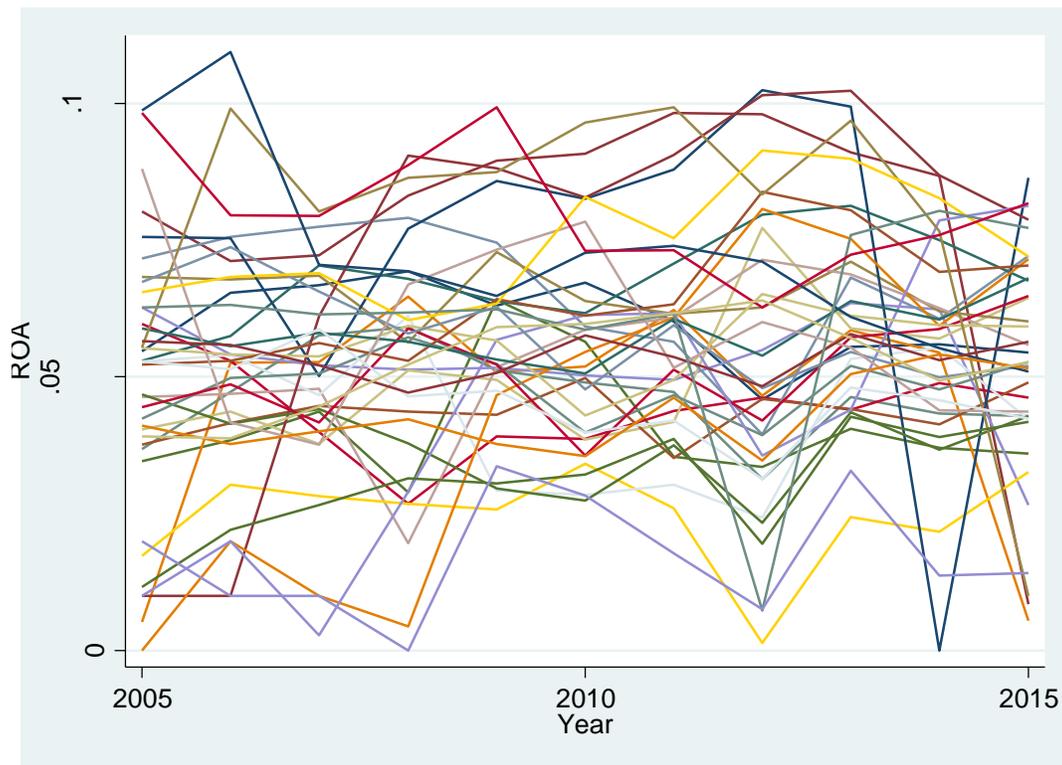
**Figure 4. 7 ROE over Time (Mean CI) Plot**

### **Return on Asset**

Before examining the relationship between financial distress factors and financial performance of commercial banks as measured by return on asset, the study explored the financial performance among different commercial banks in Kenya over the eleven year period; 2005-2015. The study used the Spaghetti plots, a lowness smoothed plot, box plot and mean plot as shown in Figure 4.8 to Figure 4.11.

### **Spaghetti Plot**

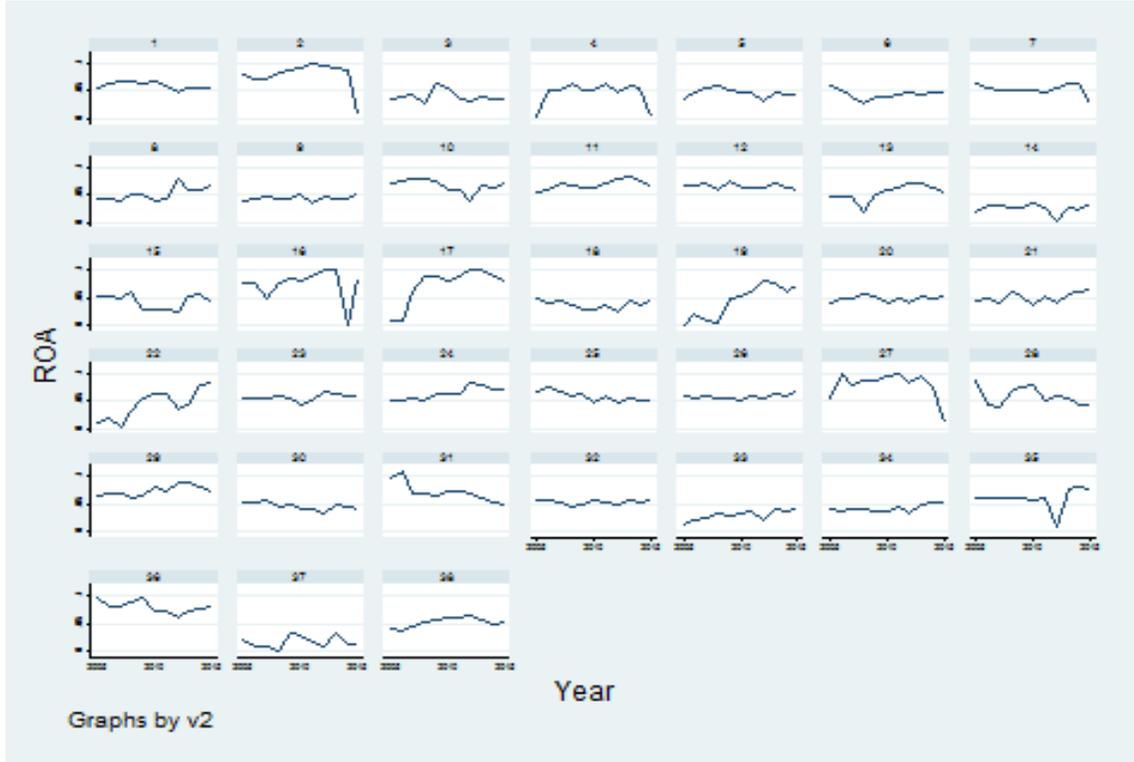
Figure 4.8 below shows the virtual presentation of the return on equity across the entities for against time for the years 2005 to 2015. The line spaghetti plot is an overlay of each entity's trend ROA over time. The plot gives a general indication of the behavior of ROA across the entities; it shows a possible heterogeneous nature of the banks



**Figure 4. 8 ROA over time Spaghetti plot**

### **Growth Trend Plots**

The current study also explored return on assets within commercial banks in Kenya over the eleven year period; 2005-2015. According to figure 4.9 the result used the empirical growth plots and indicated that there were variations in return on assets among commercial banks in Kenya, however, some commercial banks had almost the same return on assets with insignificant variations over the eleven years. In addition, it can also be observed that a few of commercial banks' return on assets remained constant with an indicator of increase towards 2015. However, some commercial banks indicated a decline especially between 2010 and 2015.



**Figure 4. 9 Growth Trend plots**

**A lowess Smoother Plot**

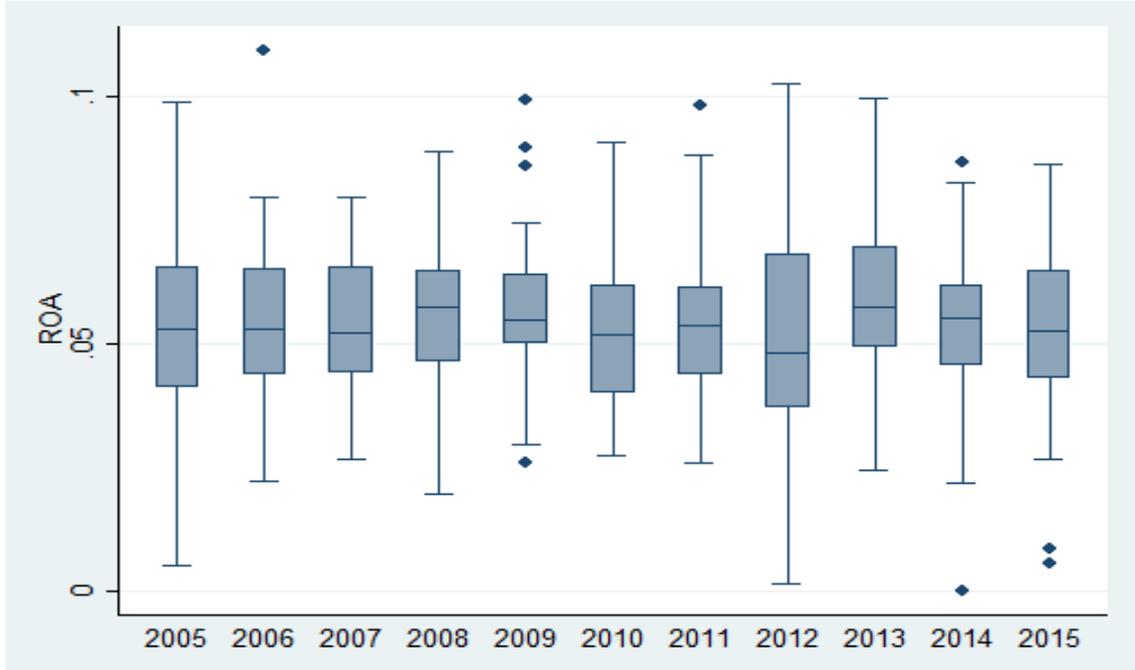
A lowess smoothed plot of the mean ROA with time shows that the return on assets was an increasing function from the beginning of the period in 2005 followed by a gradual decrease from about the year 2013 while in 2015 there was a sharp decline of return on assets. These results were in agreement with the regulatory body whose supervision report indicated a decline in profitability in 2015. CBK (2015) noted that the decline was mainly attributable to a faster growth in expenses compared to the growth in income.



**Figure 4. 10 A lowess smoother plot**

**Box Plot Graph**

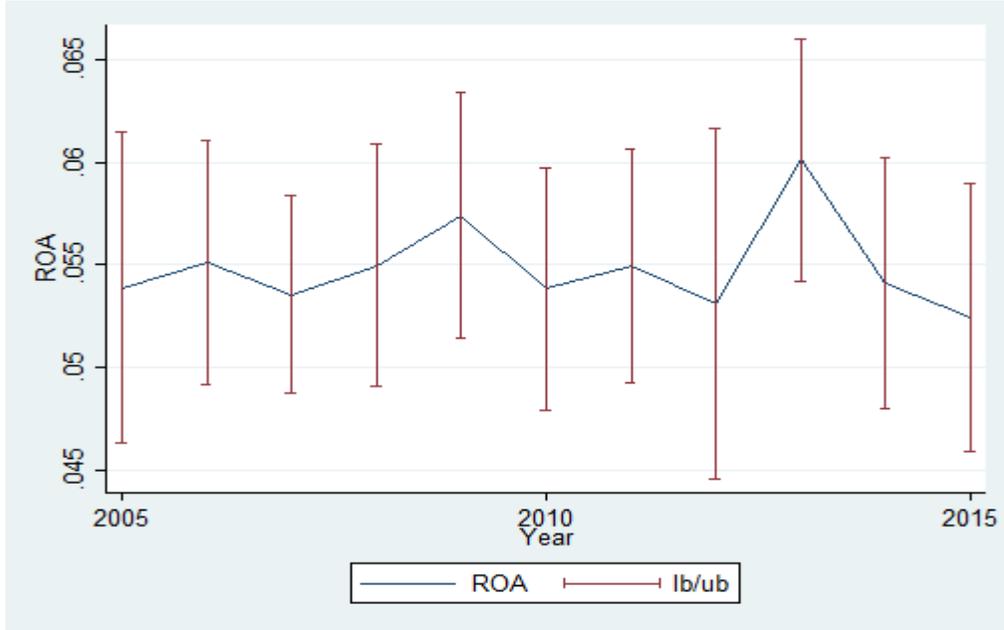
A plot of box plots over time for the variable return on equity shows slightly varying distributions of ROA over time. The distributions across time are not seemingly skewed on either directions but are of varying ranges. The ROA across the years shows non-skewed distributions. The medians are all about the centers of the boxes except for the year 2009 that has a median well below the center of the box implying a possible distribution skewed to the right. Across the period though, the interquartile ranges are of varying sizes.



**Figure 4. 11 ROA over time box plot**

### Mean Plots

Mean plot were used to show a further a graphical analysis of the distribution ROE over time. 2005, 2007, 2012 and 2015 seems to have low means however 2015 as the lowest of them all. And in addition 2015 indicates a downward decreasing trend. There is appositve slope and the location of the mean plot seems to have a regular constant variance except for 2013 that shows a shift of ROE. The confidence intervals exhibits heteroscedasticity, implying constant variance.



**Figure 4. 12 ROA over time (mean, CI) plot**

#### **4.5.2 Diagnostic Tests**

The diagnostic tests are used to identify the best model of study. Various estimation approaches can be applied to panel data, including; fixed effects model (FEM), pooled OLS and random effect model (REM). The researcher carried out carried the following panel data diagnostics to identify the best model for the current study.

##### **Random Effects or Pooled OLS Model**

A decision on whether to use random effect regression or pooled OLS model regression should be done using the Breusch-Pagan Lagrange multiplier (LM) test (Bell & Kelvyn, 2015). The null hypothesis in the LM test is that there is no significant difference across units (no panel effect) and therefore variances are zero, as a result, random effect should not be used. While the alternative hypothesis is that random effect should be adopted. Table 4.27 shows the results of the Breusch Pagan LM test which gives a P-value of 0.000 which is less than 0.05. This indicates that there are significant differences on technical efficiency among the commercial banks in Kenya. The null hypothesis is

therefore rejected and the alternative hypothesis accepted. Based on Breusch Pagan LM test pooled effects model was not appropriate for the study, as result, the current study will either use random effects model (REM) or fixed effects model (FEM).

**Table 4. 27 Lagrange Multiplier Test - (Breusch-Pagan)**

<b>Estimated results:</b>	<b>Var</b>	<b>sd=sqrt (Var)</b>
Financial performance	0.109	0.330
<i>e</i>	0.027	0.164
<i>u</i>	0.011	0.104

Test:  $\text{Var}(u) = 0$

chibar2 (01) = 155.56

Prob > chibar2 = 0.0000

### **Random Effect Model or Fixed Effect Model**

Hypothesis testing and conclusions of the study objectives were based on the multivariate analysis results rather than the bivariate analysis. A multiple panel data regression model was adopted and used. Both fixed effect model and random effect model were fitted and the Hausman test used to determine the appropriate multivariate model to adopt of the two. The Hausmann specification test results for the multivariate model between financial distress factors and performance is shown in Table 4.28. The chi-square statistic for the test was found to be equal to 23.25 with a p-value of 0.0003 which is less than 0.05. This implies that the fixed effect model is more favorable than the random effect model and was therefore adopted.

According to Bell and Kelvyn (2015), Hausman test basically tests whether the unique errors are correlated with the repressors and the null hypothesis is that unique error is not correlated (Greene, 2012), while the alternative hypothesis is that unique error is related. If null hypothesis is accepted then the preferred model is random effects otherwise use the fixed effects model (Lang, 2014). The results are presented in Table 4.28 showing a

p-value of less than 0.05. This resulted to the rejection of the null hypothesis and acceptance of the alternative hypothesis. This implies that the most appropriate model to explain the relationship between financial performance and financial distress factors was the fixed effects regression model.

**Table 4. 28: Hausman Test**

	<b>(b) fixed</b>	<b>(B) random</b>	<b>(b-B) Difference</b>	<b>sqrt(diag(V_b-V_B)) S.E.</b>
Liquidity	0.867	0.867	0.000	0.000
Leverage	0.765	0.858	-0.093	0.058
Operating efficiency	1.462	1.408	0.054	0.032
Asset quality	0.001	-0.002	0.003	0.017
capital adequacy	0.086	0.018	0.068	0.019
Chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 23.25, Prob>chi2 = 0.0003				

**Fixed Effect Model**

Table 4.29 below shows the model summary of the adopted fixed effect model. The panels were shown to be strongly balanced with a total of 418 observations in the 38 commercial banks. The minimum maximum and average numbers of observations per groups were all equal to 11 implying a strongly balanced panel data. The R<sup>2</sup>s within, between and the overall R<sup>2</sup> are 0.6585, 0.3942 and 0.5424 respectively. The R<sup>2</sup> is generally the variation of the dependent variable performance that is explained by the variation of the predictors in the model. The R<sup>2</sup> within is the goodness of fit measure for the individual mean de-trended data which disregards all the information between groups in the data. The ANOVA statistics measures the general significance of the model. The p-value of the F statistic to the model shows is 0.000 which is less than 0.05 implying that the estimated parameters in the model are at least not equal to zero. This implies that the model is generally significant and at least one of the predictors is not equal to zero.

**Table 4.29: Model Summary Fixed-effects Within Group Variable Entity; Multiple Regression**

Model Statistics				Panel Observations		
R-sq:	Within	=	0.6585	Number of Obs	=	418
	Between	=	0.3942	Number of groups	=	38
	Overall	=	0.5424			
Anova	F(5,380)	=	125.31	Obs per group:	Min	= 11
	Prob > F	=	0.000		Avg	= 11
	corr(u_i,Xb)	=	0.1013		Max	= 11

Table 4.30 presents the model coefficients from the fixed effect model fitted. All the coefficient estimates of the predictor variables were found to be significant. The beta coefficients for liquidity, leverage, operating efficiency, asset quality and capital adequacy were found to be 0.867, 0.765, 1.462, 0.006 and 0.086 respectively. The p-values of the t-statistics for the coefficients estimated were found to be 0.000 0.049, 0.000, 0.000, 0.038 respectively. All the p-values were found to be less than 0.05 implying that at 0.05 level of significance, all the independent variables have significant influence on performance. The constant term for the multivariate analysis was also found to be significant with a p-value less than 0.05. As shown in the table, the intra-class correlation is 0.50 implying that 50% of the variance is due to the differences across panels.

**Table 4. 30: Coefficients Table; Fixed Effect Model Multiple Regression**

	<b>Coef.</b>	<b>Std. Err.</b>	<b>T</b>	<b>P&gt;t</b>
Liquidity	0.867	0.070	12.362	0.000
Leverage	0.765	0.386	1.980	0.048
Operating efficiency	1.462	0.059	24.606	0.000
Asset quality	0.006	0.001	6.360	0.000
Capital adequacy	0.086	0.041	2.084	0.038
Constant	-0.371	0.036	10.430	0.000
sigma_u	0.164			
sigma_e	0.164			
Rho	0.500			

**Time Fixed Effects**

The fixed effect model was fitted based on the assumption of fixed effects on the entities whose data was tested. Further to the fixed entities, the researcher tested for time fixed effect on the model using testparm. Dummy variables for each of the 11 years were generated and a fixed effect model fitted including the dummy years' variables. Finally, testparm test was done on the model to determine whether the effects of the dummy years are all jointly equal to zero (Krista & Lisa, 2015).

Results in Table 4.31 shows the test results for time fixed effects. The p value (0.1567) is greater than 0.05 indicating that there are no significant time affects and therefore no need to introduce dummy variables, as a result, this indicates that coefficients of time are jointly equal to zero. The study further performed tests on the fixed effect model fitted to ensure that the model meets the assumptions of OLS regression that was used. The tests are important to ensure the reliability of the model fitted before testing hypotheses and drawing conclusions from the model.

## **Cross-sectional Dependence**

OLS assumes that the independent variables are strongly exogenous.  $X_{it}$  is strongly exogenous if the error term is independent of its past, present and future (Sarafidis & Wansbeek, 2007). A violation of non-cross sectional independence of the disturbance term implies an inappropriate model due to incorrect specification of the predictors ( $X_{it}$ ). That would imply that the predictors of the model are not strongly exogenous as assumed in OLS regression. The multivariate model fitted for this study was found to exhibit cross-sectional dependence thus violating the assumption of cross-sectional independence. This was tested using the Breusch-Pagan Lagrangian multiplier test for cross-sectional independence that uses a chi-square statistic as shown in Table 4.31. The p-value of the chi-square is 0.000 which is less than 0.05 implying cross-sectional dependence.

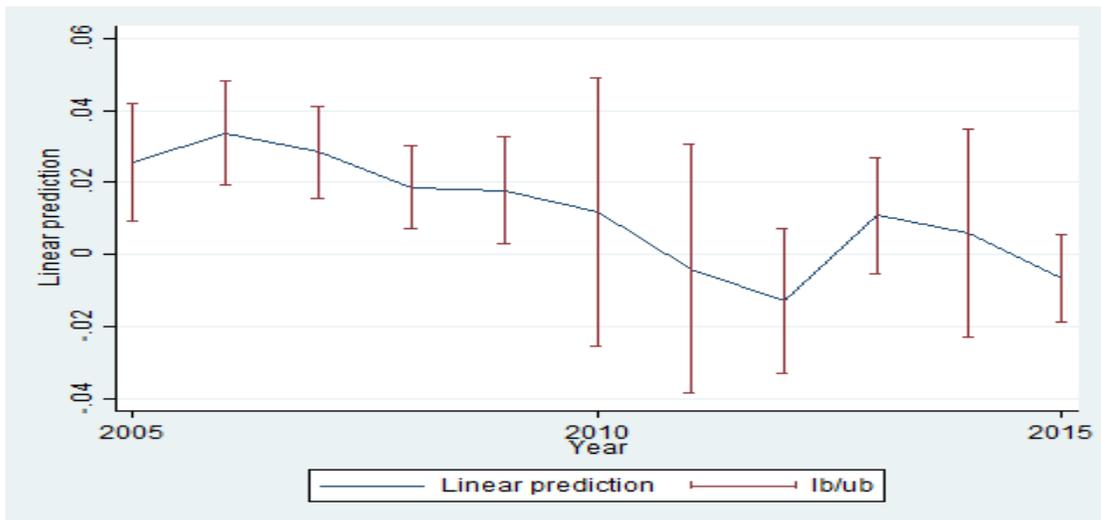
## **Heteroscedasticity**

OLS also assumes that the error term exhibit group wise homoscedasticity in the panels. Homoscedasticity is the constant variance of the disturbance term while a non-constant error term is referred to as heteroscedasticity. Should it be that the error terms of the model at the different time periods vary and are significantly larger in some time periods more than the other, the model then would be termed to exhibit group-wise heteroscedasticity. The study tested the null hypothesis that the variances of the error term were equal for all time periods. A Wald chi-square test was used to test for group wise homoscedasticity. The null hypothesis tested was rejected at 0.05 level of significance due to the p-value of the chi-square statistics that was found to be 0.000 denoting presence of heteroscedasticity and violation of group wise homoscedastic error terms.

A plot of the mean predicted disturbance terms shows that the mean disturbances vary in expectation over time. The mean disturbances are above zero for most of the years though they dropped below zero in the years 2011 and 2012. The confidence intervals of

the disturbance terms are also of varying ranges implying varying standard deviations and thus changing variances; the confidence intervals of the disturbance in 2005 is well shorter compared to the confidence intervals in the years 2010, 2011 and 2014. Non-constant variances in the disturbance terms implies a possible problem of heteroscedasticity of the errors.

A further statistical test would be required to test the significance of heteroscedasticity of the residuals. To remedy this problem, feasible generalized least squares (FGLS) method was therefore used. This method also guarantees the efficiency and consistency of the estimators for valid significance tests. FGLS is preferred to OLS since the true values of the variances and covariance for the disturbance terms as used by the OLS estimator are unknown in reality and therefore the OLS estimator is not a feasible estimator (Greene, 2002).



**Figure 4. 13: Residual mean CI plot**

### Serial Correlation

Another assumption of OLS regression is the non-serial correlation of the error term. The consistency of the fitted model with the non-serial correlation assumption was also tested. A Wooldridge Drukker test was used which is the test for the existence of first

order autocorrelation in panel data. This test is done by computation of an F-statistic to test the null hypothesis that there is no existence of first order autocorrelation. The p-value of the f-statistic was found to be 0.198 which is greater than 0.05 implying the there is no serial correlation and the disturbance term of the multivariate data fitted does not exhibit first order autocorrelation.

### **Normality Tests**

The OLS model is also based on the assumption that the disturbance terms follow a Gaussian distribution. The researcher therefore tested for normality of the disturbance terms as shown in Table 4.31. In panel data, the error term is possible due to variation between groups and due to variation within groups. The test for normality was therefore performed on both aspects of the error term. The researcher tested normality on  $u$  which is the normality on the entity specific errors within groups and normality one that is the normality of the remainder or overall error term. Jacque Bera approach for normality test was used. This approach is based on the consideration that a Gaussian distribution of the error terms should have a mean of 0.000, a skewness of 0.000 and a kurtosis of 3. The Jacque Bera approach tests the deviation of the skewness from 0.000 and Kurtosis from 3 using a chi-square statistic. The p-values of the chi-square statistics for both  $u$  and  $e$  were found to be greater than 0.05 implying normality in both cases.

**Table 4. 31: Diagnostic Tests**

<b>Test</b>	<b>Test statistic</b>	<b>P-value</b>
Time fixed effect ()	F( 10, 315) = 1.45	Prob > F = 0.1567
Cross-sectional dependence (Pesaran's test)	P= 2.665,	Pr = 0.0077
GroupWise Heteroskedasticity	Wald chi2 (33) = 1491.65	Prob>chi2 = 0.000
First order autocorrelation in Panels (Wooldridge test)	F( 1, 38) = 1.729	Prob > F = 0.198
Joint test for Normality on e (Jacque Bera)	Chi2(2) = 3.18	Prob > chi2 = 0.204
Joint test for Normality on u (Jacque Bera)	Chi2(2) = 192.96	Prob > chi2 = 0.052

**Multicollinearity**

According to Green (2012), two or more predictor variables are said to have multicollinearity when a multiple regression model are highly correlated. Multicollinearity is a study variables and leads to regression coefficients with large standard errors meaning that estimation of coefficients cannot be precise and accurate as argued by (Gujarati, 2012). The study used the variance inflation factor (VIF) to test for multicollinearity. A VIF of 1 indicates no correlation or low levels of collinearity between the predictor variables, while a value between 1 and 5 indicates moderate collinearity while a value of more than 5 indicates that the predictor variables are highly multicorrelated. As shown in Table 4.32 all the VIFs were less than 5 with a mean VIF of 1.07 that is close to 1.

**Table 4.32: VIF**

<b>Variable</b>	<b>VIF</b>	<b>1/VIF</b>
Liquidity	1.11	0.898
Leverage	1.07	0.934
Operational efficiency	1.06	0.941
Asset Quality	1.06	0.948
Capital adequacy	1.05	0.948
<b>Mean VIF</b>	<b>1.07</b>	

#### **4.6 Statistical Modelling**

The aim of the study was to determine the influence of financial distress factors on financial performance of commercial banks in Kenya. Christiano, Rostagno and Motto (2010) argued that factors are score cards on the financial performance of an organization that reflects forces that may cause financial distress and financial performance fluctuations. Thorley, Perry and Andes (2012) argued that financial distress factors are economic indicators and variables of financial distress that will affect performance of an organization as was adopted by the current study. Khalid (2017) argued that financial distress factors may be broken down into micro and macro-economic distress factors. The current study adopted liquidity, leverage operating efficiency, asset quality and capital adequacy as the financial distress factors affecting performance of commercial banks in Kenya.

Inferential analysis was the basis behind which conclusions were drawn for the study objectives. The techniques used for this analysis were to determine the level of influence that each independent variable; liquidity, leverage, operating efficiency, asset quality and capital adequacy has on the dependent variable, financial performance. The techniques involved bivariate analyses between each independent variable and the dependent variable and thereafter a joint influence analysis by multivariate analysis to

determine the joint influence of the financial distress factors on performance of commercial banks.

For inferential analysis, statistical models were fitted to determine the influences and relationships. The models fitted considered that the data collected was panel data consisting of both cross sectional and time series components. The data contained cross sections consisting of 38 entities a time period of only 11 years. Each of the entities of the data had information required for all the 11 years implying that the panels were strongly balanced. The general form of the fixed effect model structure adopted was of the form given by the following equation;

$$Y_{it} = \beta + \beta_1 X_{it} + \varepsilon_{it} \dots\dots \text{Fixed effect} \quad \{\text{equation 4.1}\}$$

Where  $X_{it}$  is the predictor variable and  $Y_{it}$  is the dependent variable. Equation 4.1 the fixed effect model assumes homogeneity of estimates across entities and that the independent variable that influence performance vary over time but have a fixed effect across the entities.

#### **4.6.1 Bivariate Analysis of Liquidity and Performance of Commercial Banks**

The first study objective was to determine the influence of Liquidity on the performance of commercial banks in Kenya. Having gone by the fixed effect model basing on the Hausmann LM test, the results of the fixed effect model are presented in Tables 4.34 and Table 4.35. Table 4.34 below presents the model summary of within variable of liquidity. The analysis shows that the panels were strongly balanced for this bivariate analysis as shown by the number of observations per group. There were a total of 418 observations used in this analysis considering 38 groups of entities implying strongly balance panels. The minimum, maximum and average numbers of observations per groups were all equal to 11. The  $R^2$ s within, between and the overall  $R^2$  are 0.0174, 0.570 and 0.2179 respectively.

The  $R^2$  is generally a measure of the variation of the dependent variable performance that is explained by the variation of the predictors in the model. In this model, The  $R^2$  within is the goodness of fit measure for the individual mean de-trended data which disregards all the information between groups in the data. The ANOVA statistics measure the general significance of the model. The P-value of the F-statistic to the model shows is 0.006 which is less than 0.05 implying that the estimated parameters in the model are at least not equal to zero. This infers that liquidity have an influence on performance of commercial banks.

**Table 4. 33: Model Summary within Group Variable Entity; Liquidity**

Model Statistics				Panel Observations		
R-sq:	Within	=	0.0174	Number of Obs	=	418
	Between	=	0.57	Number of groups	=	38
	Overall	=	0.2179			
ANOVA	F(1,674)	=	3.37	Obs per group: Min	=	11
	Prob > F	=	0.006	Avg	=	11
	corr(u <sub>i</sub> ,Xb)	=	0.000	Max	=	11

Table 4.35 is the coefficients table of the analysis that presents the model coefficients. The fixed effect model confirms the significance of the influence of liquidity ratios on performance of commercial banks. The estimated coefficient of liquidity is significantly not equal to zero ( $\beta=-125$ ,  $t= -2.400$ ,  $P\text{-value}= 0.017$ ). The P-value is less than 0.05 which implies that the estimated coefficient is significant at 0.05 level.

The P-value of the constant is also less than 0.05 which shows a significant constant term.  $\sigma_u$  is the standard deviation of residuals within groups while  $\sigma_e$  is the standard deviation of the overall error term. Rho, being anon-parametric measure of rank correlation calculated from  $\sigma_u$  and  $\sigma_e$ , gives the intra-class correlation. From the table, the intra-class correlation is 0.529 implying that 52.9% of the variance is due to the differences across panels. The estimated coefficient of liquidity here implies that a

unit increase in liquidity ratios would cause the levels of performance to decrease by 0.125 units.

**Table 4. 34: Coefficients Table; Fixed Effect Model with Liquidity as Predictor**

	<b>Coef.</b>	<b>Std. Err.</b>	<b>T</b>	<b>P&gt;t</b>
Liquidity	-0.125	0.052	-2.400	0.017
Constant	0.060	0.022	2.680	0.008
sigma_u	0.165			
sigma_e	0.156			
Rho	0.529			

#### **4.6.2 Bivariate Analysis of Leverage and Performance of Commercial Banks**

The researcher also sought to determine the effect of Leverage as a financial distress factor on the performance of commercial banks in Kenya. From Table 4.36, there were a total of 418 observations used in this analysis considering 38 groups of entities implying strongly balance panels. The minimum, maximum and average numbers of observations per groups were all equal to 11. The  $R^2$ s within, between and the overall  $R^2$  are 0.0094, 0.0144 and 0.0092 respectively.

The  $R^2$  is generally the variation of the dependent variable performance that is explained by the variation of the predictors in the model. In this model, The  $R^2$  within is the goodness of fit measure for the individual mean de-trended data which disregards all the information between groups in the data. The ANOVA statistics measures the general significance of the model. The p-value of the F statistic to the model shows is less than 0.05 implying that the estimated parameters in the model are at least not equal to zero. This infers that Liquidity have an influence on performance of commercial banks.

Table 4.35: Model Summary within Group Variable Entity; Leverage

Model Statistics			Panel Observations			
R-sq:	Within	=	0.0094	Number of Obs	=	418
	Between	=	0.0144	Number of groups	=	38
	Overall	=	0.0092			
ANOVA	F(1,674)	=	3.37	Obs per group: min	=	11
	Prob > F	=	0.0063	avg	=	11
	corr(u_i,xb)	=	0	max	=	11

The coefficients Table 4.37 of the study presents the model coefficients. From the table, the estimated leverage coefficient is significantly not equal to zero ( $\beta=0.665$ ,  $t= 1840$ ,  $p$ -value= 0.042). At 0.05 level of significance, the P-value was found to be less than 0.05 which indicates that the estimated coefficient is significant. The estimates of the coefficient of leverage show that a unit increase in leverage ratios would cause the levels of performance to rise by 0.665 units. The standard deviation of the residual within the group is called  $\text{Sigma}_u$  whereas  $\text{Sigma}_e$  is the standard deviation of the overall error term. The  $\text{sigma}_u$  and  $\text{sigma}_e$  calculates Rho and gives the intra-class correlation. The table shows that the intra-class correlation is 0.555 indicating that 55.5% of the variance is caused by the differences across panels.

**Table 4. 36: Coefficients Table; Fixed Effect Model With Leverage as Predictor**

	Coef.	Std. Err.	T	P>t
Leverage risks	0.665	0.362	1.840	0.042
Constant	0.010	0.031	0.320	0.752
$\text{sigma}_u$	0.175			
$\text{sigma}_e$	0.156			
Rho	0.555			

### 4.6.3 Bivariate Analysis of Operating Efficiency and Financial Performance of Commercial Banks

To determine the influence of operating efficiency on how commercial banks perform in Kenya, bivariate analysis models were fitted and the results of the model summary and coefficients estimates are presented in Tables 4.38 and Table 4.39 respectively. The analysis shows that the panels were strongly balanced for this bivariate analysis as shown by the number of observations per group. The minimum, maximum and average numbers of observations per groups were all equal to 11 while the data had a total of 418 observations used in this analysis considering 38 groups of entities implying strongly balance panels. The  $R^2$ s within, between and the overall  $R^2$  are 0.0152, 0.5956 and 0.2206 respectively.

The  $R^2$  is generally the variation of the dependent variable performance that is explained by the variation of the predictors in the model. In this model, The  $R^2$  within is the goodness of fit measure for the individual mean de-trended data which disregards all the information between groups in the data. The ANOVA statistics measures the general significance of the model. The p-value of the F statistic to the model is less than 0.05 implying that the estimated parameters in the model are at least not equal to zero. This implies that Operating efficiency has an influence on performance of commercial banks.

Table 4.37: Model Summary within Group Variable Entity; Operating Efficiency

Model Statistics				Panel Observations			
R-sq:	Within	=	0.0152	Number of Obs	=	418	
	Between	=	0.5956	Number of groups	=	38	
	Overall	=	0.2206				
ANOVA	F(1,674)	=	5.02	Obs per group:	Min	=	11
	Prob > F	=	0.0257		Avg	=	11
	corr(u_i,Xb)	=	0.5076		Max	=	11

The coefficient of operating efficiency for the predictor model was found to be significantly greater than 0. This confirms the significance of the influence of operating efficiency ratios on performance of commercial banks. The estimated coefficient of operating efficiency was found to be ( $\beta=0.172$ ,  $t= 2.240$ ,  $p\text{-value}= 0.026$ ). The P-value is less than 0.05 implying that at 0.05 level of significance, the estimated coefficient is deemed significant.  $\text{Sigma}_u$  is the standard deviation of residuals within groups while  $\text{Sigma}_e$  is the standard deviation of the overall error term. Rho is calculated from  $\text{sigma}_u$  and  $\text{sigma}_e$  and gives the intra-class correlation. From the table, the intra-class correlation is 0.531 implying that 53.1% of the variance is due to the differences across panels. The estimated coefficient of operating efficiency here implies that a unit increase in operating efficiency ratios would causes the levels of performance to increase by 0.531 units.

**Table 4. 38: Coefficients table; Model with Operating Efficiency as Predictor**

	<b>Coef.</b>	<b>Std. Err.</b>	<b>T</b>	<b>P&gt;t</b>
Operating efficiency	0.172	0.077	2.240	0.026
Constant	0.009	0.008	1.040	0.300
$\text{sigma}_u$	0.166			
$\text{sigma}_e$	0.156			
Rho	0.531			

#### **4.6.4 Bivariate analysis of asset quality and performance of commercial banks**

Another objective of the research was to determine the influence of asset quality on how commercial banks perform in Kenya. Tables 4.40 and Table 4.41. Table 4.40 below shows the model summary of the random effect. There were a total of 418 observations used in this analysis considering 38 groups of entities implying strongly balance panels. The  $R^2$ s within, between and the overall  $R^2$  are 0.0034, 0.0054 and 0.0001 respectively.

The  $R^2$  is generally the variation of the dependent variable performance that is explained by the variation of the predictors in the model. In this model, The  $R^2$  within is the goodness of fit measure for the individual mean de-trended data which disregards all the information between groups in the data. The ANOVA statistics measure the general significance of the model. The p-value of the F statistic to the model is less than 0.05 implying that the estimated parameters in the model are at least not equal to zero. This implies that Asset quality has an influence on performance of commercial banks.

**Table 4.39: Model Summary Within Group variable entity; Asset Quality**

Model Statistics				Panel Observations			
R-sq:	Within	=	0.0034	Number of Obs	=	41	
						8	
	Between	=	0.0054	Number of groups	=	38	
	Overall	=	0.0001				
ANOVA	F(1,674)	=	0.88	Obs per group:	min	=	11
	Prob > F	=	0.0347		avg	=	11
	corr(u_i,Xb	=	0		max	=	11
	)						

Table 4.41 is the coefficients table of the analysis that presents the model coefficients. The fixed effect model confirms the significance of the influence of asset quality ratios on performance of commercial banks. The estimated coefficient of asset quality is significantly not equal to zero ( $\beta=0.001$ ,  $t= 0.940$ ,  $p\text{-value}= 0.0347$ ). The P-value is less than 0.05 which implies that the estimated coefficient is significant at 0.05 level of significance. The p-value of the constant is also less than 0.05 which shows an significant constant term. Sigma\_u is the standard deviation of residuals within groups while Sigma\_e is the standard deviation of the overall error term. Rho is calculated from sigma\_u and sigma\_e and gives the intra-class correlation. Form the table, the intra-class correlation is 0.556 implying that 55.6% of the variance is due to the differences across

panels. The estimated coefficient of asset quality here implies that a unit increase in asset quality ratios would causes the levels of performance to increase by 0.001 units.

**Table 4. 40: Coefficients table; model with asset quality as predictor**

	<b>Coef.</b>	<b>Std. Err.</b>	<b>T</b>	<b>P&gt;t</b>
Asset quality	0.001	0.001	0.940	0.047
Constant	0.001	0.033	0.020	0.981
sigma_u	0.176			
sigma_e	0.157			
Rho	0.556			

#### **4.6.4 Bivariate analysis of capital adequacy and performance of commercial banks**

Table 4.42 shows the results of the Hausman specification test for the bivariate analysis of capital adequacy and performance. The analysis sought to determine the influence of Capital adequacy on the performance of commercial banks in Kenya. The analysis shows that the panels were strongly balanced for this bivariate analysis as shown by the number of observations per group. There were a total of 418 observations used in this analysis considering 38 groups of entities implying strongly balance panels.

The minimum, maximum and average numbers of observations per groups were all equal to 11. The  $R^2$ s within, between and the overall  $R^2$  are 0.0026, 0.0012 and 0.0001 respectively. The  $R^2$  is generally the variation of the dependent variable performance that is explained by the variation of the predictors in the model. In this model, the  $R^2$  within is the goodness of fit measure for the individual mean de-trended data which disregards all the information between groups in the data. The ANOVA statistics measure the general significance of the model. The p-value of the F statistic to the model is less than 0.05 implying that the estimated parameters in the model are at least not equal to zero. This implies that Capital adequacy has a distressing effect on performance of commercial banks.

**Table 4.41: Model Summary within group variable entity; asset quality**

Model Statistics				Panel Observations		
R-sq:	Within	=	0.0026	Number of Obs	=	418
	Between	=	0.0012	Number of groups	=	38
	Overall	=	0.0001			
ANOVA	F(1,674)	=	0.73	Obs per group:	Min	= 11
	Prob > F	=	0.03914		Avg	= 11
	corr(u <sub>i</sub> ,Xb)	=	0		Max	= 11

Table 4.43 is the coefficients table of the analysis that presents the model coefficients. The fixed effect model confirms the significance of the influence of capital adequacy ratios on performance of commercial banks. The estimated coefficient of capital adequacy is significantly not equal to zero ( $\beta=0.077$ ,  $t= 0.860$ ,  $P\text{-value}= 0.031$ ). The P-value is less than 0.05 which implies that the estimated coefficient is significant at 0.05 level of significance. The p-value of the constant is also less than 0.05 which shows a significant constant term. The estimated coefficient of capital adequacy here implies that a unit increase in capital adequacy ratios would causes the levels of performance to increase by 0.077 units. Sigma  $u$  is the standard deviation of residuals within groups while sigma  $e$  is the standard deviation of the overall error term. Rho is calculated from sigma  $u$  and sigma  $e$  and gives the intra-class correlation. Form the table, the intra-class correlation is 0.557 implying that 55.7% of the variance is due to the differences across panels.

**Table 4. 42: Coefficients Table; Model with Capital Adequacy as Predictor**

	<b>Coef.</b>	<b>Std. Err.</b>	<b>T</b>	<b>P&gt;t</b>
capital adequacy	0.077	0.090	0.860	0.031
Constant	-0.003	0.035	-0.080	0.934
sigma_u	0.176			
sigma_e	0.157			
Rho	0.557			

#### **4.6.6 Combined Effect of Financial Distress Factors on Financial Performance of Commercial Banks**

Hypothesis testing and conclusions of the study objectives were based on the multivariate analysis results rather than the bivariate analysis. A multiple OLS panel data regression model was adopted and used. Both fixed effect model and random effect model were fitted and the Table 4.44 below shows the model summary of the adopted fixed effect model. The panels were shown to be strongly balanced with a total of 418 observations in the 38 groups.

The minimum, maximum and average numbers of observations per groups were all equal to 11 implying a strongly balanced panel data. The  $R^2$ s within, between and the overall  $R^2$  are 0.6585, 0.3942 and 0.5424 respectively. The  $R^2$  is generally the variation of the dependent variable performance that is explained by the variation of the predictors in the model. The  $R^2$  within is the goodness of fit measure for the individual mean de-trended data which disregards all the information between groups in the data. The ANOVA statistics measures the general significance of the model.

The p-value of the F statistic to the model shows is 0.000 which is less than 0.05 implying that the estimated parameters in the model are at least not equal to zero. This implies that the model is generally significant and at least one of the predictors is not equal to zero.

**Table 4.43: Model Summary within group variable entity; multiple regression**

Model Statistics			Panel Observations				
<b>R-sq:</b>	Within	=	0.6585	Number of Obs	=	418	
	Between	=	0.3942	Number of groups	=	38	
	Overall	=	0.5424				
<b>ANOVA</b>	F(5,325)	=	125.31	Obs per group:	Min	=	11
	Prob > F	=	0.000		Avg	=	11
	corr(u_i,Xb)	=	0.1013		Max	=	11

Table 4.45 presents the model coefficients from the fixed effect model fitted. All the coefficient estimates of the predictor variables were found to be significant. The beta coefficients for liquidity, leverage, operating efficiency, asset quality and capital adequacy were found to be 0.867, 0.765, 1.462, 0.001 and 0.086 respectively. The p-values of the T-statistics for the coefficients estimated were found to be 0.000, 0.049, 0.000, 0.025, 0.0397 respectively. All the p-values were found to be less than 0.05 implying that at 0.05 level of significance, all the independent variables have significant influence on performance. The constant term for the multivariate analysis was also found to be significant with a p-value less than 0.05. As shown in the table, the intra class correlation is 0.50 implying that 50% of the variance is due to the differences across panels.

**Table 4. 44: Coefficients table; model multiple regression**

	<b>Coef.</b>	<b>Std. Err.</b>	<b>T</b>	<b>P&gt;t</b>
Liquidity	0.867	0.070	12.360	0.000
Leverage	0.765	0.386	1.980	0.049
Operating efficiency	1.462	0.059	24.610	0.000
Asset quality	0.001	0.001	0.640	0.025
Capital adequacy	0.086	0.101	0.850	0.039
Constant	-0.371	0.036	-10.430	0.000
sigma_u	0.164			
sigma_e	0.164			
Rho	0.500			

#### **4.6 Robust Model Using Feasible Generalized Least Squares**

The model fitted for the multivariate data was found to violate the assumptions of cross-sectional dependence and that of heteroscedasticity. For reliability of the model, a different model was therefore fitted that would correct the violated assumptions. A feasible generalized least squares model was fitted to correct violations of homoscedasticity, non-cross sectional dependence and non-autocorrelation. Since the fitted model had heteroscedastic error terms that also exhibited cross sectional dependence, the FGLS model fitted was enabled to allow for heteroscedastic robust error terms that are cross-sectional dependence.

According to Halunga, Orme, and Yamagata (2017) Feasible Generalized Least Squares (FGLS) is a common estimator, where the cross-sectional covariance's are typically modelled parametrically. Table 4.46 shows the model summary of the FGLS model fitted. Bikker, Shaffer and Spierdijk (2012) argued that FGLS and OLS yield about the same point estimates, only their standard errors differ substantially. The use of FGLS

reduces the standard errors dramatically. Apparently, FGLS does not lead to a harmful scale correction, which would result in a substantial upward bias and further noted that feasible generalized least squares (FGLS) will easily cope with the heteroskedasticity problem.

**Table 4. 45: Feasible Generalised Least Squares Model Summary**

<b>Coefficients:</b> generalized least squares			
<b>Panels:</b> heteroscedastic			
<b>Correlation:</b> no autocorrelation			
<b>Model Statistics</b>		<b>Panel Observations</b>	
<b>Estimated Covariance</b>	38	Number of Obs	418
<b>Estimated autocorrelations</b>	0	Number of groups	38
<b>Estimated coefficients</b>	6	Time periods	11
<b>Wald chi2(4) =</b>	53.87		
<b>Prob &gt; chi2 =</b>	0.000		

Table 4.47 shows the coefficients of the independent variables in the FGLS model. FGLS model confirms that the estimated coefficients of the financial distress factors are all significantly not equal to zero. The coefficient estimates of liquidity, leverage, operating efficiency, asset quality and capital adequacy in the FGLS model were found to be 0.301, 0.284, 1.448, 0.002, -0.078 and -0.124 respectively. The p-values to these z statistics were all found to be less than 0.05. Being that all the P-values are less than 0.05, it implies that all the financial distress factors do have an influence on financial performance of the banks.

**Table 4. 46: Coefficients table; Feasible Generalised Least Squares Model**

	<b>Coef.</b>	<b>Std. Err.</b>	<b>Z</b>	<b>P&gt;z</b>
Liquidity	0.301	0.065	4.610	0.000
Leverage	0.284	0.129	2.205	0.035
Operating efficiency	1.448	0.042	34.540	0.000
Asset quality	0.002	0.001	2.550	0.015
capital adequacy	-0.078	0.035	-2.217	0.034
_cons	-0.124	0.033	-3.780	0.000

#### **4.7 Hypothesis testing**

The final multivariate GLS fitted model was considered a better model compared to the OLS model which violated the assumptions. The GLS model taking care of the violations was considered a more robust model and was used to test the hypotheses of the study.

##### **4.7.1 Liquidity as a financial distress factor on financial performance**

The current study used liquidity as its first variable whose objective was to examine the effect of liquidity as a financial distress factor on financial performance of commercial banks in Kenya. Liquidity ratios were used as measures of liquidity. The current study predicted a positive significant relationship between liquidity as a distressing factor on financial performance of commercial banks in Kenya. Fixed effects regression model was used to assess if the relationship was statistically significant and as a result the following null hypothesis was tested:

**H<sub>01</sub>:** Liquidity has no significant influence on financial performance of commercial banks in Kenya.

From the FGLS model fitted, the p-value of the t-statistic for the estimated coefficient of liquidity is 0.000 which is less than 0.05. The null hypothesis was rejected at 0.05 level of significance and a conclusion drawn that liquidity as a financial distress factor has a

positive significant influence and distressing effect on financial performance of commercial banks in Kenya to the extent of 0.301 units. This means that one unit increase in liquidity levels as a financial distress factor will increase financial performance of commercial banks in Kenya by 0.301 units. This findings concur with early studies of Kibuchi (2015) and Cheluget et al., (2014). Kibuchi (2015)'s study was on the relationship of liquidity risk on financial performance of banks. It was established that there is a positive relationship between liquidity risk and financial performance as measured by ROE on commercial banks in Kenya while Cheluget et al., (2014) confirmed that low liquidity had significant influence on financial distress and led to failure of insurance companies in Kenya. Ongore and Kusa (2013) contradicts this findings as liquidity was found to have no significant effect on performance of commercial banks in Kenya and concluded that performance was not as such about keeping high liquid.

#### **4.7.2 Leverage as a financial distress factor on financial performance**

The current study used Leverage as its second variable whose objective was to examine the effect of leverage as a financial distress factor on financial performance of commercial banks in Kenya. Debt to equity ratio and debt to asset ratios were used as measures of leverage. The current study predicted a positive significant relationship between leverage as a distressing factor on financial performance of commercial banks in Kenya. Fixed effects regression model was used to assess if the relationship was statistically significant and as a result the following null hypothesis was tested:

**H<sub>02</sub>:** Leverage has no significant influence on financial performance of commercial banks in Kenya

Considering the fitted FGLS model, the p-value of the t-statistic for the estimated coefficient of leverage is 0.035 which is less than 0.05. The null hypothesis was rejected at 0.05 significance level and a conclusion drawn that leverage as a financial distress factor has a positive significant distressing influence on performance of commercial

banks in Kenya. That financial performance of commercial banks can financially be distressed by leverage as a financial distress factor by 0.284 units. However, the current study indicates that as leverage increases, financial distress increases and financial performance increases.

This result concurs with (Okello, 2015; Zeitun & Saleh, 2015) who linked leverage as a risk factor on performance of listed companies in NSE. Their study concluded that leverage was the strongest determinant of the financial risk of the listed companies and could easily influence financial distress in listed companies in Kenya since more debt financing implies higher possibilities of default hence higher risk. Tan (2012) found out that firms with low financial leverage perform better than firms with high financial leverage. The current study also was in agreement with Kosikoh (2014) who found out that there exists a positive relationship between leverage and financial distress and financial performance on insurance companies in Kenya. However, the study only emphasized on the relationship between leverage and financial distress for insurance companies in Kenya.

The current study also concurs with Demirhan (2014) whose findings indicated that leverage as a financial distress factor has a positive relationship with financial performance. Demirhan (2014) found that high leverage was inversely correlated with firm financial performance during financial crisis period and managing a reasonable amount of debt in the capital structure should be another consideration for finance managers. In addition, the results of the current study was in agreement with the pecking order theory by Stewart and Nicholas (1984). The theory asserts that use of leverage is less costly than any other source of external finance and as a result, leverage as a financial distress factor will positively affect financial performance by 0.284. This means that if leverage increases then financial distress increases, resulting to a decrease of 0.284 units on financial performance and this further can be interpreted to mean that the difference of 0.716 will be the effect of financial distress.

However Nyamboga, Ongesa, Omwario, Nyamweya, Muriuki and Murimi (2014) based on non-financial firms listed in NSE, disagreed that leverage does not have significant influence on corporate financial distress and financial performance. The findings also contradicted those of Hussain and Fayyaz (2015); Innocent and Nnagbogu (2014) whose studies that were based on commercial banks in Pakistan and Nigeria respectively found that financial leverage has a significant negative relationship with firm's performance as measured by ROA. The current study also disagreed with Chinedu and Nnagbogu (2014) who in their study of the effect of financial leverage on financial performance of companies in Nigeria found out that financial leverage has no significant effect on financial performance of the sampled companies in Nigeria.

#### **4.7.3 Operating efficiency as a financial distress factor on financial performance**

The current study used operating efficiency as its third variable whose objective was to establish the effect of operational efficiency as a financial distress factor on financial performance of commercial banks in Kenya. Operating expense ratios and net worth turnover were used as measures of operational efficiency. The current study predicted a positive significant relationship between operational efficiency as a distressing factor on financial performance of commercial banks in Kenya. Fixed effects regression model was used to assess if the relationship was statistically significant and as a result the following null hypothesis was tested:

**H<sub>03</sub>:** Operating efficiency has no significant influence on financial performance of commercial banks in Kenya.

It was found according to the fitted FGLS model, the p-value of the t-statistic for the estimated coefficient of operating efficiency is 0.000 which is less than 0.05. The null hypothesis was rejected at 5% significance level and a conclusion drawn that operating efficiency has a positive significant influence on performance of commercial banks in Kenya of 1.448 making operating efficiency to be the biggest financial distress factor influencing financial performance. This means that high operational efficiency

influences financial performance of commercial banks positively and an increase of operational efficiency as a financial distress factor increases financial performance of commercial banks by 1.448 units.

The findings of the current study agree with findings of Chortareas, Girardone and Ventouri (2012) based on a sample of EU commercial banks which found that high operating efficiency reduces the effect of financial distress. Klingenberg, Timberlake, Geurts and Brown (2013) based on manufacturing firms in developed countries, found out that there was a positive relationship of operational efficiency and financial performance but there was no link of operational efficiency and financial distress as a factor of financial performance of Kenyan banking industry. Ongore and Kusa (2013) also found out that efficiency is a key internal factor that determines bank profitability but negatively associated with profitability.

#### **4.7.4 Asset quality as a financial distress factor on financial performance**

According to Adeolu (2014), asset quality as an aspect of bank management entails the evaluation of a firm's asset in order to facilitate the measurement of the level and size of credit risk associated with its operation to ensure profitability. Vigneswara (2015) asserted that to achieve banking stability, banks should ensure quality assets are maintained since quality assets result in high profitability and further, Vigneswara (2015) noted that failure to ensure banking stability can cause financial fragility and may lead crisis in the event of market illiquidity and the contagion effect of banks.

The ratio of nonperforming loans and loan loss provision were used as proxies of asset quality. The asset quality is therefore important in an organization since it predicts the amount of non-performing assets (Kimanzi, 2015; Wang'ombe et al., 2016). Kimanzi (2015) argued that a higher ratio depicts poor asset quality as it indicates that commercial banks in Kenya are having a higher proportion of its assets (loans) as nonperforming or loss provisions. The following null hypothesis was tested:

**H<sub>04</sub>:** Asset quality has no significant influence on financial performance of commercial banks in Kenya.

The fitted FGLS model showed that the p-value of the t-statistic for the estimated coefficient of asset quality is 0.002 while the p-value was 0.015, which is less than 0.05. The null hypothesis was rejected at 0.05 level of significance and a conclusion drawn that asset quality as a financial distress factor has appositive influence of 0.002 on financial performance of commercial banks in Kenya, this is expected since asset quality as a financial distress factor comprises of loans and advances issued by commercial banks in Kenya. An increase in loans and advances will imply high interest income thus better performance, however, this performance will be affected by default of loans and advances leading to an effect on financial performance thus as a result, asset quality will not have the much expected effect on financial performance as compared to other financial distress factors.

The current study agrees with Barus, Muturi and Kibati (2017) and Ogilo (2012) who concluded that asset quality influenced the financial performance of savings and credit societies in Kenya. According to Ogilo (2012), a unit increase in asset quality will lead to a unit decrease in financial performance by 16.913 and by a factor of 0.079. Ogilo (2012) carried out a study using asset quality as an indicator of credit risk on financial performance. Wang'ombe, Muturi, and Ngugi (2016) and Kimanzi (2015)'s studies also found out that asset quality have a weak relationship with financial intermediation of SACCOs and financial performance of commercial banks respectively. Wang'ombe, Muturi, and Ngugi (2016) also found that a decline in asset quality is associated with decline in efficiency of deposit taking SACCOs. While Kimanzi (2015) found out a negative relationship between asset quality and financial performance of commercial banks in Kenya.

This result contradicted with Umoru and Osemwegie (2016) whose results on the effect of asset quality on financial performance of Nigerian banks found a significant adverse effect and noted that banks had been confronted with a crisis of non-performing loans.

The findings of the current study also differed with that of Olweny and Mamba (2011) whose findings indicated that there is a negative and strong relationship between poor asset quality and profitability on commercial banks. However Olweny and Mamba (2011) agrees with the current study that; failing to monitor asset quality in terms of credit loans gives rise to low profit.

The findings of Akhtar and Hayati (2016) revealed that asset quality of Islamic banking system does not significantly impact financial distress and later insolvency, whereas, interaction with capital asset ratio significantly impact asset quality. Similarly, the findings were in contrast with findings by Nasieku (2014) in a study on commercial banks in Kenya and Gebreslassie (2015) whose study found that nonperforming loan ratio has statistically significant negative influence on the financial health of the banks.

#### **4.7.5 Capital adequacy as a financial distress factor on financial performance**

According to Olalekan and Adeyinka (2013) capital adequacy is used to measure financial strength and stability of a company. Olalekan and Adeyinka (2013) further argued that capital will be used to absorb an unanticipated abnormal loss in cases where such losses cannot be absorbed by earnings in financial institutions. The current study used capital adequacy as its fifth variable, whose objective was to establish the effect of capital adequacy as a financial distress factor on financial performance of commercial banks in Kenya. Capital adequacy ratio and leverage ratios were used as measures of capital adequacy and further used to identify the ideal latent variable. The current study predicted a negative significant relationship between capital adequacies as a distressing factor on financial performance of commercial banks in Kenya. Fixed effects regression model was used to assess if the relationship was statistically significant and as a result the following null hypothesis was tested:

**H<sub>05</sub>:** Capital adequacy has no significant influence on financial performance of commercial banks in Kenya.

The FGLS model showed the p-value of 0.034 of the t-statistic for the estimated coefficient of capital adequacy and the p-value is less than 0.05. As a result, the null hypothesis had to be rejected at 0.05 level of significance and a conclusion drawn that capital adequacy as a financial distress factor has a negative significant influence of -0.078 on performance of commercial banks in Kenya. This means that an increase of capital adequacy financially distresses profitability of commercial banks resulting in a decline in profitability of commercial banks in Kenya if all other financial distress factors held constant. However, according to Nasieku (2014) it is expected that a bank with low capital ratio to be less liquid, this is not the case in the current study since there was a negative relationship of capital adequacy but a positive relationship of liquidity on financial performance.

The current study concurred with Adeyemi (2012) and Ikpefan (2013). Ikpefan (2013) whose study found out that capital adequacy of banks have a negative impact on ROA of Nigeria commercial banks. Adeyemi (2012) concluded that capital inadequacy was the main cause of banks' poor performance and failure in Nigeria and therefore a factor of financial performance. The current study also agrees with Nasieku (2014) and Ogege, Williams and Emerah (2012) who found out that there is a negative relationship between inflation and banks capital base as inflation erodes banks' capital in most developing economies and capital adequacy will influence financial distress negatively.

In addition, the current study disagreed with Mathuva (2012) who concluded that bank profitability is positively related to core capital ratio. Mathuva (2012) found out that an increase in capital will raise the expected earnings by reducing the expected costs of financial distress. The findings were inconsistent with MM (1963) capital structure irrelevancy theory that capital structure does not affect the performance of a firm.

#### **4.8 Optimal model**

Using the generalized least squares, all the variables under study were significant at 5% and the optimum model for the study is replicated below and full results for optimal

model are presented in Table 4.48 with variables arranged in ascending order of significance;

$$FP_{it} = a + 1.448OPE_{it} + 0.301LIQ_{it} + 0.284LEV_{it} + 0.02ASQ_{it} - 0.078CAD_{it} + e_{it}$$

**Table 4. 47: Coefficients table; generalised least squares model**

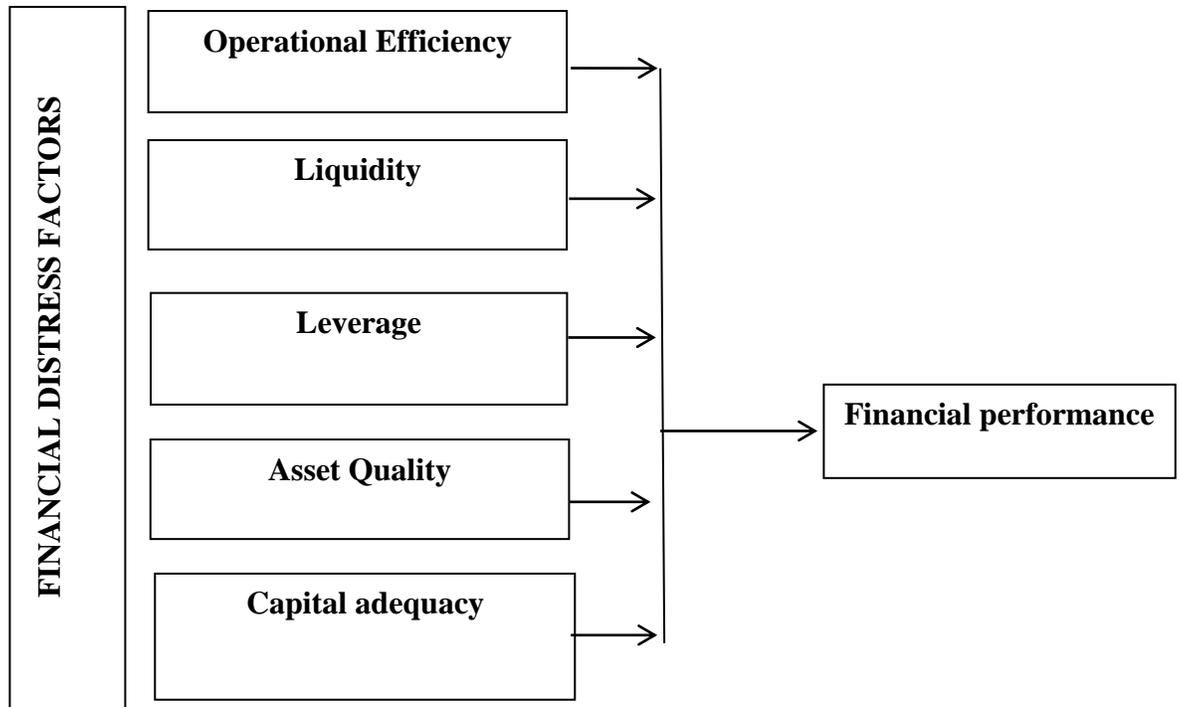
	<b>Coef.</b>	<b>Std. Err.</b>	<b>Z</b>	<b>P&gt;z</b>
Operating efficiency	1.448	0.042	34.540	0.000
Liquidity	0.301	0.065	4.610	0.000
Leverage	0.284	0.129	2.205	0.035
Asset quality	0.002	0.001	2.550	0.015
capital adequacy	-0.078	0.035	-2.217	0.034
_cons	-0.124	0.033	-3.780	0.000

The following is the revised conceptual framework:

**Figure 4. 14 Revised conceptual framework**

**Independent Variables**  
**Variables**

**Dependent**



## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents the summary of major findings of the study, relevant discussions, conclusions and the necessary recommendations. The summary is done in line with the objectives of the study based on the output of statistical analyses used to test the research hypotheses of the study. The chapter also suggests areas for further research.

#### **5.2 Summary of findings**

##### **5.2.1 Effect of liquidity on financial performance of commercial banks in Kenya**

The first objective of the study was to establish whether liquidity as a distress factor affects the financial performance of the commercial banks in Kenya. Liquidity was found to have a financial distress influence on performance of commercial banks in Kenya. According to the findings, liquidity which was measured in terms of quick assets to total. The overall measure of liquidity was found to have a positive distressing effect on financial performance of commercial banks in Kenya. The final combined feasible generalized least squares model results showed a significant positive coefficient of liquidity in the model implying significance influence of liquidity as a financial distress factor on performance of commercial banks.

##### **5.2.2 Effect of leverage on financial performance of commercial banks in Kenya**

The second objective of the study was set to establish whether leverage as a financial distress factor affects the financial performance of the commercial banks in Kenya. Leverage was found to have a distressing effect on performance of commercial banks in Kenya. According to the findings, leverage which was measured in terms of debt equity ratio and debt asset ratio was found to have a positive influence on performance of

commercial banks in Kenya. The final combined generalized least squares model results showed a significant positive coefficient of leverage in the model that implied significance influence of leverage on financial performance of commercial banks. The findings revealed that leverage has a significant positive effect on the financial performance of commercial banks in Kenya both in the short run and in the long run. As a result, low leverage decreases profitability of commercial banks.

### **5.2.3 Effect of operational efficiency on financial performance of commercial banks in Kenya**

The third objective of the study was set to establish whether operational efficiency as a financial distress factor affects the financial performance of the commercial banks in Kenya. Operating efficiency was found to have an influence on performance of commercial banks in Kenya. According to the findings, operating efficiency which was measured in terms of operating expense ratio and net worth turnover ratio was found to have a positive distressing effect and influence on financial performance of commercial banks in Kenya. The final combined generalised least squares model results showed a significant positive coefficient of operating efficiency in the model, implying that operational efficiency is the most significant financial distress factor influencing financial performance of commercial banks Kenya.

### **5.2.4 Effect of asset quality on financial performance of commercial banks in Kenya**

The fourth objective of the study was to establish whether asset quality as a distress factor affects the financial performance of the commercial banks in Kenya. Asset quality was found to have an influence on financial performance of commercial banks in Kenya. According to the findings, asset quality which was measured in terms of non-performing assets to total loans ratio and loss provisions to operating income ratio was found to have a positive influence on financial performance of commercial banks in Kenya. The final combined generalised least squares model results showed a significant positive

coefficient of asset quality in the model implying significant influence of asset quality on performance of commercial banks. The result gives a strong indication that an increase in asset quality as a financial distress factor, by reducing the ratio of non-performing loans to total loan would reduce the financial distress and as a result give rise to better financial performance of commercial banks in Kenya.

#### **5.2.5 Effect of Capital Adequacy on financial performance of commercial banks in Kenya**

The fifth objective of the study was to establish whether capital adequacy as a distress factor affects the financial performance of the commercial banks in Kenya. Capital adequacy was found to have a distressing effect on financial performance of commercial banks in Kenya. According to the findings, capital adequacy which was measured in terms of capital adequacy ratio and leverage ratio was found to have a negative influence on performance of commercial banks in Kenya. The final combined generalized least squares model results showed a significant negative coefficient of capital adequacy in the model implies significance negative influence of capital adequacy on performance of commercial banks. This implies that capital inadequacy has a distressing effect to financial performance of commercial banks in Kenya.

### **5.3 Conclusions**

The study sought to determine the influence of liquidity on financial performance of commercial banks in Kenya. From the results of the analysis conducted by the study and hypothesis tested, it was concluded that liquidity as a distress factor has a positive significant influence on the financial performance of commercial banks in Kenya. This also means that commercial banks liquidity has a distressing effect to financial performance of commercial banks in Kenya.

The study also sought to determine the distressing effect of leverage as a financial distress factor on financial performance of commercial banks in Kenya. The study

conducted analyses and results used to test the hypothesis from which a conclusion was drawn that leverage has a positive significant distressing influence on the financial performance of commercial banks in Kenya. Thirdly, it was also concluded that the increase of debt financing during crisis period implies that the debt financing makes firms more susceptible to refinancing risks and borrowing at higher costs causing financial distress on financial performance of commercial banks in Kenya.

Fourthly, it was also concluded that operating efficiency has the highest significant positive financial distressing effect on the financial performance of commercial banks in Kenya. The findings of the analysis indicated that asset quality ranked as one of those financial distress factors with a positive distressing effect on financial performance of commercial banks in Kenya. Conclusion was further drawn that capital adequacy as a financial distress factor has a negative significant influence on the financial performance of commercial banks in Kenya. These findings further indicated that as the relationship of capital adequacy is negative, the relationship of liquidity and performance is positive; this indicates that commercial banks liquidate their capital balances to ensure they remain liquid for purposes of avoiding financial distress and increasing financial performance of commercial banks in Kenya.

#### **5.4 Recommendations**

The banking sector serves as one of the sectors expected to facilitate the realization of vision 2030. It ensures that there is provision of efficient financial services and investment opportunities to create vibrant and global competitive financial services in Kenya that will create jobs and also promote high levels of savings to finance Kenya's investment needs. Globally competitive financial services by the banking sector will be achieved only if financial distress will be well managed by banks. CBK as a regulator through commercial banks should ensure that financial distress factors that affect financial performance are identified and proper management strategies put in place to counter the effect of financial distress on financial performance. Commercial banks also

play a critical role in Kenya's financial sector in terms of loans and advances, savings and dealing in government securities.

The current study findings becomes a source of great assistance to bank managers whose main mandate is to improve their financial performance and ensure proper additional policies are in place for ensuring sound operations of various commercial banks in Kenya. Kenyan commercial banks therefore should ensure additional necessary sound fiscal and monetary policies and financial regulations that will encourage and stimulate not only economic growth, financial performance but also economic development. Additional policies and financial regulations on the other hand will help in managing financial distress to manageable levels should be key since commercial banks perform well in economically stable and sound economic environment free from financial distress.

CBK should ensure proper additional measures are put in place to counter the effect of financial distress factors that may affect financial performance of commercial banks in Kenya. CBK as a regulator of commercial banks should re-adjust the regulation framework regularly. CBK should be aware that financial distress management may in turn work against commercial banks in Kenya due to competition from SACCOS specifically deposit taking SACCOS. Some of the remedies they could pursue include selling major assets, merging with other banks, reducing capital spending among others. However, the business of dealing with government securities and providing brokerage services among other activities gives commercial banks in Kenya a rare advantage over other financial institution and therefore further diversification into these other activities should be encouraged to ensure continued proper levels of liquidity.

In addition, CBK should ensure appropriate regulatory mechanisms meant to ensure proper prevention and control mechanisms have been employed by all commercial banks in ensuring the effect of financial distress are put to manageable levels. This will as a result restore confidence not only to the investors and the government but also to potential investors in the banking sector including corporate customers and the public at

large. Based on the findings, the study also recommends that effect of financial distress on financial performance of commercial banks and their mitigation should be given priority.

Several other important recommendations are mainly made in a managerial perspective; this is because financial distress factors are internal factors that require management's input. Recommendations provide guidelines to managers of commercial banks on how banks ought to configure their financial distress mitigating strategies at managerial levels, so as to mitigate instances of negative distressing effects from financial distress factors on financial performance of commercial banks.

First, the existence of a significant positive relationship of liquidity and financial performance of commercial banks proves the fact that, liquidity has a strong distressing effect on financial performance of commercial banks in Kenya. This means that there should be a continued monitoring of the cash balances with central bank and other liquid assets. This monitoring will ensure that proper levels of liquidity are maintained since the higher the liquidity the better the operations, as a result, there will be high performance in operations of commercial banks. Commercial banks in Kenya must strive to maintain proper levels of liquidity as lack of liquidity may bring about failure of meeting customer needs especially the depositors who form the largest chunk of a bank's total liabilities.

From the current study, liquidity was found to have a positive relationship with financial performance. However, there was only 30% influence of liquidity on performance and therefore liquidity was seen to be maintained at proper levels; since the demand for cash may be more than anticipated, banks should ensure proper measures are put in place when borrowing from each other to make up for this shortfall especially when depositors withdraw their cash in droves. It is worth emphasizing that no bank, however big, can withstand a sustained panic withdrawal from depositors, resulting to insufficient liquidity as a signal of distress to commercial banks.

Secondly, the study found that leverage is a financial distress factor and hampers financial performance of commercial banks in Kenya. Companies' management should ensure that financial decisions made by them are in consonance with shareholders' wealth maximization objectives that encompasses the profit maximization objective of the firm. The amount of debt finance in the financial mix of the firm should be at the optimal level to ensure adequate utilization of the firms' assets and reduce the effect of financial distress on financial performance. Therefore, managers should employ financial leverage in a way that enhances value for their company's owners that will lead to an increase in returns to equity holders of commercial banks, other than being a financial distress factor affecting the financial performance negatively.

Thirdly, there is a direct relationship between operational efficiency and financial performance. The results indicated the highest effect of operational efficiency as a financial distress factor on financial performance, this meant that high operational efficiency influenced high profitability of commercial banks; this operational efficiency includes proper management of routine expenditure, proper levels of staff costs and other expenses that are incurred in operations of commercial banks.

A policy on efficient management should be put in place for bank operational expenses. This should be done by finding ways to obtain the optimal utilization of resources during production of banking products and services. In other word, policy instruments should be able to reduce operational expenses through cost decisions. From a regulatory perspective, commercial bank performance should be based on individual commercial banks' efficiency. Policy on credit risk management should be enhanced in order to improve on asset quality, thus minimizing non-bank performing assets. Consequently, both bank management and the regulatory authority should exercise strong monitoring and control of assets.

Fourthly, the study found that asset quality as a financial distress factor has a distressing effect on the financial performance of commercial banks in Kenya. It is therefore recommended that the management should continue to focus on how to maximize

marketing strategies of their loan product and may be increase the number of loan products in order to continue earning sufficient interest incomes.

Continued expansion of the loan book is therefore encouraged to facilitate this, there should be continued mobilization of deposits not only from their customers but from CBK as a last lending resort in order to meet the credit needs. The regulator and other policy makers should draft guidelines that encourage commercial banks to have sufficient deposits to necessitate interest and non-interest incomes. In addition, the current study found that there was a significant relationship of asset quality as a financial distress factor on financial performance of commercial banks in Kenya. A bank's major assets are the loans it gives to its customers, such that a bank becomes prudent while lending by ensuring that the borrower has capacity to repay.

With failure to repay loans and advances, individual commercial banks will experience financial distress resulting in a decline in their performance of giving loans and advances. When loans go bad, both the profit or loss and statement of financial position will be affected since the bank must provide for the losses. Therefore, commercial banks must adhere to the prudential guidelines on asset quality to keep watch on the effect of asset quality as a financial distress factor on financial performance of commercial banks in Kenya.

Lastly, the study recommends that managers of commercial banks should maintain proper proportions of capital in their capital structure. This is because according to the current study, capital adequacy as a financial distress factor is negatively associated with financial performance. In addition, the following measures for effective financial performance of commercial banks in Kenya are important, (i) CBK should allow each commercial bank to set its own benchmark that it should not necessarily be the same as the prudential guidelines from CBK, depending on the desired safety level and size of the commercial bank. Nothing stops the strong banks from setting their capital base beyond the minimum capital base of specified by the CBK. (ii) An initiative approach to forecasting capital position into the future should be applied and numerous scenarios

testing should be carried out. This will help banks to understand the underlining processes and dynamism of the industry as well as reliable predictions as regards to its capital needs of enhancing financial performance. (iii) Individual commercial banks should also be able to establish linkage between financial distress and capital adequacy specifically for their bank to engage in value creating activities to enhance financial performance of commercial banks in Kenya.

### **5.5 Suggestions for further research**

This study analyzed the effect of financial distress factors on the financial performance of commercial banks in Kenya. However, not all distress factors were studied. It is therefore recommended that future studies be carried out on other factors such as Interest rate, inflation, financial innovation and other macro-economic factors and may be use a different model as the case may be. Further study can also be undertaken on the effect of financial performance on financial distress of commercial banks in Kenya.

The current study captured the only available secondary data for the period 2005 to 2015 that are in CBK records and a further study is recommended to include longer period for the panel data. This would help in capturing the potential effects across the economic cycles. This study focused on identifying the key financial distress factors and their distressing effect to financial performance, a study on how financial distress is managed in banks and other institutions will be beneficial. The current study recommends that a similar study be carried out for other deposit taking financial institutions such as microfinance institutions, investment banks, mortgage firms and SACCOs since the financial institutions faces many challenges of financial distress that may result to failure.

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## APPENDICES

### Appendix I: Consent Letter

FRED SPORTA

Jomo Kenyatta University of Agriculture and Technology,

School of Human resource Development,

P.O. BOX 30-00100

Nairobi.

TO WHOM IT MAY CONCERN.

#### **RE: CONSENT TO COLLECT DATA**

I am a PH.D student at Jomo Kenyatta University of Agriculture and Technology undertaking a doctorate degree programme in business administration titled :

#### **“Effect of Financial Distress Factors on Financial performance for Commercial banks in Kenya”**

Your bank has been selected to assist in providing the required information as the same will be considered important in this study. I am therefore requesting you to kindly assist me with the necessary documented information. Please note that any information given will be treated with utmost confidentiality and will only be used for the purpose of the study.

Thank you in advance for your cooperation.

Yours faithfully,

FRED SPORTA

Jomo Kenyatta University of Agriculture and Technology

## Appendix II: Data Collection Guide

### COMMERCIAL BANKS IN KENYA

<b>BANK CLASSIFICATION</b>	<b>DESCRIPTION</b>	<b>COMMERCIAL BANKS</b>
<b>Tier I</b>	Comprises of banks with an asset base of more than Kes.40 billion.	<ol style="list-style-type: none"> <li>1. Standard Chartered Bank</li> <li>2. Commercial Bank of Africa</li> <li>3. Barclays Bank of Kenya</li> <li>4. Equity Bank</li> <li>5. Kenya Commercial Bank</li> <li>6. Co-operative Bank of Kenya</li> <li>7. Diamond Trust Bank</li> </ol>
<b>Tier II</b>	Comprises of banks with an asset base of less than Kes.40 billion but more than Kes. 10 billion	<ol style="list-style-type: none"> <li>1. CFC stanbic</li> <li>2. NIC Bank</li> <li>3. Chase Bank</li> <li>4. I &amp; M Bank</li> <li>5. Eco Bank</li> <li>6. Bank of Africa</li> <li>7. Family Bank</li> <li>8. Housing Finance</li> <li>9. Prime Bank</li> <li>10. Bank of Baroda</li> <li>11. Citi Bank</li> <li>12. National Bank of Kenya</li> <li>13. Bank of India</li> <li>14. Imperial Bank</li> </ol>
<b>Tier III</b>	Comprises of banks with	<ol style="list-style-type: none"> <li>1. Guaranty Trust Bank Ltd</li> </ol>

an Asset base of less than  
Kes. 10 billion.

2. Victoria Commercial Bank
  3. Credit Bank
  4. Habib Bank (K) Ltd
  5. Habib A.G. Zurich
  6. Oriental Commercial Bank
  7. Sidian Bank
  8. Development Bank of Kenya
  9. Middle East Bank
  10. Equatorial Commercial Bank
  11. Trans-National Bank
  12. Fidelity Commercial Bank
  13. Paramount Universal Bank
  14. Giro Commercial Bank
  15. Consolidated Bank
  16. Guardian Bank
  17. Gulf African Bank
  18. First Community Bank
  19. Jamii Bora Bank
  20. UBA Bank Ltd
  21. African Bank of Kenya
  22. Charterhouse Bank Ltd
  23. Dubai Bank
-

**Appendix III: Data Collection Sheet/ Questionnaire**

Name of the Financial Institution.....

Date of Licensed /Registered.....

Physical address.....

**Part I: Liquidity**

**(i) Quick Assets to Total Liabilities Ratio**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Cash in Hand(CH)											
Cash at CBK (CB)											
Receivables (R)											
Marketable Securities(MS)											
CH+CB+R+MS=CCRM											
Total Liabilities											
Quick Assets to Total liabilities ratio=CCRM/Total Liabilities											

**(ii) Quick Assets to Total Deposits Ratio**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Cash in Hand(CH)											
Cash at CBK (CB)											
Receivables (R)											
Marketable Securities(MS)											
CH+CB+R+MS=CCRM											
Total Customer Deposits											
Quick Assets to Total Deposits ratio=CCRM/Total Customer Deposits											

**Part II: Leverage**

**(i) Debt Equity Ratio**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Debt/Total liabilities											
Equity											
Debt-Equity ratio=Debt/Equity											

**(ii) Debt to Assets Ratio**

	200 5	200 6	200 7	200 8	200 9	201 0	201 1	201 2	201 3	201 4	201 5
Total Liabilities											
Total Assets											
Debt to Assets Ratio=Debt(Total liabilities/Total Assets											

**Part III: Operational Efficiency**

**(i) Operational Expense Ratio(OER)**

	200 5	200 6	200 7	200 8	200 9	201 0	201 1	201 2	201 3	201 4	201 5
Operating Expenses(OE)											
Gross Interest Income											
OER= OE/Gross Interest Income											

**(ii) Net Worth Turnover Ratio (NWTR)**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Revenue(Gross interest Income)											
Total Assets(TA)											
Total Liabilities(TL)											
Net Worth=TA-TL											
NWTR=Gross Interest Income/Net Worth											

**Part IV: Asset Quality**

**(i) Total Non Performing Loans (NPL) to Total Loans Ratio**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total NPL											
Total Loans											
DPS=Total NPL/Total Loans											

**(ii) Non Performing Loan (NPL) to Operating Income Ratio**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Loan loss provision											
Operating Interest income.											
Loan loss provision to income ratio=Loan loss provision/Operating income.											

**Part V: Capital Adequacy**

**(i) Capital Adequacy Ratio (CAR)**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Core Capital(Tier I and Tier II)											
Total Risk Weighted Assets(TRWA)											
CAR=Core Capital/TRWA											

**(ii) Leverage Ratio (LEV)**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Capital											
Total Assets											
LEV=Total Capital/Total Assets											

**Part VI: Financial Performance**

**(i) Return on Assets**

<b>Profitability measurement</b>	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Net income											
Total Asset											
Return on Assets (ROA)=Net Income after tax /Total Asset											

**(ii) Return on Equity**

<b>Profitability measurement</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Net income											
Total Equity											
Return on Equity(ROE)=Net Income after tax /Total Equity											