THE EFFECT OF CREDIT RISK ON THE FINANCIAL DISTRESS OF LISTED COMMERCIAL BANKS ON THE NAIROBI SECURITIES EXCHANGE

BY

ROSE WANGUI KARIMI

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DECLARATION

I hereby declare that this proposal is entirely my own composition. It has not been presented in any University or college for examination purposes.

Signature--   Date-----------------------------

ROSE WANGUI KARIMI   **D63/71432/2014**

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

Signature--   Date-----------------------------

MR. HERICK ONDIGO

LECTURER,

DEPARTMENT OF FINANCE AND ACCOUNTING

SCHOOL OF BUSINESS

UNIVERSITY OF NAIROBI

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DEDICATION

This work is dedicated to my father Joseph Karimi, mother Virginia Wamuyu, husband Samuel Ngigi, daughter Tamasha Njambi and son Tyren Mwangi because of their moral support, encouragement and understanding. Thanks to the Almighty God for his blessings without which it would have been impossible to accomplish this project.

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LIST OF ABBREVIATIONS

BCBS-   Basel Committee on Banking Supervision

CAMEL-   Capital adequacy, Asset quality, Management Efficiency and Liquidity

CAPM-   Capital Asset Pricing Model

CBK-   Central Bank of Kenya

IMF-   International Monetary Fund

MDA-   Multivariate Discriminant Analysis

NSE-   Nairobi Securities Exchange

SME-   Small Medium Enterprises

SPSS-   Statistical Package for the Social Sciences

ABSTRACT

The objective of this study was to establish the effects of credit risk on financial distress of listed commercial banks at the Nairobi Securities Exchange. The research conducted was a study for all listed commercial banks at the NSE by December 2014. Data was obtained from financial statements of the listed commercial banks as collected for the years 2010-2014. Descriptive research design was used where data was analyzed by the use of SPSS. This was achieved by looking at the effect of credit risk, bank size, and operating efficiency on the computed Z-Score value of listed commercial banks in Kenya. The study concludes that while bank size and operating costs efficiency have a significant relationship with the financial distress, there was no significant relationship between financial distress and credit risk of listed commercial banks in Kenya. The recommendation from the findings of the study suggests that all listed commercial banks in Kenya should implement mechanisms to efficiently increase their asset base, while continuously maintain sustainable operating expenses. The study suggests that more independent variables to be added in the regression model to help improve the results of the study.

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

Credit risk is considered the oldest form of risk in the financial markets. In the financial sector the risk is defined as the uncertainty of a return and potential financial loss as a result. According to Valsamakis, Vivian & Du Toit, (2005), credit risk is the risk that a financial contract will not be concluded according to the agreement. It is the risk that the counterparty to an asset will default. In other words it is the risk to earnings or capital due to borrowers' late and nonpayment of loan obligations.

Central Bank of Kenya (2013) identify the most critical risks in financial institutions as strategic risk, credit risk, liquidity risk, market risk, operational risk, information and communication technology risk, reputational risk, compliance risk and country and transfer risk. Credit risk encompasses both the loss of income resulting from the sector inability to collect anticipated interest earnings as well as the loss of principal resulting from loan defaults (Mwithi, 2012). Credit risk arises because the possibility that the expected cash flows from advances and securities held, might not be paid in full. An effective system that ensures repayment of loans by borrowers is critical in reducing the level of loan losses, thus the long-term success of any banking organization (Korir, 2012). Screening borrowers is an activity that has widely been recommended by, among others (Derban, Binner, & Mulllineux, 2005).

It is important to obtain a comprehensive view of the key factors that may lead banks to financial distress, including the adequacy of business models in relation to risk appetite,

and the question of how this adequacy is handled inside and outside banks through governance processes. Against this backdrop, appropriate benchmarks, sensitivity analyses as well as stress tests ought to be considered in order to assess the real capability of banks to face stressed market conditions and absorb consecutive shocks on the basis of their business strategy and degree of risk tolerance. On this study we shall look at the extent to which the Banks' financial distress situation is affected by the management of the credit risks.

1.1.1 Credit Risk

Credit risk is defined as the potential that a bank borrower or counter party will fail to meet their obligations in accordance with the agreed terms (Basel Committee, 2000). Credit risk can be divided into credit default risk and concentration risk and country risk. Credit default risk is the risk of loss arising from a debtor not able to pay his obligations in full as at when they fall due. Concentration risk is the risk associated with any single or group exposures with potential of having large losses that would threaten a bank's core operations. In a case where commercial banks have no indicators on the proportion of the borrowers that will default then this would highly expose the banks to a huge risk of uncertainty of profits and eventually being incapable to meet their financial obligations. Hence it is critical that commercial banks be prepared to bear a degree of credit risk in situations where certain borrowers fail to repay their loans as per the terms of agreement.

Banks can be rendered to be under receivership and later lead to bankruptcy in circumstances where the loan default cases rise in an alarming rate. This is more so where securitization was inadequate. Managing credit risk a structured approach to managing

uncertainties through risk assessment, developing strategies to manage it, and mitigation of risk using managerial resources (Central Bank of Kenya, 2013).A structured approach to managing uncertainties can be done through risk assessment, developing strategies to manage it, and mitigation of risk using managerial resources (Korir, 2012). Risk management involves: identifying the source of the risk, which is to identify the leading variables causing the risk; and devising methods to quantify the risk using mathematical models, in order to understand the risk profile of the instrument (Korir, 2012).

Barrickman (2000), in his study on successful commercial lending from the ground up found that any successful business must meet its customer needs and make a profit. Likewise, successful financial institutions must meet the desperate needs of depositors and borrowers. Depositors look for high rates, short terms and no risk, while borrowers seek low rates and long terms. He also found that financial institutions are therefore, in the risk intermediation business. To be successful, financial institutions, must properly underwrite risk, manage and monitor the risk assumed (Barrickman, 2000). The role of risk management is to assure that an institution does not have any need to engage in a business that unnecessarily imposes risk upon it.

1.1.2 Financial Distress

Financial distress is a condition where a company has difficulty paying off its financial obligations to its creditors. The term financial distress is used in a negative connotation to describe the financial situation of a company confronted with a temporary lack of liquidity and with the difficulties that ensue in fulfilling financial obligations on schedule and to the full extent (Outecheva, 2007).

Andrade and Kaplan (1998) identified two forms of financial distress: default on a debt payment, and an attempt to restructure the debt in order to prevent the default situation. Financial distress occurs when a company does not have capacity to fulfill its liabilities to the third parties (Andrade and Kaplan, 1998). Increasing non-performing loan of commercial banks and delisted of public companies in Indonesia is a typical phenomenon of corporate financial distress. Gestel, Baesens & Willekens, (2006) characterized financial distress and failure as the result of chronic losses which cause a disproportionate increase in liabilities accompanied by shrinkage in the asset value.

Turetsky and MacEwen (2001) define financial distress as a series of subsequent stages characterized by a special set of adverse financial events. Each stage of financial distress has a distress point and continues until the next distress point is reached. Technically, each stage of financial distress is defined as an interval between two distress points. The onset of financial distress begins with a volatile decrease from positive to negative cash flow. The following dividend reduction signalizes the change to the next stage leading to default. Technical default on debt precedes troubled debt restructuring which usually tends to reduce the risk of potential bankruptcy. Thus, for the first time, researchers succeeded in describing financial distress as a continuous process with a clear structure and a categorization of the distress events.

Kariuki (2013) noted that on the expansion of the local banks and non-banking financial institutions temporarily slowed down in Kenya due to a series of bank failures in the mid-1980s when most of the banks were being started. The growth resumed later in the decade and by the 1990s the banks had captured a quarter of the commercial banks market. Financial distress afflicted numerous local banks in Kenya many of which have

been closed down or have been restructured. Nine local banks were closed down or taken over between 1984 and 1996 in Kenya.

1.1.3 Effect of Credit Risk on Financial Distress

To measure the adequacy of general provision and specific loan loss provisions and the size of the general and specific loan loss reserve in relationship to the total exposures of the bank. This allowance for loan losses created a cushion of credit losses in the banks' expected loan losses. Arbel, Kolodny, & Lakonishof, (1977) in his study noted that that the effect of credit risk has been a major concern for investors as credit risk may lead to bankruptcy. The ability to avoid or reduce expected bankruptcy costs and thereby increase performance has been suggested as a reason for mergers and consolidations. Kargi (2011) noted that banks witnessed rising non-performing credit portfolios and these significantly contributed to financial distress in the banking sector. Banks collect deposits and lends to customers but when customers fail to meet their obligations problems such as non-performing loans arise. Therefore credit risk has a significant impact on the profitability.

While commercial banks have faced difficulties over the years for a multitude of reasons, the major cause of serious financial problems continues to be directly related to credit standards for borrowers, poor portfolio risk management or lack of attention to changes in the economic circumstances and competitive climate (Central Bank of Kenya, 2000). The credit decision should be based on a thorough evaluation of the risk conditions of the lending and the characteristics of the borrower.

Numerous approaches have been developed for incorporating risk into decision-making process by lending organizations. They range from relatively simple methods, such as the use of subjective or informal approaches, to fairly complex ones such as the use of computerized simulation models. According to Saunders and Wilson (1999), financial institutions need to gather adequate information about potential customers to be able to calibrate the credit risk exposure. The information gathered will guide the bank in assessing the probability of borrower default and price the loan accordingly. Much of this information is gathered during loan documentation. The bank should however go beyond information provided by the borrower and seek additional information from third parties like credit rating agencies and credit reference bureaus (Simson and Hempel, 1999).

1.1.4 Listed Commercial Banks on the Nairobi Securities Exchange

Commercial banks are financial intermediary institutions that take deposits and gives credit amongst other financial services. In Kenya, the banking sector plays a dominant role in the financial sector, particularly with respect to mobilization of savings and provision of credit. According to Central Bank of Kenya, (2014) the banking sector consisted of 44 banking institutions (43 commercial banks and 1 mortgage finance company). Out of the 44 banking institutions, 30 locally owned banks comprise three with public shareholding and 27 privately owned while 14 are foreign owned.

The listed commercial banks were eleven as at July 2015. Stock prices of the commercial banks have been up and down mainly because of the foreign investor sales that are quite marginal. Besides the performance of the individual stocks on a general view for the period 2013-2014, the Kenyan banking system has remained stable and resilient,

supporting the various economic sectors through provision of loans and advances recording an increase from Kshs. 1.53 trillion in December 2013 to Kshs 1.88 trillion in December 2014 (Central Bank of Kenya, 2014). Central Bank of Kenya uses capital adequacy, asset quality, management quality, earnings and liquidity (CAMEL) rating system in rating the soundness of the commercial banks. It was noted that there was an improvement of the ratings over the 2012-2014 have had a general rating of strong on the performance using CAMEL (Central Bank of Kenya, 2014).

1.2 Research Problem

Commercial banks adopt different credit risk analysis majorly determined by; ownership of the banks (privately owned, foreign owned, government owned), risk policies of banks, banks regulatory environment and the caliber of management of the banks. Looking at the emphasis that is laid on credit risk by commercial banks in their financial statements, the level of contribution of this factor to financial distress need to be deeply analyzed and understood.

A surge in bad debts and flat growth in interest income has slowed down Equity Banks profitability. The banks are feeling the heat of a new Central Bank of Kenya directive on the treatment of non-performing loans which has inflated their bad debts book and forced them to set aside additional cash as provision for defaulters. Frauds such as corruption, embezzlement, and theft of assets have resulted into high administration costs detrimental to financial institutions growth (Otero &Rhyne, 1994). High costs make it difficult for some financial institutions to sustain their operations from loan revenues alone. Costs to financial institutions affect the rate at which the fund their loan books, salaries of staff

and infrastructure expenses, but may be exacerbated by unreliable infrastructure, an inefficient payment system, commissions and poor selection procedures. Central Bank of Kenya (2014) found that the commercial banks non-performing loans increased marginally by 36.80% compared to total loans. The sector's asset quality had deteriorated in 2014 though it was above the statutory requirements.

Locally, studies that have been done include: Nguta and Huka (2013) who assessed the factors influencing loan repayment default in microfinance institutions in Imenti North District and found that the micro-finance sector is faced with challenges of loan repayment defaults by clients; Musyoki and Kadubo (2012) assessed the impact of credit risk management on the financial performance of Banks in Kenya for the period 2000 – 2006; Mwangi (2012) examined the effect of credit risk management on the financial performance of Commercial Banks in Kenya; Korir (2012) investigated effects of credit risk management practices on financial performance of Deposit Taking Microfinance Institutions in Kenya. However, the study variables included corporate governance practices, financial sustainability, financing choice and outreach of microfinance institutions. Central Bank Supervision Report, 2005) indicates that many banks that collapsed in the late 1990's were as a result of the poor management of credit risks which was portrayed in the high levels of nonperforming loans. It's important therefore to study how banks are managing the credit risk.

The above studies have focused on credit risk management. However there is little study that has been done in Kenya while focusing on effect of credit risk on financial distress of commercial banks institutions. It is against this backdrop that the current study seeks to address the existing knowledge gap. This paper therefore seeks to assess the effect of

credit risk to financial distress of listed commercial in Kenya. Specifically, the paper aims to empirically analyze the question: does credit risk have an effect on the financial distress of the listed commercial banks on the Nairobi Securities Exchange?

1.3 Research Objective

To determine the effect of credit risk on the financial distress of listed commercial banks on the Nairobi Securities Exchange.

1.4 Value of the Study

The study will contribute to the evolution of the important subject of risk management. Bank managers will also understand how credit risk affects financial distress within banks. They will be able to accurately predict the financial distress and also understand the relationship of credit risk to financial distress.Central Bank of Kenya and Nairobi Securities Exchange the regulators of listed commercial banks on the Nairobi Securities Exchange, will be able to predict the imminent possible financial distress way before they occur and hence manage the credit risk levels adequately. This study therefore help the government policy makers mainly Central Bank of Kenya to streamline the risk management procedures. Investors will be in a position to determine where they will place their equity investment as the study will show the best performing bank in terms of credit risk and financial distress. Finally the study will help scholars to know more on credit risk analysis.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This Chapter presents a review of literature related to the theme of the study; the first sub-section introduces theoretical review relating to credit risk. The second sub-section is an overview of related empirical researches. Sub-section three looks at determinants of financial distress in commercial banks.

2.2 Theoretical Literature Review

This chapter is a review of relevant literature to the study. It includes reviewing studies that have been conducted by other researchers on the prevailing phenomenon. The areas covered include the theoretical foundation and the effects of credit.

2.2.1 Modern Portfolio Theory

This is a theory of finance introduced by Markowitz (1952). According to Markowitz investors focused on assessing the risks and rewards of individual securities in constructing their portfolios intuitively attempting to maximize portfolio expected return for a given amount of portfolio risk, or equivalently minimize risk for a given level of expected return, by carefully choosing the proportions of various assets. Markowitz formalized this intuition. Detailing mathematics of diversification, he proposed that investors focus on selecting portfolios based on those portfolios' overall risk-reward characteristics instead of merely compiling portfolios from securities that each

individually has attractive risk-reward characteristics. This means that investors should select portfolios not individual securities. (Markowitz 1952)

James (1958) expanded on Markowitz's work by adding a risk-free asset to the analysis. This made it possible to leverage or deleverage portfolios on the efficient frontier. This led to the notions of a super-efficient portfolio and the capital market line. Through leverage, portfolios on the capital market line are able to outperform portfolio on the efficient frontier. This theory provides a context for understanding the interactions of systematic risk and reward. Portfolio theory has enlightened on how institutional portfolios are managed and motivated the use of passive investment techniques. The mathematics of portfolio theory is used in credit risk management and was a theoretical precursor for today's value-at-risk measures. (Mwangi 2012)

2.2.2 Capital Market Theory

This theory is generally attributed to Sharpe (1964) who received a Nobel Prize for it, but Lintner, (1965) and Mossin, (1966) derived similar theories independently. Capital market theory extends from portfolio theory and develops a model for pricing all risky assets. The final product is the capital asset pricing model (CAPM) as developed by Sharpe (1964). Sharpe (1964) formalized the capital asset pricing model (CAPM). This makes strong assumptions that lead to interesting conclusions. Not only does the market portfolio sit on the efficient frontier, but it is actually Tobin's super-efficient portfolio. According to CAPM, all investors should hold the market portfolio, leveraged or de-leveraged with positions in the risk-free asset. CAPM also introduced beta and relates an asset's expected return to its beta. Portfolio theory provides a context for understanding

the interactions of systematic risk and reward. It has shaped how institutional portfolios are managed and motivated the use of passive investment techniques. The mathematics of portfolio theory is used in credit risk management and was a theoretical precursor for today's value-at-risk measures.

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2.2.3 Moral Hazard Theory

Krugman (2009) described a moral hazard as any situation in which one person makes the decision about how much risk to take, while someone else bears the cost if things go badly. Therefore, a moral hazard is where one party is responsible for the interests of another, but has an incentive to put his or her own interests first. For example one might take risks that someone else will have to bear. Moral hazards such as these are a pervasive and inevitable feature of the financial system and of the economy more generally.

The inadequate control of moral hazards often leads to socially excessive risk-taking— and excessive risk-taking was certainly a recurring theme in the recent financial crisis. A

topical example was the subprime scandal. A subprime would-be borrower didn't have much chance of getting a mortgage. However, banks originated mortgages with a view to selling it (securitizing it), this incentive was seriously weakened. In fact, when the bank sold on the mortgage to another party it had no interest in whether the mortgage defaulted or not, and was only concerned with the payment it would get for originating the loan. The originating bank was now happy to lend to almost anyone, and it ended up in the patently unsound situation where mortgages were being granted with little or no concern about the risks involved. Loans that constitute a large proportion of the assets in most banks' portfolios are relatively illiquid and exhibit the highest credit risk (Koch and MacDonald, 2000).

The subprime scandal was merely illustrative of a much broader and deeper problem—namely, that moral hazard in the financial sector has simply been out of control. Financial bailouts of lending institutions by governments, central banks or other institutions can encourage risky lending in the future if those that take the risks come to believe that they will not have to carry the full burden of potential losses (Auronen, 2003).

2.3 Determinants of Banks Financial Distress

A great deal of interest by researchers in finance starting in the late 1960s has arisen on the prediction of corporate financial distress and bankruptcy is a subject. The first step in the evolution of the quantitative firm failure prediction model was taken by Beaver (1966), who developed a dichotomous classification test based on a simple t-test in a univariate framework. He used individual financial ratios from 79 failed and non-failed companies that were matched by industry and assets size in 1954 to 1964 and identified a

single financial ratio – Cash flow/ Total Debt as the best predictor of corporate bankruptcy.

2.3.1 Liquidity

A firm in trouble will usually experience shrinking liquidity. Ordinarily, a firm experiencing consistence operating losses tends to have diminishing current assets relative to total assets. Likewise a firm with negative working capital usually has problems meeting its short term obligation as there are not enough current assets to cover them (Kariuki, 2013).

2.3.2 Reinvestment Capacity

Reinvestment capacity taking into account the age of the firm will show the signs of distress because established firms tend to have high retained earnings over the life of the business as compared to younger firms. Altman noted that this ratio does not discriminate against young firm. In real world, younger firms are more likely to enter into financial distress compared to older firms. Companies with high reinvestment ratio indicates years of profitability and hence less likely to face financial distress (Tan, 2012).

2.3.3 Profitability

Cumulative profitability of the firm is measured to evaluate how productive a company in generating earnings, relative to its size excluding interest and taxes. A shrinking profitability is a warning sign. This is obtained by subtracting operating expenses from operating revenue. This profitability ratio measures management ability to squeeze profit

out of its available assets. It measures profit on each shilling of investment made by the firm. This is measured by dividing earnings before interest and taxes by total assets (Outecheva, 2007).

2.3.4 Leverage

This offers a quick test of how far the company's assets can decline before the firm becomes technically insolvent. The market value of equity is obtained by multiplying the total number of preferred and common stocks by the share. The total liability includes both short term and long term liabilities. Firms with high debt to equity ratio tend to move towards insolvency if earnings don't support the interest expense. The leverage ratio is measured by dividing market value of equity or book value of total liabilities (Altman, 1968).

2.4 Empirical Literature Review

Studies explaining the relationship between credit risk and financial distress in institutions were as follows.

2.4.1 International Evidence

Liyuqi (2007) examined the determinants of bank's profitability and its implications on risk management practices in the United Kingdom. The study employed regression analysis on a time series data between 1999 and 2006. Six measures of determinants of bank's profitability were employed. Liquidity, credit and capital were proxy as internal determinants of bank's performance. GDP growth rate, interest rate and inflation rate

were used as external determinants of banks profitability. The six variables were combined into one overall composite index of bank's profitability. Return on Asset (ROA) was used as an indicator of bank's performance. It was found that liquidity and credit risk have negative impact on bank's profitability.

Kargi (2011) did a descriptive study on the impact of credit risk on the profitability of Nigerian banks. The data which was used was obtained was secondary mainly the annual reports and accounts of sampled banks from 2004 to 2008. The data extracted include variables such as Return on Assets, profit after tax, total assets, non-performing loans and advances and total deposits. The study also established that that credit risk management has a significant impact on the profitability of Nigeria banks. Therefore, management need to be cautious in setting up a credit policy that might not negatively affects profitability and also they need to know how credit policy affects the operation of their banks to ensure judicious utilization of deposits.

According to Bhunia and Sarkar (2011), most research studies on company bankruptcy and failure predictions are done in developed countries such as those carried out by Beaver (1966) and Altman (1968) in the United States. Financial failure or distress can be described in so many ways. It can mean liquidation, deferment of payments to short-term creditors, deferment of payments to interest on bonds, deferment of payments on principal on bonds, nonpayment of a preferred stock dividend, overdrawn bank account and attempt to restructure debt to prevent default. Different authors have different definition and hence it is not clear when to classify a business to be financially distressed (Outecheva, 2007).

Al-Saleh and Al-Kandari (2012) research on commercial banks in Kuwait, using the Logistic regression found out that, out of the eleven ratios that have been included in the study, only three ratios are statistically significant in predicting financial distress of the banks. They were investment in securities to total assets ratio, the loans to total assets ratio and the loans to deposits ratio. These ratios do not support Beavers theory as only one ratio is similar to those identified by Beaver.

Tetteh (2012) did a case study approach was adopted to assess the extent to which the implementation of various credit risk management strategies by the Ghana Commercial bank Limited has reduced the amount of non-performing loans. Primary data was obtained by face-to face interview was conducted to collate the views of a senior credit officer at the Ghana Commercial bank Limited on credit risk management strategies. Secondary data on total advances and non-performing loans were obtained from the books of accounts and annual reports. The study was in the Ghanaian context and it covered Ghana Commercial Bank (GCB) for the period 2000 - 2010. The findings of the study showed that Ghana Commercial Bank has a clear, written guideline on credit risk management with the board of directors having an oversight responsibility for implementation.

Tuvadaratragool (2013) did an exploratory research on the role of financial ratios in signaling financial distress from Thai listed companies. An exploratory research design was used in this study. Secondary data was used which was obtained from the Stock Exchange of Thailand database from the financial statements for the period 2003 to 2008 of 48 firms; 28 failed firms and 28 non-failed firms. The financial distress was based on the liquidity, profitability, turnover and solvency ratios. The study also established that

found that the financial statement information can be used to adequately signal business failure in the Thai context in normal economic circumstances.

Ezejiofor, Nzewi, & Okoye, (2014) did a survey research that involved use of financial accounts of the ten selected banks listed in Nigeria Securities Exchange. The financial data which was used covered seven years annual reports and accounts of these banks from 2006 to 2012.with an objective of establishing if the Altman's failure prediction model could have successfully predicted failure potential of sound and healthy banks. In the analysis descriptive design was adopted with the opinion that ratios measuring profitability, liquidity and solvency were the most significant ratios. The financial data which was used covered seven years annual reports and accounts of these banks from 2006 to 2012.The findings provided evidence that the Altman's bankruptcy prediction model could have successfully predicted the failure of the banks that actually went under in the Nigerian Banking Sector Altman's Z-Score was found to be 72% accurate in predicting bankruptcy two years prior to the event.

Shisia, Sang & Waitindi, (2014) did an in depth analysis on the application of Altman's Failure Prediction Model on corporate financial distress in Uchumi Supermarket in Kenya multivariate discriminant analysis (MDA) statistical technique was used in this study. The data which was used was obtained financial reports, library, and organization's records such as in-house magazines, journals, publications as well as website and other resourceful information available at the Uchumi supermarket secretariat for 5 years from 2001 to 2006. The data extracted include ratios such as current assets and liabilities, total assets, retained earnings, earnings before interest and taxes, book value of the equity and sales. The study also established that found that the

Altman failure prediction model was appropriate to Uchumi supermarket as it recorded declining Z-score values indicating the company experienced financial distress and that is why the company was delisted from the NSE in 2006.

2.4.2 Local Evidence

Karanja (2012) did a descriptive research study to establish the effect of credit risk management techniques used to evaluate SMEs on the level of non-performing loans by commercial banks in Kenya. A regression analysis was developed in order to examine the relationship credit risk management and SME nonperforming loans in banks in Kenya. The study established that there is a negative relationship between credit risk management and non-performing loans. Taliani (2010) conducted a study with an objective of developing a discriminant model incorporating stability ratios that can be used to predict financial distress in commercial banks in Kenya and to identify critical financial ratios with significant predictive ability. The findings provided evidence that the stability of financial ratios has an impact on the ability of the firm to continue as a going concern. Profitability ratios offer a reasonable measure of management effectiveness in firm value creation; leverage / indebtedness ratios provide historical reasons for firm failure while liquidity ratios constitute a measure of firms' solvency. The model attained 70% and 100% correct classification in year 1 and in year 3 respectively.

Kemboi (2013) this study was done with an objective of establishing if the Altman's failure prediction model was appropriate in predicting corporate financial distress in Uchumi Supermarket in Kenya. In the analysis multivariate discriminant analysis (MDA) statistical technique as used by Altman (2006) was adopted with the opinion that ratios

measuring profitability, liquidity and solvency were the most significant ratios. The data which was used was obtained financial reports, library, and organization's records such as in-house magazines, journals, publications as well as website and other resourceful information available at the Uchumi supermarket secretariat for 5 years from 2001 to 2006. The findings provided evidence that the Altman's failure prediction model was appropriate to Uchumi Supermarket as it recorded declining Z-score values indicating the company experienced financial distress and hence being delisted from the NSE in 2006.

Kariuki (2013) did a descriptive study to identify the impact of financial distress on commercial banks performance in Kenya. The data obtained from the financial statements of the banks and the Central Bank of Kenya from 2008 to 2012. Altman's Z score model was used to measure financial distress while return on assets ratio was used to measure financial performance. The study also showed that financial distress had a significant effect on financial performance of banks where performance was negatively affected. The study established the need to reduce financial distress by ensuring financial stability in banks to ensure shareholders confidence.

Muasya (2013) did a descriptive research study to if there is a relationship between credit risk management practices and loan portfolio losses in commercial banks in Kenya. The study utilized a standard questionnaire to collect primary data from the credit managers/officers through the drop and pick method form forty two (42) commercial banks in Kenya. The data was presented using tables giving descriptive statistics including frequencies, mean and percentages. Research findings indicated that a significant number of commercial banks in Kenya had not put in place credit risk management information systems. The study also showed that there is a significant

negative relationship between credit risk management practices and loans losses in commercial banks in Kenya.

2.5 Summary of Literature Review

From this chapter the credit risk and financial distress in the banking sector cannot be understated. Risk management is nowadays considered as a key activity for all companies. The theories clearly have tried to explain the various ways in which the risk can be mitigated and controlled. In as much as a lot of researches have been done on either credit risk or financial distress of commercial banks in relation to other variables, less international and local studies have been done to establish the effect of credit risk on financial distress of publicly listed companies. The studies did not establish a clear relationship between credit risk and financial distress. In addition, and to the best knowledge of the researcher, no other research has been done relating the two variables. Thus there exists a gap necessitating this study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Introduction

This chapter describes the methodology that was adopted to achieve the research objectives of the study. The first subsection covers research design. Subsection two covers the unit of analysis followed by the data collection methods. Lastly we look at how data was analysed.

3.2. Research Design

Kerlinger (1986) defined research design as the plan and structure of investigation so conceived so as to obtain answers to research questions. According to Mugenda and Mugenda (1999) research design is the outline plan or scheme that is used to generate answers to the research problems. It is basically the structure and plan of investigation. The research problem will be studied through the use of descriptive research design due to the nature of this study. Descriptive research portrays an accurate profile of persons, events, or account of the characteristics. The purpose of this research design is to create a framework that would serve as reference point for data collection activation. The design formed the fundamental guide for the collection of the data. The research design not only informs the rest of the research process, but it also ensures that the understanding of the findings within the confinement of the same framework when results are presented. The design is appropriate because the study involves an in depth study of credit risk and the relationship between the two variables namely credit risk and the financial distress of publicly traded commercial banks extensively.

3.3. Population

Target population refers to the population as at July 2015 to be studied or which the investigator wants to generalize his findings from the study. The target population comprised of the eleven listed commercial banks at the Nairobi Securities Exchange as at July 2015 (Appendix I).

3.4. Data Collection

The study used secondary data. The secondary data was collected from the various CBK Bank Supervision Annual Reports from the Central Bank of Kenya, for the period 2010 to 2014. This included income statements, statement of financial position and statement of changes in equity. Altman Z – score model was used to define the financial distress of listed commercial banks. Ezejiofor et al (2014) ascertained that the Altman's bankruptcy prediction model can successfully predict the failure of the banks. Data for the dependent variable was collected in the form of working capital, total interest income, earnings before interest and tax, equity as well as total assets and total liabilities for Altman Z-Score model. The data for independent variables were the non-performing loans, total loans, total deposits, operating expenses and pre-tax profits.

3.5 Data Analysis

To achieve the objective of this study we used credit risk analysis ratios and Altman Z-Score model for non-manufacturing and emerging markets to determine the effect of credit risk on the financial distress of listed commercial banks. The data was collected,

sorted and organized before capturing the same in statistical packages for social sciences (SPSS) for analysis. ANOVA, bivariate and partial correlation analysis was done.

3.5.1. Analytical Model

The regression model used was similar to one used by Kaaya and Pastory (2013) to analyze the effect of credit risk on banks' performance in Tanzania by controlling the effect of deposits and bank size. Financial distress was measured using the Altman Z-Score model as the dependent variable, credit risk was measured by non-performing loans over total loans and advances as an independent variable; bank size and operational costs efficiency was taken as controlling variables in the multi-linear regression as follows;

$Z=\alpha+\beta_1 CR+\beta_2 BS+ \beta_3 OCE +\varepsilon$

Where;

α =constant/the interception point of the regression line and the y-axis

β_1, β_2, β_3 were the coefficients of the independent variables that were determined.

Z=Financial distress measured using Altman Z-Score model.

CR = Credit risk was measured by the non performing ratio (Non-performing loans/ total loans and advances)

BS and OCE: Control Variables

The controlling variables were added to take into consideration the factors that also affect financial distress in the analysis.

Where:

BS = Bank size for the listed commercial bank =log (total assets)

OCE = Operational Costs Efficiency = Operating Expenses/ total operating income

ε = Error term

The financial distress was the dependent variable which was measured using the Altman (1993) Z- score formula for non-manufacturing and emerging markets as shown below.

$$Z' = 6.56\ X_1 + 3.26\ X_2 + 6.72\ X_3 + 1.05\ X_4$$

Where:

X_1 = (Current Assets − Current Liabilities) / Total Assets

X_2 = Retained Earnings / Total Assets

X_3 = Earnings before Interest and Taxes / Total Assets

X_4 = Book value of Equity / Total Liabilities

Z' Score Bankruptcy Model Zones of Discrimination:

Z' > 2.6 -"Safe" Zone

1.1 < Z' < 2.6 -"Grey" Zone

Z' < 1.1 -"Distress" Zone

3.5.2 Tests of Significance

Parametric tests were estimated to determine the significance of the relationship using; the correlation coefficient (r), coefficient of determination (r^2), coefficient of multiple correlation (R^2), bivariate analysis, partial correlation, and ANOVA using F-Test.

Correlation coefficients (r), measured the strength and the direction of a linear relationship between the two variables. The coefficient of determination, r^2, was used to determine the degree of linear-correlation of variables ('goodness of fit') in regression analysis. The coefficient of multiple correlation R^2 was used to measure how well a dependent variable could be predicted using a linear function of a set of other variables (covariates).

Bivariate analysis of variables was done to show the relationships between any two variables for the purpose of determining the empirical relationship between them. Partial correlation tests were done to examine relationship between dependent variable and independent variable, while controlling other variables that may be related to the dependent variable. ANOVA was used to provide the statistical test of whether or not the means of several groups were equal. F-test was used to show if variances of two variables were equal and two-tailed test was used to test against the alternative that the variances were not equal.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1 Introduction

The chapter presents the quantitative analysis of secondary data obtained from listed commercial banks at NSE from the year 2010 to year 2014. The objective of the study was to determine the effect of credit risk on the financial distress of commercial banks. Data analysis of the 11 listed commercial banks as at December 2014 was done using Microsoft Excel worksheets and Statistical Package for Social Scientists (SPSS) version 19.

4.2 Descriptive Statistics

The study findings were described in mean and standard deviation as indicated below.

Table 4.1 Summary of Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Z Score	55	.5548	3.2018	1.985933	.6092743
Credit Risk	55	.0104	.1058	.045213	.0251487
Bank Size	55	4.4685	5.5837	5.110964	.2631831
Operating Cost Efficiency	55	1.3229	2.6413	1.823847	.2800230
Valid N (listwise)	55				

Source: Research Findings

The study looks at the effects of tax payments on stock returns for companies listed at the NSE. Our dependent variable Z-Score which measured the financial distress was found to have a mean of 1.985933 with a standard deviation of 0.6092743.

Credit risk was the other variable. The non-performing loans divided by the total loans and advances of the commercial bank. This ratio represented this variable and had a mean of 0.045213 with a standard deviation of 0.0251487.

Bank size on the other hand was defined by the natural logarithms of total assets of the commercial banks. The mean for this variable was found to be 5.110964 with a standard deviation of 0.2631831.

The operating cost efficiency ratio which was obtained by dividing the total operating income with the total operating expenses had a mean of 1.985933 with a standard deviation of 0.6092743.

4.3 Inferential Statistics

Inferential statistics makes reasoning about the population drawn on the data used from that population. A sample size is drawn and tests done. A conclusion about the entire population is made based on the findings from the sample. In this research the whole population was used and hence there was no sample size obtained.

4.3.1 Correlation Analysis

The researcher used Pearson's Correlation analysis in order to establish whether linear relationships existed between the variables. The correlation analysis was done at 95% and 99% confidence level. Kindly see table 4.2.

Table 4.2 Correlation Analysis

		Z Score	Credit Risk	Bank Size	Operating Cost Efficiency
Z Score	Pearson Correlation	1			
	Sig. (2-tailed)				
Credit Risk	Pearson Correlation	-.026	1		
	Sig. (2-tailed)	.851			
Bank Size	Pearson Correlation	-.162	-.116	1	
	Sig. (2-tailed)	.239	.400		
Operating Cost Efficiency	Pearson Correlation	.409[**]	-.266[*]	.319[*]	1
	Sig. (2-tailed)	.002	.049	.018	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

a. Listwise N=55

Source: Research Findings

4.4 Regression Analysis

Linear regression analysis was conducted on the model.

Model $Z=\alpha+\beta_1 CR+\beta_2 BS+\beta_3 OCE+\varepsilon$

The table below shows the summary of the regression model. The coefficient of determination (R Square) gives the variation in the dependent variable that was due to change in the independent variable. Changes in financial distress are only explained by

the variables to the extent of 26.8%. An estimate of 0.518 shows a positive linear relationship between the dependent and independent variables.

Table 4.3 Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.518[a]	.268	.225	.5362470

a. Predictors: (Constant), Operating Cost Efficiency, Credit Risk, Bank Size

Source: Research Findings

4.4.1 Analysis of Variance

Analysis of variance was done to show whether there was a significant mean difference between dependent and independent variables. It was conducted at 99% confidence level and the results are as shown in table 4.4 below.

Table 4.4 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.380	3	1.793	6.236	.001[a]
	Residual	14.666	51	.288		
	Total	20.046	54			

a. Predictors: (Constant), Operating Cost Efficiency, Credit Risk, Bank Size

b. Dependent Variable: Z_Score   **Source: Research Findings**

4.4.2 Regression Coefficients

The table below summarizes the results for regression coefficients.

Table 4.5 Regression Coefficient Results

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.601	1.453		2.478	.017
	Credit Risk	1.908	3.012	.079	.633	.529
	Bank Size	-.747	.293	-.323	-2.551	.014
	Operating Cost Efficiency	1.160	.284	.533	4.093	.000

Source: Research Findings

The multiple regression models thus become;

Z= 3.601 + 1.908CR - 0.747BS + 1.16OCE

The model suggests that when all the independent variables are held constant at zero, then the financial distress is 3.601. When the other variables are held constant, a unit increase of the ratio of credit risk results to an increase of the financial distress by 1.908 On the other hand, holding other factors constant at zero, increasing the natural logarithm of total assets by one, reduces the financial distress by 0.747 while the same is increased by 1.16 when one increases the ratio of the total operating income to total operating expenses by one unit.

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4.4 Interpretation of the Findings

The Z-Score which was our dependent variable had a mean of 1.985933 and a standard deviation of 0.6092743. The ratio of non-performing loans to total loans and advances that the researcher used to measure credit risk had a mean of 0.45213 with a standard deviation of 0.0251487. The total natural logarithm of total assets that were used to measure bank size of the company had a mean of 5.110964 and a standard deviation of 0.2631831. Operating cost efficiency had a mean of 1.823847 and a standard deviation of 0.2800230.

The Pearson's correlation for credit risk against financial distress was -0.026. This suggests that an increase in the credit risk by one per cent would result to a decrease in financial distress by 2.6%. The result findings suggest that credit risk is negatively related to financial distress. The study results are inconsistent with results by Kargi (2011) who found a strong relationship between credit risk in terms of loan performance and financial distress.

There was a negative relationship of bank size and financial distress with a significant Pearson's Correlation of -.162. A positive relationship was found between operating cost efficiency and financial distress with a Pearson's Correlation of 0.409. The regression analysis had a coefficient of determination of 0.268 with an estimate of 0.518. The study suggests that when the natural logarithms of commercial bank assets are increased by 1%, the financial distress decreases by 7.47%. This might be due to the reason of diseconomies of scale, and the principle of diminishing rate of return, where an increase in an asset does not increase the marginal output of the asset. These findings are

consistent with findings by Kariuki (2013) who found out that non listed banks had higher financial distress in comparison to the listed banks due to their small size in terms of assets as compared to the listed banks.

The results also indicated that an increase in operating costs efficiency would result to an increase of financial distress. There was a positive correlation between operating costs efficiency and financial distress since the Pearson's value was 0.409 and positive. This means that an increase of operating costs efficiency by 1% would result to an increase of 40.9% of financial distress. It was also noted through the findings that there is a statistically significant correlation between since the Sig. (2-tailed) value is 0.002.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The chapter gives a summary of the findings, conclusion of the study and necessary recommendations for further research. It is in this chapter that conclusions on effects of credit risk on financial distress of listed commercial banks firms at the NSE will be made.

5.2 Summary

By commercial banks increasing their credit risk by having an ever increasing amount of non-performing loans, it would be attributable the possibility of a commercial bank being on financial distress. Korir (2012) suggests that management credit risk effective to prevent it from failing in its obligation and meeting its objective, minimize loan defaulters, cash loss and ensures the organization performs better increasing the return on assets and helps the organization in attaining maximum financial returns.

The research findings indicated that a mild relationship exists between credit risk and financial distress. When credit risk increase, the financial distress on the other hand are decreased albeit on a relative proportion. This shows commercial banks are sensitive to credit risk changes to influence their probability of leading to financial distress. The increase in financial distress due to increase in credit risk is only explained by the coefficient of determination which was at 0.268. This means that it is only 26.8% change in financial distress that would be explained by credit risk.

The bank size effect on the other hand with correlation analysis being at -0.747, indicates that with an increase in size of a commercial bank, the financial distress decreases by 74.7%. The negative relationship is significant and supports claims on the small firm effect.

The operating cost efficiency ratio had a negative relationship with financial distress of a company. The relationship was significant with Pearson's Correlation being 1.16. This would mean that when a bank listed at NSE maintains operating costs efficient, may automatically mean that there may result to increase in financial distress. There is in fact a relationship between the two variables that may be supported by maintaining high operating expenses such as increasing staff salaries will eventually decline the stability of a commercial bank.

5.3 Conclusion

This study established that listed commercial banks need to ensure adequate control of credit risk which would in turn reduce the probability of the bank being in financial distress. The objective of the study was to analyze the effect of credit risk on financial distress of listed commercial banks. The findings showed that there exists a mild relationship between credit risk and financial distress. According to the findings of this study credit risk a crucial contributor to the existence of financial distress in the listed Kenyan commercial banks. Most of the listed banks were found to be in the grey zone. This therefore indicates that being listed at Nairobi Securities Exchange may not automatically mean financial stability for the banks.

The size of the bank however is noted to be lowering the financial distress. This was indicated by the negative relationship connoted by the findings. The increase in assets of a bank noted to rise as the years progressed reduced the impact on financial distress.

As per the study findings the operating cost efficiency was a better determinant of financial distress of a listed commercial bank than credit risk. This might be due to the reasons that higher operating expenses reduce the operating profits. Hence a bank may only be making profits only to sustain the existence in the short run and not the long run and hence fall in to distress in the near future. This may explain the positive relationship operating cost efficiency and financial distress.

5.4 Policy Recommendations

The findings of this study give insight into the relationship between credit risk, bank size, operational cost efficiency and financial distress. Hence the information is important to policy makers in making informed decisions that will help in achieving a desired effect. Banks can also utilize the information to help them identify their specific source of financial distress and find remedies to help reduce the mitigating factors.

As per the study there is an insignificant relationship between credit risk and financial distress. Regulators of commercial banks however should ensure that all banks credit risk is maintained within a certain threshold failure to which investors should be well cautioned against. This would help maintain the credibility of the banking sector by both investors and the depositors.

Since the bank size affects financial distress negatively the policy makers need to motivate the growth of the asset base of the commercial banks. This means that as banks acquire more assets there is reduction of financial distress. Agency conflicts should be addressed to ensure that the investors get value for their investments.

The study also provided insightful information on operational cost efficiency. The regulator will need to be careful on how it sets regulation on costs vs income ratios. This will protect the investors since as a bank incurs increased operational costs, operating income reduces which then ultimately may lead to financial distress to the bank. The study shows that there needs to be more input by the regulators and other stake holders in supporting further growth and development of the commercial banks.

5.5 Limitations of the Study

The researcher relied entirely on data from financial statements of commercial banks which are subject to material misstatement, errors or omissions. Figures are sometimes restated which reduces accuracy and reliability of such information.

Time was also another limitation in which the researcher did not have enough time to visit each and every firm listed at the securities exchange to collect data. Data collected from secondary data may be misleading and erroneous, the lack of a way to measure the truthfulness and correctness of the data collected from secondary sources is another limitation to this study.

The researcher only used three variables to explain the changes in financial distress. This is a limitation since there are other variables that affect financial distress. These variables

may not necessarily be empirically measurable. Such variables may include the perception of the investors on these companies among other variables.

5.6 Areas for Further Research

The researcher suggests that similar studies be carried out to cover commercial banks that are not listed at the NSE. Special emphasis may be given to micro finance banks, which have become an important aspect of the economy for both developing and developed countries.

The effects of credit risk on financial distress should also be studied in other exchanges around the world. Statistical differences should be analyzed for studies conducted in both developed and developing countries. The results of such studies should be compared to results in this study.

There are other factors that may be affected by credit risk. Therefore studies of credit risk relationship to other factors such as corporate governance should be studied and results of such study compared to results of this study.

The study results showed that only 26.8% of the changes in financial distress are explained by study variables. Studies should be conducted to explain other factors that influence changes in financial distress.

REFERENCES

Aasen, M. R. (2011). Applying Altman's Z-score to the financial Crisis. An empirical study of financial distress on Oslo Stock Exchange. (Unpublished Master's Thesis).Norwegian School of Economics, Norway.

Altman, E. I. (1993). Corporate financial distress and bankruptcy: A complete guide to predicting and avoiding distress and profiting from bankruptcy. Second Edition. New York: John Wiley and Sons.

Auronen, L. (2003). Asymmetric information: theory and applications. Presented at the Seminar of Strategy and International Business, Helsinki University of Technology, Helsinki, May.

Arbel A., Kolodny R., & Lakonishof J (1977). The relationship between risk of default and return on equity: An Empirical Investigation. *The Journal of Financial and Quantitative Analysis, 12 (4)* preceding's of the 1977 Western Finance Association Meeting. (PP 615-625)

Al-Saleh, M. A., & Al-Kandari, A. M. (2012). Prediction of financial distress for commercial banks in Kuwait. World Review of Business Research, 2(6), 26-45.

Andrade, G & Kaplan, S (1998). How costly is financial (not economic) distress? Evidence from highly leveraged transactions that became distressed: *The Journal of Finance,* 53(5), *1443-1493*.

Central Bank of Kenya, (2014). Bank Supervision Annual Reports. The Central Bank of Kenya.

Central Bank of Kenya, (2005). Bank Supervision Annual Reports. The Central Bank of Kenya.

Central Bank of Kenya, (2013). Risk management Guide Lines, The Central Bank of Kenya.

Basel Committee. (2000) Principles for the management of credit risk. Basel Committee on Banking Supervision.

Basel Committee. (2001) Sound practices for the management and supervision of operational risk. Basel Committee on Banking Supervision.

Barrickman, J.R. (2000). Successful commercial lending from the ground up. 7(2): 12-14.

Beaver, W. (1966). Financial Ratios as Predictors of Failure. *Journal of Accounting Research, 5*, 71-111.Retrieved from http://www.jstor.org/stable/2490171

Bhunia, A., & Sarkar, R. (2011). A study of financial distress based on MDA.*Journal of Management Research*, *3*(2), 2-7.DOI http://dx.doi.org/10.5296/jmr.v3i2.549

Derban, K., Binner, J., & Mullineux, A. (2005). Loan repayment performance in community development finance institutions in the UK", Small Business Economics, 25, 319-32.

Ezejiofor R., A., Nzewi U., C., & Okoye V., C., (2014). Corporate Bankruptcy: An Application of Altman Model in predicting potential of failure in Nigerian

Banking Sector. *International Journal of Emphirical Finance* 2(4) 2014 Retrieved on August 24 2015, from http://www.iiste.org

Gestel, T., Baesens, B, Suykens, J, & Willekens, M. (2006). Bayesian Kernel based classification for financial distress detection'*: European Journal of Operational Research, 172(3), 979-1003.*

Grier, W. A. (2007). "Credit Analysis of Financial Institutions". 2nd ed. Euromoney Institution Investor PLC

Karanja G. G. (2012). The effect of credit risk management practices on the level of non-performing loans. A case study of commercial banks lending to SMEs in Kenya, unpublished MBA project, University of Nairobi.

Kargi, H. S. (2011). Credit risk and the performance of Nigerian banks. From Ahmadu Bello University Zaria Nigeria, Department of Accounting.

Kariuki, H. N. (2013). The effect of financial distress on financial performance of commercial banks in Kenya, unpublished MBA project, University of Nairobi.

Kerlinger, F. N. (1986) "Foundations of behavioral research", (3rd edition) Fort worth: Holt, Rinehart and Winston Inc.

Kemboi E.K.(2013). The validity of Altman failure prediction model in predicting corporate financial distress in Uchumi Supermarket in Kenya. Unpublished MBA project. University of Nairobi.

Koch, T.W. & MacDonald, S.S. (2000), Bank management, The Dryden Press/Harcourt College Publishers, Hinsdale, IL/Orlando, FL.

Korir, M. K (2012). Effects of credit risk management practices on financial performance of deposit taking microfinance institutions in Kenya. MBA Unpublished Research Project, University of Nairobi.

Krugman, P. (2009). The return of depression economics and the crisis of 2008.

Liyuqi (2007), Determinants of Banks profitability and its implication on Risk management practices: Panel Evidence from the UK. University of Nothingham.

Markowitz H. (1959). Portfolio selection: Efficient diversification of investments. New York. John Wesley

Muasya, A. M. (2013). The relationship between credit risk management practices and loans losses - A study on commercial banks in Kenya, unpublished MBA project, University of Nairobi.

Mugenda,O. M. and Mugenda A. G. (1999) Research methods: Quantitative and qualitative approaches. Nairobi Acts Press.

Mukama, J. Fish, T. and Volschenk, J. (2005). Problems affecting the growth of microfinance institutions in Tanzania. *The African Finance Journal*, 7(2).

Musyoki, D. & Kadubo, A. (2012). The impact of credit risk management on the financial performance of banks in Kenya for the period 2000 – 2006. *International Journal of Business and Public Management 2(2), 72-80.*

Mwangi, G. (2012). The effect of credit risk management on the financial performance of commercial banks in Kenya. Unpublished MBA project, University of Nairobi.

Mwithi, S. (2012) Relationship between credit risk management practices and the level of non-performing loans of microfinance institutions in Nyeri County. Unpublished MBA Thesis, University of Nairobi.

Nguta, M. & Huka, G. (2013). Factors influencing loan repayment default in microfinance institutions: The experience of Imenti North District, Kenya. *International Journal of Applied Science and Technology*, 3(3)

Otero, M. & Rhyne, E. (1994). The new world of microenterprise finance. Building healthy financial institutions for the poor. USA: Kumarian Press

Outecheva, N. (2007). Corporate financial distress: An empirical analysis of distress risk. (Unpublished doctoral dissertation), University of St Gullen, Switzerland.

Shisia A., Sang W & Waitindi S., (2014). An in-depth analysis of the Altman's failure prediction model on corporate fnancial distress in Uchumi Supermarket in Kenya. *European Journal of Business and Management,* 6 (3) 2014. Retrieved on August 24 2015, from http://www.iiste.org

Saunders, A. and Wilson, B. (1999). The impact of consolidation and safety-net support on Canadian, US and UK Banks: 1893-1992. *Journal of Banking and finance*, 23, 537-571.

Simson, D.N. &Hempel, G.H. (1999). Bank Management, Text and Cases, Fifth edition, John Wesley and Sons Inc., New York.

Sumeth, T. (2013). The role of financial ratios in signaling financial distress: Evidence from Thai listed companies.

Taliani, I. J. (2010). Predicting financial distress in commercial banks in Kenya. Unpublished MBA project. University of Nairobi.

Tan, T. K. (2012). Financial distress and firm Performance: Evidence from the Asian Financial Crisis. *Journal of Accountancy and Finance, 11*, 5-6.Retrieved from http://www.aabri.com/manuscripts/121199.pdf

Tetteh, F. L. (2012). Evaluation of credit risk management practises in Ghana commercial bank, unpublished MBA project, Kwame Nkrumah University of Science and Technology

Turetsky, H & McEwen, R (2001). An empirical investigation of firm longevity. A model of the ex-ante predictors of financial distress. In review of quantitative finance and accounting, 16, 323-343.

Valsamakis, A.C., Vivian, R.W. & Du Toit, G.S. (2005). Risk management: managing enterprise risks. 3rd ed. Sandton: Heinemann Higher.

APPENDICES

Appendix I: Listed Commercial Banks at Nairobi Securities Exchange as at December 2014

1. Barclays Bank of Kenya Limited

2. CFC Stanbic Holdings Limited

3. Cooperative Bank of Kenya Limited

4. Diamond Trust Bank Kenya Limited

5. Equity Bank Limited

6. Housing Finance Company Limited

7. I&M Holdings Limited

8. Kenya Commercial Bank Limited

9. National Bank of Kenya Limited

10. NIC Bank Limited

11. Standard Chartered Bank Limited

Source: Nairobi Securities Exchange

Appendix II: Raw Data

BANK	YEAR	Z SCORE	CREDIT RISK	BANK SIZE	OPERATING COST EFFICIENCY
Barclays Bank of Kenya Limited	2010	2.24152138	0.07216482	5.23892715	1.68354609
Barclays Bank of Kenya Limited	2011	1.9350815	0.06375477	5.22776493	2.075426314
Barclays Bank of Kenya Limited	2012	1.92350186	0.03504275	5.27172102	2.079180819
Barclays Bank of Kenya Limited	2013	1.7318875	0.02952405	5.32199516	1.757622616
Barclays Bank of Kenya Limited	2014	1.70216719	0.03488029	5.35985461	1.83062646
CFC Stanbic Holdings Limited	2010	1.57003085	0.02891002	5.03208172	1.322948811
CFC Stanbic Holdings Limited	2011	1.40817699	0.01587967	5.1486477	1.854546628
CFC Stanbic Holdings Limited	2012	1.71708397	0.01824695	5.13195252	1.477682018
CFC Stanbic Holdings Limited	2013	2.38517154	0.0288006	5.23533137	1.926632854

CFC Stanbic Holdings Limited	2014	2.90379739	0.03716198	5.23747615	1.90343681
Cooperative Bank of Kenya Limited	2010	1.16996025	0.05360266	5.19664581	1.50328539
Cooperative Bank of Kenya Limited	2011	0.88334939	0.04544311	5.23833092	1.607928353
Cooperative Bank of Kenya Limited	2012	1.30954144	0.05003235	5.31286462	1.615713227
Cooperative Bank of Kenya Limited	2013	1.64272017	0.04180405	5.36087151	1.743522211
Cooperative Bank of Kenya Limited	2014	1.57883886	0.0435242	5.45280593	1.754219659
Diamond Trust Bank Kenya Limited	2010	1.87766488	0.01797039	4.76893799	1.6036374
Diamond Trust Bank Kenya Limited	2011	1.7811808	0.01262022	4.89006603	1.812979836
Diamond Trust Bank Kenya Limited	2012	1.83997417	0.01499329	4.97649968	1.62137225
Diamond Trust Bank Kenya	2013	1.9599168	0.01357116	5.058743	1.988303486

Limited				
Diamond Trust Bank Kenya Limited	2014	2.13485158	0.01237025	5.15129474	1.993453834
Equity Bank Limited	2010	2.30937737	0.0464932	5.12831511	1.628181893
Equity Bank Limited	2011	2.31541094	0.02842365	5.24929608	1.832347442
Equity Bank Limited	2012	2.72621548	0.03126423	5.33496014	2.161002204
Equity Bank Limited	2013	2.63731981	0.05204921	5.37916345	2.107963688
Equity Bank Limited	2014	1.85576557	0.03845961	5.44538961	2.118627844
Housing Finance Company Limited	2010	3.2018218	0.07361858	4.46848147	1.601874126
Housing Finance Company Limited	2011	3.11513003	0.0612785	4.50458923	2.068868951
Housing Finance Company Limited	2012	3.10734606	0.07516395	4.60972852	1.5791994
Housing Finance Company Limited	2013	3.09324788	0.08875967	4.67086894	2.002027551
Housing Finance	2014	2.77256775	0.08913244	4.78258252	1.856384442

Company Limited					
I&M Holdings Limited	2010	2.11054727	0.03211963	4.79776309	1.635296988
I&M Holdings Limited	2011	2.19200353	0.02084901	4.88741533	2.119286276
I&M Holdings Limited	2012	2.02795786	0.01337188	4.96208685	1.568159488
I&M Holdings Limited	2013	2.6270713	0.01412109	5.04450925	1.944135401
I&M Holdings Limited	2014	2.88247049	0.02078929	5.1393929	1.913002365
Kenya Commercial Bank Limited	2010	2.11190276	0.08854402	5.34835268	1.697187067
Kenya Commercial Bank Limited	2011	1.95569348	0.05574449	5.45721521	2.142274486
Kenya Commercial Bank Limited	2012	2.06692791	0.06187499	5.48763058	1.654149896
Kenya Commercial Bank Limited	2013	2.08043453	0.07398015	5.50877858	1.842616532

Kenya Commercial Bank Limited	2014	2.16603151	0.05217126	5.58374662	1.810931475
National Bank of Kenya Limited	2010	1.5918167	0.04341531	4.78032065	1.647835073
National Bank of Kenya Limited	2011	1.03692334	0.04131464	4.83885977	1.7852
National Bank of Kenya Limited	2012	0.92129532	0.07322385	4.84224836	1.3532
National Bank of Kenya Limited	2013	0.69457058	0.10372753	4.96999262	1.4019
National Bank of Kenya Limited	2014	0.55482941	0.10584359	5.09326837	1.4246
NIC Bank Limited	2010	1.47445413	0.0530957	4.74072188	1.700314931
NIC Bank Limited	2011	1.34442959	0.05109467	4.86906007	1.789468686
NIC Bank Limited	2012	1.93305821	0.04689644	5.00979908	1.553707013
NIC Bank Limited	2013	1.96964905	0.06364925	5.05459013	1.85799788
NIC Bank Limited	2014	2.46470569	0.05859791	5.13906355	1.866210216

Standard Chartered Bank Limited	2010	1.9259121	0.01903564	5.15581074	2.170478026
Standard Chartered Bank Limited	2011	1.61062848	0.01037529	5.21702143	2.641250893
Standard Chartered Bank Limited	2012	2.12094711	0.01827951	5.29140391	2.286095878
Standard Chartered Bank Limited	2013	2.26306002	0.02873685	5.34636546	2.442937859
Standard Chartered Bank Limited	2014	2.26839991	0.08089765	5.35142791	2.311417357

Source: Research Findings