EFFECTIVENESS OF ACCOUNTING RATIOS IN PREDICTING FINANCIAL DISTRESS OF COMPANIES LISTED IN NAIROBI SECURITIES EXCHANGE, KENYA

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THIS RESEARCH PROJECT IS SUBMITTED TO BOARD OF POST GRADUATE STUDIES FOR THE CONFERMENT OF MASTER OF BUSINESS ADMINISTRATION DEGREE ACCOUNTING OPTION

KISII UNIVERSITY
SCHOOL OF BUSINESS AND ECONOMICS

NOVEMBER 2018
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DEDICATION

I dedicate this project report to my beloved parents. My special dedication goes to my wife Sharon Jepletin for her constant moral support.
ACKNOWLEDGEMENT

My deep gratitude goes to the Almighty God for the good health and the ability to carry out this project report. My sincere thanks and appreciation is extended to my supervisors Dr. Bogonko and Dr. Kimutai for their real sacrifice, patience and understanding in guiding and giving valuable suggestions that enriched my work. I also wish to acknowledge the encouragement and support from friends and fellow students, may our Dear God bless you. Special thanks go to the University Administrators for allowing us to pursue our Masters of Business administration degree at Kisii University, may God sincerely bless you and provide for the University according to His riches in glory.
ABSTRACT

Financial distress research of companies has attracted a growing attention in the recent past. This phenomenon of financial distress in public companies has been witnessed by a number of corporate failures and the increase in delisting of listed companies. However, the researcher notes that while there are various studies on, the impact of financial ratios on financial performance, the researcher notes that little has few studies have been conducted on effectiveness of ratio analysis in the context of firms listed at the NSE in Kenya. Efficiency ratio gives rise to either leveraged firm or unleveraged firm. This study therefore fills the gap by investigating effectiveness of market ratios on financial distress of listed firms in Nairobi Security Exchange Market, Kenya. Theories such as the agency theory, the Wreckers theory of Financial Distress and Normative Theory of Business Bankruptcy were reviewed which provides a foundation for both efficiency ratio and financial distress. The study used a cross-sectional survey research design is an observational study. The target population was 51 non-banking firms listed companies in Nairobi Security Exchange Market as indicated in from year 2012-2016. The entire population except the banking industry was used in the study. The study used document analysis by getting panel data from listed companies in Nairobi Security Exchange Market. Descriptive and inferential statistics method with the aid of Stata was used for data analysis and interpretation. Data were presented using tables and diagrams. Hypotheses were tested at 0.05 level of significance (95% confidence level) from OLS pooled least squares regression (fixed and random effect) which shows the relationship between the independent variable and dependent variable. The findings show that leverage ratio has a negative and significant effect on financial distress of firms listed on the NSE ($\beta_2 = -1.852$, p-value = 0.001), while efficiency analysis ratio has a positive and significant effect on financial distress, $\beta_1 = 0.593$, p-value = 0.000). The findings also showed that profitability ratio indicates effectively financial distress ($\beta_1= -0.010$, p-value = 0.818). It is suggested that efficient management and financing of working capital can increase the operating profitability ratio. In conclusion financial ratios predict 47% of financial distress on firms listed in NSE. Users of financial information should always examine ratios since it an important tool in predicting financial distress. The study therefore recommends the development of guidelines on the level of leverage to be held by the listed companies for sustainability.
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<tr>
<td>ALCO</td>
<td>Bank’s Asset and Liability Management Committee</td>
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<td>ANOVA</td>
<td>Analysis of Variance</td>
</tr>
<tr>
<td>CB</td>
<td>Chase Bank</td>
</tr>
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<td>CBK</td>
<td>Central Bank of Kenya</td>
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<tr>
<td>CCC</td>
<td>Cash Conversion Cycle</td>
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<td>CDSC</td>
<td>Central Depository and Settlement Corporation</td>
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<tr>
<td>CMA</td>
<td>Capital Market Authority</td>
</tr>
<tr>
<td>CPP</td>
<td>Creditors Payment Period</td>
</tr>
<tr>
<td>DCP</td>
<td>Debtors Collection Period</td>
</tr>
<tr>
<td>EBITDA</td>
<td>Earnings before interest, tax, depreciation and amortization</td>
</tr>
<tr>
<td>ICPACK</td>
<td>International Certified Public Accountants of Kenya</td>
</tr>
<tr>
<td>KNBS</td>
<td>Kenya National Bureau of Statistics</td>
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<tr>
<td>NACOSTI</td>
<td>National Commission for Science, Technology and Innovation</td>
</tr>
<tr>
<td>NSE</td>
<td>Nairobi Security Exchange Market Kenya</td>
</tr>
<tr>
<td>ROA</td>
<td>Return on Asset</td>
</tr>
<tr>
<td>ROE</td>
<td>Return on Equity</td>
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<td>ROI</td>
<td>Return on Investment</td>
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<td>ROS</td>
<td>Return on Sales</td>
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<tr>
<td>SFA</td>
<td>Sales Force Analysis</td>
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<td>SPSS</td>
<td>Statistical Package for the Social Sciences</td>
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CHAPTER ONE

INTRODUCTION

1.1 Background Information

Financial distress research of companies has attracted a growing attention in the recent past both in research and in practice. Business firms additionally encounter financial distress when they confront lacking efficiency to meet their financial liabilities. The most discernible impact of financial distress is the suspension of debt premium installments, cutting capital costs, exchanging settled resources and scaling back (Makini, 2015) temporary insolvency and low efficiency (Jabeur & Fahmi, 2017) (Sitati and Odipo, 2011, Nyamboga et al., 2014). This upsurge in research attention could be attributed to the importance attached to the need of firms to understanding financial dimensions that are revealed in moments of crisis (Nyamboga et al., 2013). (Sitati and Odipo 2011) defined financial distress as the inability of a firm to satisfy its financial obligations as and when they fall due. This is often witnessed whenever the firm’s operational cash flows are lower than its financial expenses. Business firms additionally encounter financial distress when they confront lacking efficiency to meet their financial liabilities. The most discernible impact of financial distress is the suspension of debt premium installments, cutting capital costs, exchanging settled resources and scaling back (Makini, 2015) temporary insolvency and low efficiency (Jabeur & Fahmi, 2017).

Khayatun, Nicky & Awaluddin (2017) in a study to evaluate Effect of Financial Distress Ratio in Banking Company in Indonesia using logistic regression test found out that
Performing Loan (NPL) ratio has no significant effect on financial distress. Loans to Deposit Ratio (LDR) ratio have no significant effect on financial distress. Operating Cost Ratio to Operating Income (BOPO) has no significant effect on financial distress. Return On Assets (ROA) ratio has no significant effect on financial distress. The ratio of NPL, LDR, BOPO, and ROA have an effect on financial distress. Listed Chinese companies examine, 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. Tesfamariam (2014), study on determinants of financial distress in the case of manufacturing share companies in Ababa, Ethiopia revealed that efficiency and profitability had insignificant effect in determining financial distress. Alifiah (2013) supports use of leverage, profitability, and efficiency and leverage ratios in prediction of financial distress.

Since independence Kenya has witness numerous of financial among listed companies. This has been evidenced by some companies undertaking financial restructuring and others being placed under receivership and subsequently delisted. This situation is worrying and does erode confidence in the capital market. An analysis on the Nairobi Securities Exchange reveals that atleast16 listed companies have undergone financial challenges between 2011-2015 (ROK, 2016).Further, more than 56 % of the companies listed in NSE had declining trend on their market capitalization for the years2011,2012, 2013, 2014 and 2015 (CMA, 2016). There is an increasing trend of
failure of Kenyan firms such as Uchumi Supermarkets, Mumias Sugar and A-Baumann (Maina & Sakwa, 2012).

The empirical literature reviewed reveals conflicting findings on the predictors of financial distress. According to Altaman (1968) efficiency ratios were not significant whereas efficiency and profitability ratios were most significant in prediction of financial distress. Study done by Nyamboga (2014), on determinants of corporate financial distress: case of non-financial firms listed in NSE, Kenya concluded that profitability was most influential determinant of corporate financial distress while efficiency and leverage found with no significant effect. Nyamboga (2014), study conflicted with those of Tesfamariam (2014); Pranowo et al (2010 and Kiragu (2013), who concluded that leverage and efficiency had the most significant effect on financial distress. Pranowo et al (2014), found profitability to have no significant impact on the corporate financial distress. Cheluiget (2014) study on determinants of financial distress in insurance companies in Kenya concluded that profitability, efficiency, efficiency and leverage had positive effect on financial distress which was inconsistent with Tesfamariam (2014); Pranowo 2010 and Kiragu (1993), in the power ranking. Studies by Muigai (2014); Mwangi, Muathe and Kosimbei (2014); Memba (2013) and Nyanumba (2013) concentrated on capital structure as determinant of financial distress. Based on literature reviewed, there is a lot of conflicting theoretical and contextual literature on determinants of financial distress. Earlier researches done in Kenya are conflicting on findings, study variables, theoretical and methodological approaches (Kihooto, 2016; Muigai, 2016; Cheluget, 2014; Ntoiti, 2013 & Memba, 2013). This conflicting empirical result informs further
research focusing on examining the predictive ability of financial ratios in predicting, particularly in the firms listed in NSE where this study is based.

1.2 Statement of the problem

From the above background it is evident that financial distress attract attention not only on corporate section but also to individual who wish to invest. It’s the objective of any firm to be a going concern. The owners and the managers strive to maximize the profit and maintain the firms operations. However there has always been experienced financial distress globally. Kenyan companies have equally been affected by financial distress. In the recent past Uchumi Supermarket has suffered financial distress and was put under receivership (Kipruto, 2013). Companies listed at the NSE are no exception to financial distress and bankruptcy (Mohamed, 2012). These companies are expected to be health financially in order to maintain investor confidence. Kariuki argues that the bankruptcy on indebted firm will send a shock wave to the firm’s equally indebted suppliers leading in turn to more bankruptcies until eventually the whole economy collapses in a heap (Kariuki, 2013). The financial health of firms listed at the NSE will influence the transactions conducted at the NSE. More recently Mumias Sugar Company, Kenya airways have been hit hard by financial distress and have asked the government for bailouts (The Standard Newspaper, June 27 2015). Imad (2015) studied financial distress of the non-banking in Palestine exchange, while and (Kariuki, 2013) using banking industry in Kenya using the Z – score. (Kipruto, 2013) and (Shisia et al., 2014) studied financial distress in Uchumi Supermarkets using the Altman’s Z – score model. There is therefore great need to identify great indicators of financial distress to assist the investors and the users of accounting
The studies conducted have proved that financial ratios predict financial distress. In Kenya there is need to evaluate the effectiveness of financial ratios as an indicator of financial distress. No significant studies have been done in Kenya on financial distress prediction. The original Z – score model (Altman, 1968) was developed to predict financial distress and bankruptcy in large manufacturing firms in the United States of America. This study therefore differs from the above studies in that it sought to test the validity of Altman (1968) model in the Kenyan context and in particular listed companies at the NSE.

The findings from others studies have indicated mixed reactions on the ability of financial ratios to predict financial distress (Kariuki, 2014) in a study of banks concluded that financial ratios had significant impact on financial distress. There is a negative relationship between financial distress and financial ratios. The study established the need to reduce financial distress by ensuring financial stability in banks to ensure shareholders confidence. (Shisia et al., 2014) conducted a study with the objective of Altman failure prediction model in predicting financial distress in Uchumi Supermarket in Kenya. They used secondary data for a period of five years from 2001 – 2006. The study established that Altman failure prediction model was appropriate for Uchumi Supermarket as it recorded declining Z – score values indicating that it was suffering financial distress. It is always important account users will need only a small number of financial ratios to make crucial decisions about a company’s state of affairs. Hence, it will be costly and waste of resources for corporate stakeholders to focus on the numerous financial ratios in order to make critical business decisions. There is also the risk of focusing on less important, ambiguous or the wrong type of ratios. There is need to determine which ratios are more statistically
effectives than others in predicting financial distress. The ratios in themselves may not be as useful when applied individually. It is therefore necessary to combine several ratios. The problem then is to determine which ratios are more significant in such decision making process. It would not be viable for analysts, creditors, investors to apply all the over 50 financial ratios. This study focused at the Kenyan companies listed in the Nairobi Stock Exchange. This study would sought to determine the predictive power of ratios in all the firms listed in NSE and thus determine the most appropriate ratios that can be used to effectively predict the financial distress in Kenyan firms after a period of economic depression and prolonged drought in the agricultural sector.

1.3 Objective of the Study

1.3.1 General Objective of the Study

The main objective of the study was to determine effectiveness of financial ratio analysis on financial distress of listed banks in Nairobi Security Exchange Market Kenya.

1.3.2 The specific objectives

This research project was guided by the following objectives


1.4 Research Hypothesis

To meet the above objectives the following research hypothesis were formulated.

\( H_01: \) Profitability ratios are not statistically significant in effectively predicting financial distress of listed companies in Nairobi Security Exchange Market?

\( H_02: \) Leverage ratios are not statistically significant in effectively predicting financial distress of listed companies in Nairobi Security Exchange Market?

\( H_03: \) Efficiency ratios are not statistically significant in effectively predicting financial distress of listed companies in Nairobi Security Exchange Market?

\( H_04: \) Market ratios are not statistically significant in effectively predicting financial distress of listed companies in Nairobi Security Exchange Market?

1.5 Significance of the Study

This study by increasing the literature benefits the management of listed companies in the NSE. Findings, of this study added knowledge to the existing literature on the effect of accounting ratios on financial performance. Therefore, CMA would formulate policies on financial ratios that will assist regulate companies on financial indicates of financial
distress. Firms would also benefit from concerted commitment to accounting ratios reporting including a strong reputation, investors and shareholders’ interest, being exemplified as responsible by stakeholders, sustainable product brand loyalty and improved government and community relations.

Different stakeholders have different expectations from the company. Stakeholder theory would take into account powerful stakeholders interest (Nyabwanga, 2013) while disclosing their intellectual capital. Thus, under managerial branch of stakeholder theory, research of this kind is limited in the Kenyan context; therefore, this research would be important for future scholars in the field of finance and other related studies. Finally, the findings of this study would be of great help to the Nairobi Securities Exchange in formulating financial ratios guidelines that pertaining firm financial distress.

According to Cheluiget (2014), prediction of bankruptcy is probably one of the most important business decision making problems as it affects the entire life span of a business. If the firms are financially unsound, then the risk of default will be very high. Investors invest in companies that are financially healthy as risk of default is minimized for them. If not so, investors’ confidence in a firm will tend to decrease, ultimately resulting in corporate failure. Therefore, it is imperative for all the organizations to predict their financial health. By doing so, firms can remain in the industry and prevent themselves from being liquidated by taking necessary actions.
1.6 Scope of the Study

The study was restricted to all the companies listed in Nairobi Stock Exchange Market, which operates in Kenya. These was comprised of agricultural, automobiles and accessories, construction and allied, energy and petroleum, insurance and investment. The study was further restricted itself to; an evaluation of ratio analysis as an indicator of financial distress of companies listed in Nairobi Stock Exchange Market in Kenya. The study used five (5) variables for the analyses such as: efficiency ratio; solvency; market ratios; leverage ratio, and financial distress for the past five years. The dependent variable represented by financial distress as a dependent variable was represented by Gross profit margin, return on Equity, and return on investment while financial ratio analysis stands as for independent variables. This study was carried out on 62 companies listed in Nairobi Security Exchange Market. The study was entailing a review of efficiency ratio, market ratio and financial distress concepts, theories underpinning financial distress and stakeholders which include agency theory Wreckers theory of financial distress and normative theory of business bankruptcy. It also reviews empirical evidence of the relationship between efficiency ratio, profitability ratio, market ratio and financial distress. The study reviewed data on financial distress of listed companies in Nairobi Security Exchange Market between 2011 and 2016.

1.7 Limitations of Study

The study will be limited to companies listed in NSE only hence the study results will not be able to be generalized to other sectors. The researcher will enhance the reliability this by increasing the years for analyzing financial statements to 5 years, and employing
document analysis. The study was limited to financial ratios on the effects and its effects on financial performance of companies listed in NSE in Kenya. The researcher overcomes this by developing a work plan to utilize the available time well. Some of the information may be difficult to be obtained from the custodians due to sensitivity and confidentiality of the financial information. The researcher introduced himself by providing evidence using a letter from the University and NACOSTI, this assures them that the information they give is treated confidentially and it will be used purely for academic purposes.

1.8 Assumptions of the study

The study was guided by the following assumption:

i. All the secondary data of the listed firms were obtained for the five year period. The data obtained from audited financial reports in CMA shall be relevant to the study. The study presumed that shall have indicators of profitability, leverage, activity ratios and market ratios.

ii. There were five year period gave enough data for making informed decision, thus the study assumed that all the data obtained shall be relevant enough to enable this study come up with valid recommendations and make decision about the use of these ratios in relation to the financial distress.

1.9 Operational Definition of Terms

Financial Distress: Financial Distress Financial distress is a situation where a company does not have capacity to fulfill its liabilities to the third.
Leverage ratios: financial leverage, is a measure of financial risk, refers to financing a portion of the firm’s assets, bearing fixed financing charges in hopes of increasing the return to the common stockholders.

Liquidation - The process of dissolving a company by selling off all of its assets (making them liquid).

Efficiency ratios: Indicate the efficiency of the use of assets in generating sales

Market ratios: These show the banks overall operations and growth by the use of different sourcing of funding

Profitability ratios: Profitability of firms is used to measure the firms return on their investments.

Ratio analysis: Quantitative analysis of information contained in a bank’s financial statements.

Return on Assets - Is a financial ratio that shows the percentage of profit a company earns in relation to its overall resources. It is commonly defined as net income divided by total assets. Net income is derived from the income statement of the company and is the profit after taxes.

Return on Equity - Is the amount of net income retained as a percentage of shareholders equity. Return on equity measures a corporation’s profitability by revealing how much profit a company generates with the money shareholders have invested.

Return on Investment - It is the money an investor gets back as a percentage of the money he or she has invested in a venture.
CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Framework

This section discusses the theories that were established by other researchers, authors and scholars and are relevant to financial innovations. The study specifically reviewed the Agency theory, Wreckers theory of financial distress and normative theory of financial distress.

2.1.1 Agency Theory

The theory was established by Jansen and Meckling in 2010. The theory that seeks to explain the relationship between an agent and his principal in the running of a business. The theory explains mechanisms for resolving conflicts which arise between the two parties especially when the agents are acting on behalf of the principal in the course of business. Problems usually arise when the desires and goals of the two parties conflict. Different attitudes towards risk between shareholders who are the owners of the firm and agents such as company executives hired to run the organization also become a bone of contention.

Agency theory has been extensively studied and expounded as a key theory influencing how corporate decisions are made. In (Jensen & Meckling, 2010), they defined the term agency cost, showed the relationship between a firms separation of ownership and its
control, investigated the full nature of debt and equity of a firm versus the agency costs incurred. The paper also explored how to a great extent, the adopted ownership structure of a corporation including how ownership equity by managers aligns managers interest with those of the owners. (Omondi & Muturi, 2013) described the role of a company’s board of directors as a useful corporate management tool that could be used to unearth and monitor opportunism of top executives out to profit at shareholders expense. The paper also expends the idea of agency problem to controversial corporate practices such as golden parachutes, white knights and hostile takeovers as a way through which top notch executives really concentrate on their own interests. (Kariuki, 2014) indicated that conflicts between creditors and managers as the second most prevalent form of conflict after that of shareholders and managers. The author states that it is also the most severe. Managers using debt agree to incur real agency costs and limit their own freedom in making decisions since they moves they make must closely tally the wishes of the debt holders (Kahl, 2015) states that in general, increase in debts is highly correlated with increased levels of bankruptcy risk, diminished free cash flows, probability of bankruptcy and overall consequential corporate financial distress. (Cheluiget 2015) argue that due to the limited freedom managers have, this is not necessary a bad thing since agency conflicts and costs are likely to be reduced as high financial leverage forces company executives to exercise high financial prudence which may be lax in case of equity control. Nyamboga et al. (2014) expressly state that restrictive covenants are a preventative measure to high agency conflicts and associated costs. These include; restrictions on amount of dividends payable, moratorium on the ability of a firm to pledge its asset to new debt holders, restrictions on mergers, assets disposals or acquisition of new debt without prior approval by current
creditors. The firm may also agree to maintain a minimum acceptable level of working capital and to furnish its creditors with up to date financial statements at periodic intervals.

2.1.2 Wreckers theory of Financial Distress

The theory as postulated by Daniel, Hirshleifer and Subrahmanyam in 1998 authors explored the concept that stocks of financially distressed firms consistently underperform those of financially sound firms. This is usually motivated by the desire among investors to opt out before the firm ultimately fail and they lose their investment. The act of withdrawing funds from already financially distressed firms who quite to the contrary badly need those funds is referred to as “wrecking”. The action can also be explained as the process of pre-emptive destruction of a company before its value ultimately plummets to a value beyond salvage. Investors withdraw resources from the firm as private, non-dividend benefits. Financially distressed firms shareholders will only suffer opportunity cost if the firm recovers, however if it defaults on its obligations, the withdrawal of funds is deemed to be a free source of funds which can be reinvested somewhere else for an acceptable return. This act is compared to the traditional concept of ripping apart an old ship which is beyond or too expensive to repair and utilizing its individual parts to put another newer one. When predicting failure over long horizons, the most important and persistent firm characteristics that should be taken into account include; market capitalization, market to book ratio and equity volatility. The study revealed that financially distressed firms have traditionally delivered anomalous low returns. This creates a safe environment for predator firms such as private equity funds to swoop in and acquire control and chart a new course for the firm through corporate restructuring.
This theory is relevant since the companies involved deals with management who have a relationship with the shareholders, just like the agent and the principal relationship. The management being agents work for the shareholders.

2.1.2 Normative Theory of Business Bankruptcy

The theory was postulated by (Schwartz, 2005) posits that formal bankruptcy theory began with the recognition that a bankruptcy system is at times necessary to solve a collective action problem among creditors of an insolvent firm. Insolvency may be a corollary of economic distress, financial distress or both. Economic distress occurs when the firm does not have sufficient revenues to cover its costs exclusive of financing costs. Such a firm has negative economic value. (Schwartz, 2005) further enunciates that a firm is only in financial distress if it would have positive earnings were it not required to service its debts. Because a firm’s debt can be considered to be sunk when insolvency has occurred, the existence of debt is irrelevant to the question of whether a firm should continue being a going concern or not. This is collaborated and supported by Imad, (2015) who argue that in overall, social welfare is maximized when economically distressed firms are liquidated but financially distressed firms continue operating as going concerns. Alshatti (2015)., Further add that in accordance with normative theory of business bankruptcy, creditors are less interested in saving firms from imminent bankruptcy doom but are chiefly concerned whether the assets of the firm are enough to satisfy their claim. If assets exist, debt holders will attempt to seize them resulting in a firm’s piecemeal liquidation. However, when a firm is only experiencing financial distress, creditors total insolvency state pay off would be maximized were the firm to continue its operations rather than disposing its assets. A firm’s turn around
would require coordinated and collective efforts and associated costs of undertaking this exercise are usually considerable. As a consequence, financially distressed firm are likely to be liquidated in bits in the absence of regulatory protection. A good financial corporate distress prediction model can avoid these inefficiencies through collective prior correction measures to save a firm from attaining the state of no return.

The normative theory plays a key role in dealing with the financial distress, in Kenyan context since it provides an accepted procedure in case a company shows signal of distress situation. The theory therefore, it prevents the creditors from agreeing a new deal amongst them, so that the company can continue to trade (a restructuring). Secondly, where a restructuring is not in prospect, it prevents the business from being sold as a whole (or as a going concern), notwithstanding that this would be likely to attract a higher price than a piecemeal realization of the individual assets. Although individual creditors who win the race to the assets will be better off, overall creditors will be worse off (the common pool problem). The theory will therefore impose the main purpose of all corporate bankruptcy law is and assist firms a stay in operations by preventing creditors from taking individual enforcement action to 'grab' assets, so that the business can either be restructured or the business and assets sold.

2.2 Empirical Literature Review

This section empirically examines existing literature on the dependent variable financial distress and independent variables; accounting profitability ratios, efficiency ratios leverage ratios and market ratios.
2.2.1 Financial Distress

Financial distress is a term which is used to describe a firm which is suffering from short term financial difficulties. If the symptom of financial distress is not treated effectively and efficiently, then this can often lead to the onset of insolvency proceedings; although financial distress can often be detected many months before any formal prescription or legal action need be sought, and therefore one might say that with appropriate intervention insolvency can often be avoided altogether. In accounting and financial terms, financial distress could be thought of as being one of the following scenarios: company operating returns are lower than its cost of capital, cost are greater than revenue, actual returns are less than expected returns and outflows are greater than inflows (Becerra, Galvao & Abou-Seada, 2015).

These scenarios are unlikely individually to cause the company to fail and through adequate management skills these problems more often than not can be addressed before they become out of control and irreversibly lead to legal insolvency process. Traditionally, insolvency prediction models aim to pick up signs of these financial distress signals contained within past accounting data and assess the likelihood of the distressed company becoming formally insolvent (Cooper, 2010).

A theoretical explanation of distress perhaps originates with Altman (2007) who perceived a company to be akin to a reservoir of liquid assets with this reservoir being supplied by monetary inflows and drained by its outflows. He describes financial distress as the exhaustion of this liquid asset reservoir which acts as a cushion or bolster, dampening the impact of variations in monetary flows. (Imad, 2015) suggests that with all else being equal,
the probability of failure is greater when: the size of the reservoir is smaller, the inflow of funds from operations is smaller, the claims on resources by creditors is larger, the funds flow required for business operations is larger and the variation of inflows, outflows and claims on the company is higher. These ideas form the basis of much academic literature on insolvency prediction by Beaver (1966), Altman (1968) and Tabari (2013), for example, who, by using accounting data and financial ratios, have been able to detect stark differences between the financial of failed and non-failed companies.

Regular survey conducted consistently show that many insolvency proceedings could have been avoided if professional advice has been obtained earlier, and the longer a company delays seeking professional help the higher the chance that the business cannot be rescued (Balcaen & Ooghe, 2013). Economic failure has no real concrete definition but in economic terms, research done by researchers suggests the following common reasons why a company may become insolvent: loss of market where companies have not recognized the need to change in a shrinking or changing marketplace because their margins have been eroded or because their service has been overtaken technically (29%), management failure to acquire adequate skills, either through training or buying them in, over optimism in planning, imprudent accounting, lack of management information (22%), bad debts (10%), lack of working capital (20%) and other reasons including excessive overheads, new venture/expansion/acquisition are also attributed (Balcaen, & Ooghe, 2013).

The decision of management team is critical if any signs of financial distress are detected, but all too often there is a reluctance to seek professional help which may ultimately save the business. Foreman (2003) provides evidence that floored business plans and poor
execution are the root causes of corporate failure given that traditional financial ratios concerning relative profitability, capital structure, and the power to finance growth internally almost completely explain which firms would fail within two years. Early intervention can be a tough decision to make (Charitou, Neophytou & Charalambous, 2012). Often the thought of taking advice from insolvency professionals is unpalatable to the management team as they fear that insolvency professionals are like vultures circling prior to the terminal insolvency event. If insolvency is to be avoided, it is about taking appropriate advice as the earliest opportunity (Memba, 2013). It appears that financial distress happens to companies whose operating decisions perform below expectations. Bankruptcy, in contrast, seems to be a result of decision that companies make to relieve themselves of problems such as excess debt levels (Robert, 2014).

Insolvency is described as the inability of a company to pay its debts and is defined in two ways, in terms of cash flow and in terms of the balance sheet. Legal insolvency thus occurs when a company cannot meet its immediate liabilities, or when the total liabilities are in excess of its assets. If insolvency is detected then it is the responsibility of the company directors to ensure that appropriate formal steps are pursued. If the company continues to trade after this point the directors must take every step thereafter to minimize the potential loss to the company’s creditors, otherwise wrongful trading may be established and the director may be ordered to contribute to the assets of the company for the benefit of the creditors and/or face disqualification (Robert, 2014). The court will use both objective and subjective tests to determine whether wrongful trading has occurred. A director, therefore, has to match the standards of performance reasonably expected of director having similar functions, else a judgment of fraudulent trading may be established which is a criminal
offense. Unlike fraudulent trading which includes an element of dishonesty or recklessness with intent to defraud creditors, wrongful trading is not a criminal offence.

In his study on the possibility of using financial ratios to predict the distress of industrial companies General food in Syria for the period from 1999-2000) Makini (2015), and try to develop a model that could benefit from it for predicting distress of these companies, so it is an important indicator to judge the performance of such industrial companies, by analyzing 10 financial ratios obtained from the financial statements using a sample of 22 companies for tracking food industrial public sector in Syria, found out that 12 of them failed and 10 is non-failed using discriminatory analysis. He concluded that a set of 3 ratios can be used to predict the failure of companies, namely: the rate of external funding, efficiency ratios rapid, profitable sales. About the accuracy form in predicting distress of the companies is 100% in the study, 87.5% in the first year before faltering, 82.5% the second year before faltering, 79.17% the third year, 66.67% of the fourth year before faltering.

By using logistical support and discriminatory methods with the aim of establishing model to predict financial of public share holding companies listed in Amman financial Market, (Shisia, 2014), concluded that 26 companies failed and 26 successful company, was obtained from the evidence public shareholding companies during the period (1991-2002). Ratios were classified into financial efficiency ratios and profitability ratios, leverage and activity (Shisia, 2014). The researcher found that the discriminatory form and logistical they can predict the failure of companies with an accuracy of 96.2% a year earlier failure, the ability of these models to predict has decreased the beginning of the second year to the
fifth year prior to failure. Odipo and Sitati (2010) conducted a study using Altman’s model in bankruptcy prediction at the Nairobi securities exchange. The study used twenty firms listed between 1989 and 2008.

The study used Altman’s model which incorporated, total assets, retained earnings, earnings before interest and taxes, book value of equity, and sales as independent variables. The findings of the study revealed that Altman’s model was found to be applicable with 80% successful prediction. The study relied on secondary data from NSE and CMA. However, this study was only limited to financial ratios in bankruptcy prediction. In a study on assessing corporate financial distress in South Africa, Bothwell (2010) investigated to develop a model for bankruptcy prediction. The study used 28 companies and grouped 64 ratios, classifying firms into failed and non-failed firms. The independent variables used were Times Interest Earned, Cash to Debt and Working Capital to Turnover. The findings revealed that the model correctly classified about 75% of failed and non-failed firms. The study used simple random sampling design and used multiple discriminant model methodology. This study however relied only on ratios ignoring other factors which contribute to financial distress.

In a study conducted to test bankruptcy and financial distress prediction in the mobile Telkom industry in Ghana, Kpodoh (2010) used Z score bankruptcy prediction model. The study used qualitative and quantitative data (modified single case design) which was collected using questionnaires issued using survey method. Secondary data was obtained from financial statements. The findings revealed the strength of Z score in bankruptcy prediction. It also confirmed the correlation between corporate governance and corporate
failure. The study however concentrated on ratios and corporate governance excluding macroeconomic factors which affect firm characteristics indirectly, triggering financial distress on a firm.

2.2.2 Accounting Ratios

2.2.2.1 Profitability ratios and financial distress

Profitability ratios are indicators of the firm's general efficiency. Mostly, it is used as a measure for income that a company generates within a duration of time in regard to its level of sales, capital employed, assets, earnings per share and net worth. Profitability ratios can measure income ability of the firm, and it is seen as a symbol of growth, and success. For example, creditors are concerned in profitability ratios because it indicates the company's ability to meet its interest requirements. This shows the growth and the rate of profit on their investments. Profitability ratio evaluates how fine a company is performing by analyzing how profit was earned in comparison to sales, assets and net worth of firms.

Jahur and Quidir (2012), says that the Profitability Ratio Analysis of Income Statement and Balance Sheet measures company profit performance. The income statement and balance sheet are the two crucial reports that indicate the profit and net worth of an organization. Its analyses indicate how good the company is performing in terms of profits in comparison to sales. It also shows how well the assets are performing in regard to generating revenue.

Profitability Ratios Measures on Margins and Returns such as gross, Operating and/or Net Profits, ROA ratio, ROE ratio, ROCE ratio. However, he stated that to determine the Gross
profit is the surplus generated by sales over cost of goods sold. That is, Gross Profit Margin = Gross Profit/Net Sales or Revenue. Moreover, Operating profits are arrived at by deducting marketing, administration and R&D costs from the gross margin. Nonetheless, He explains that Operating Profit Margin = Operating Profit/Net Sales or Revenue. He also explains that the return on resources used is divided into three categories such as ROA, ROE, and ROCE: At first the Return on Assets = Net Profit/ (Total Assets at beginning of the period + Total Assets at the close of the period)/2) .The denominators is the average total assets employed during the year. Return on Equity = Net Profit/ (Shareholders' Equity at the beginning of the year + Shareholders' Equity at the close of the year)/2).ROCE ratio: Return on Capital Employed = Net Profit/ (Average Shareholders’ Equity + Average Debt Liabilities).

In examining use of financial ratios to evaluate financial distress Jahur & Quadir (2012), they stated that the Profitability Ratio Analysis of Income Statement and Balance Sheet Ratio analysis of the income statement and balance sheet are used to measure company profit performance. He emphasized that ratio analyses of the income statement and balance sheet should be learnt in order to determine or evaluate the business financial performance. Considering the fact that, the income statement and balance sheet are two important reports that show the profit and net worth of the company its analysis play a vital role to the users, its’ analyses shows how the well the company is doing in terms of profits compared to sales. His argument suggest the statement of financial position also shows how well the assets are performing in terms of generating revenue. He said that the balance sheet does not report profits, there’s an important relationship between assets and profit. The business owner normally has a lot of investment in the company’s assets.
In an attempt to evaluate financial distress on organizational stability, (Maria Zain, 2008), cited in his articles about the return on assets as an important percentage that shows the company’s ability to use its assets to generate income. He said that a high percentage indicates that company’s is doing a good utilizing the company’s assets to generate income. He notices that the following formula is one method of calculating the return on assets percentage. \[ \text{Return on Assets} = \frac{\text{Net Profit}}{\text{Total Assets}} \]. The net profit figure that should be used is the amount of income after all expenses, including taxes. He enounce that the low percentage could mean that the company may have difficulties meeting its debt obligations. He also short explains about the profit margin ratio – Operating Performance. He pronounces that the profit margin ratio is expressed as a percentage that shows the relationship between sales and profits. It is sometimes called the operating performance ratio because it’s a good indication of operating efficiencies. The following is the formula for calculating the profit margin. \[ \text{Profit Margin} = \frac{\text{Net Profit}}{\text{Net Sales}} \] (Maria, 2008).

Jahur and Quadir (2012), in this article he barfly express about the efficiency ratio. He Pronounce that it is analysis of the financial statements is used to measure company performance. It also analyses of the income statement and balance sheet. Investors and lending institutions will often use ratio analyses of the financial statements to determine a company’s profitability and efficiency ratios. If the ratios indicate poor performance, investors may be reluctant to invest. Therefore, the current ratio or working capital ratio, measures current assets against current liabilities. The current ratio measures the company’s ability to pay back its short-term debt obligations with its current assets. He thinks a higher ratio indicates the company is better equipped to pay off short-term debt with current assets. Wherefore, the acid test ratio or quick ratio, measures quick assets
against current liabilities. Quick assets are considered assets that can be quickly converted into cash. Generally they are current assets less inventory.

Tabakari referred that the accounts receivable is an important analytical tool for measuring the efficiency of receivables operations is the accounts receivable turnover ratio. Tabarie, at al. (2013), Many companies sell goods or services on account. This means that a customer purchases goods or services from a company but does not pay for them at the time of purchase. Payment is usually due within a short period of time, ranging from a few days to a year. These transactions appear on the balance sheet as accounts receivable.

In their survey on understanding financial ratios, (Nyamboga et al., 2014) used various financial ratios and techniques can help in gaining a more complete picture of a company's financial outlook. He thinks the most important thing is fixed cost and variable cost. Fixed costs are those costs that are always present, regardless of how much or how little is sold. Some examples of fixed costs include rent, insurance and salaries. Variable costs are the costs that increase or decrease in ratios proportion to sales.

As pointed out by (Clausen, 2011), the long term debt to equity ratio of a Business. The ratio of these numbers tells a lot about the business. It is calculated by taking the debt owed by the company and divided by the owner’s equity, also known as capital. The debt number may include all liabilities, or just long term debt.

2.2.2.2 Efficiency Ratios and financial distress

Efficiency ratio is defined by Ongare et al. (2015) as the capability of an enterprise to assets into sales in the most cost-effective manner possible while still ensuring the high quality of
its products, service and support and thus sustaining its operations. Operational efficiency tends to confirm the notion of increasing competitiveness and improving resource utilization by companies listed in NSE. In the literature on bank performance, efficiency is usually used to assess managerial efficiency in a company to make quick decision to raise liquid cash by selling of their assets. Some external factors and characteristics may influence an companies 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 ratios 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 cashflows.

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).

In a study by (Khidmat, 2014) on chemical sector firms listed in Pakistan firm he stated that risk management is substantial part of all types of business concern, the study examined the way of accomplishing minimizing of risk, liquidity adequacy and maximizing the profit. (Mbogo, 2017) the study has found three point of view of scrutinizing the performance; increasing the profit, getting the efficiency boost of sale customers and the most favorable use of variant negotiation channels, in order to achieving these effectiveness the researcher has recognized an association between profit and operational efficiencies as well as operational and transactional efficiencies, therefore, the comparability make it to help to recognize the weaker or stronger branch of concern. The Kah, l 2017 on examining the relationship between financial distress and efficiency ratio found out a positive relation between profit and operational efficiency and also between operational and transactional efficiency, the quality of service also impact on profit and operational efficiency.

In a study to examine influencing factor of firm efficiency ratios by mean of variables concerned with inventory management practices using a specimen of Ghana manufacturing firm, (Mahama, 2015) the study showed that leverage, account receivable period and inventory period substantively and absolute, the study also scrutinize that size of organization and the cash conversion cycle not have substantial effect on profitability of
firm but only thing effecting the firm profitability negatively is leverage (Samiloglu&Demrtgunes, 2008).

In study of on determinants of corporate financial distress, Nyamboya et al. (2014) efficiency ratios significantly affect financial distress. This study used operating expense ratio (OER) and net worth turnover ratio (NWTR) to measure the 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 (Nyamboga et.al 2014) 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).

**2.2.2.3 Market ratios and financial distress**

Market value ratio is also call share ownership ratio. It referred to the stockholders way of analyzing the present and future investment in a company. In this ratio the stockholders are interested in the way certain variables affect the value of their holdings. It helps the stockholder to be able to analyze the likely future market value of the stock. (Kariuki , 2014) examined the impact of returns and risks on the share prices for a sample of 38 industrial public companies in Jordan listed on Amman Security Exchange for the period of 2000 to 2007. The results of the study showed that there is no effect for the returns, risks and dividends on the market value per share. However, the results indicated
that there is a significant relationship between cash flow and share prices. (Kariuki, 2014) study explored the ability of the published accounting information to predict share prices for a representative sample of 110 Jordanian public companies listed in Amman Security Exchange for the period of 2005 to 2009. The results informed that there is a relationship between the published accounting information of the insurance public companies and their share. The results also informed that market information have more ability on predicting share prices compared to the accounting information. (Imad, 2015), examined the role of published accounting Information in predicting share prices. The study used a sample of 40 Jordanian public companies listed in Amman Security Exchange for the year 2003. The results showed that there is a positive significant positive relationship between the market price per share with the ratios of net profits to equity, net profits to total assets, and dividends to net profits as a total. The results showed also a significant negative relationship between the market price per share, with the ratios of fixed assets to total assets, the creditors total to total of cash sources, and the wages ratio to total of expenses ratio.

2.2.2.4 Leverage ratios and financial distress.

In his empirical study of the financial ratios on financial distress on insurance companies Cheluiget (2014) says that, financial leverage had a significant positive effect on the organizations profit on equity given that earnings’ power of the organizations’s assets is in exceed of the average interest cost of debt to the firm. (Clausen, 2009) found results that are significantly positive in terms of relationship between debt ratio and measures of profitability. (Kumar,2011) identifies a positive connection between debt and profitability
but for industries. In their study of leveraged buyouts, (Nyamboga et al., 2014) established a significantly positive relation between profitability and total debt as a percentage of the total buyout-financing package.

The capital structure theory is premised on the idea that the interests of the company’s managers and its shareholders are not perfectly aligned. According to (Kariuki, 2013), emphasis is placed on the importance of the agency costs of equity in corporate finance arising from the separation of ownership and control of firms whereby managers tend to maximize their own utility rather than the value of the firm. Agency costs can also exist from conflicts between debt and equity investors. These conflicts arise when there is a risk of default. The risk of default may create what Short (Mohamud, 2013) referred to as an “underinvestment” or “debt overhang” problem. In this case, debt will have a negative effect on the value of the firm.

Alternatively, there may be instances where managers have incentives to take excessive risks as part of risk shifting investment strategies. This leads us to Imad, (2015) who suggested that free cash flow theory where the problem is how to motivate managers to disgorge the cash rather than investing it below the cost of capital or wasting it on organizational inefficiencies. Thus a higher level of leverage may be used as a disciplinary device to reduce managerial cash flow waste through the threat of liquidation or through pressure to generate cash flows to service debt (Shisia et al., 2014). In these situations, debt will have a positive effect on the value of the firm.

In attempt to mitigate raising from overinvestment problems, (Lupuu, 2013) developed a model in which debt financing is shown to mitigate overinvestment problems but aggravate
the underinvestment problem. This model predicts that debt can have both a positive and a negative effect on financial distress and presumably both effects are present in all firms. According to him the common element in the models of Myers, Jensen and Stulz is their focus on the link between the firm’s investment opportunity set and the effects of debt on the value of the firm. Thus a reasonable conjecture will be that for firms with few growth opportunities the positive effect of debt on firm performance will be more dominant whereas the opposite effect will apply for firms with high growth opportunities (Lupuu, 2013). But firm performance may also affect the capital structure choice. This reverse causality effect is in essence a feature of theories linking agency costs, corporate control issues, and in particular, asymmetric information and taxation with the value of the firm.

Leverage ratio shows how efficient the organization uses other people’s money and whether it is using a lot of borrowed money (Ntoiti, 2013). Thachappilly (2009), in this articles him express about debt management. He mention that the Ratio of Debt to Equity has Implications for return on equity debt ratios check the financial structure of the business by comparing debt against total capital, against total assets and against owners' funds. The ratios help check how "leveraged" a company is, and also the financial maneuverability of the company in difficult times (Thachappilly, 2009). Debt ratios and the related interest coverage ratio checks the soundness of a company's financing policies. One the one hand, use of debt funds can enhance returns to owners. On the other hand, high debt can mean that the company will find it difficult to raise funds during lean periods of business (Jahur, 2012). The ratio of these numbers tells a lot about the business. It is calculated by taking the debt owed by the company and divided by the owner’s equity, also known as capital.
(Shisia, 2014) in this article, using Uchumi Supper market in Kenya to critically analysis of the Altman’s failure prediction model on corporate financial distress, he briefly about the asset management ratio. It divided into different types of categories. He state that about the used to analyze accounts receivable and other working capital figures to identify significant changes in the company’s operations and financial accounts. He said that there are two categories about this ratio such as account receivable turnover and average age of account receive. He measurement the ratio as, Accounts receivable turnover = Sales / Average Accounts receivable. Average age of accounts receivable/ collection period = 365 days / Accounts receivable Turnover.

In a survey to test the validity of Altman Z score on non-commercial firms listed in NSE, (Shisia, 2014), He said that learn how to perform inventory analysis and inventory turnover analysis to better understand a business as well as to identify effective inventory management. He analyzing a company’s financial performance definitely includes performing inventory analysis. He know that there are three types of business inventory: Raw Materials (RM), Work-In-Progress (WIP), Finished Goods (FG). He give idea two types formula of ratio such as Inventory Turnover = Cost of Goods Sold / Average Inventory, Average age of Inventory = 360 days / Inventory Turnover (Banafa, 2015).

Using two factor ratios in calculation (Clausen 2009), denotes that about the total asset ratio affects financial distress. The calculation uses two factors, total revenue and average assets to determine the turnover ratio. When calculating for a particular year, the total revenue for that year is used. Instead of using the year ending asset total from the balance sheet, a more accurate picture would be to use the total average assets for the year. Once
the average assets are determined for the same time period that revenue is compared, the formula for calculating the asset turnover ratio is. Total Revenue / Average Assets = Asset Turnover Ratio.

In his article Mtetwa (2010), he short propose that about the fixed asset. He define that fixed assets are assets that are used in production or supply of goods or services and they are to be used within the business for more than one financial year. Consequently, fixed assets represent the company's long term income generating assets and they can either be tangible or non-tangible. It includes land and buildings, plant and equipment, golf courses, casinos, football players, machinery and hotels depending on the nature of the business under consideration. Fixed asset turnover = Sales / Net fixed asset. (Mtetwa, 2010)

2.3 Research Gap

The Previous studies focused primarily on financial performance, stock return, and bankruptcy or financial distress prediction by using various statistical and data mining techniques such as decision trees and neural network (Chen & Du, 2009; Lam, 2004; Ntoiti, 2013; Wang, Jiang, & Wang, 2009; Yu & Wenjuan, 2010). For instance, (Zibanezhad, Foroghi and Monadjemi2011) employed classification and regression trees (C&RT) to predict financial bankruptcy using financial ratios as well as to determine the most important variables. (Nyamboga et al., 2013) implemented the bagging-decision tree model to predict stock returns by using fifty financial ratios. (Makini, 2015) focused validity of financial ratios in predicting financial distress on financial distress prediction of Chinese listed firms applying decision tree and genetic algorithms. (Sitati and Ondipo, 2009) used the decision tree to examine which financial ratios have strong influence on the
profit growth of listed logistics companies; they have employed C5.0, which is one of the
decision tree techniques. In earlier studies, researchers utilized statistical methods which
are prone to unrealistic normality and linearity assumptions. For example, Altman (1968)
applied multiple discriminant analysis, which requires data to meet normality, equal
covariance and independency of variables conditions.

The Numerous studies that have been conducted on financial distress using the Altman Z-
score model and other discriminant analysis tools with the main focus on testing validity
of the Altman Z score. With a limitation of scope to Kenya’s only equity market, the NSE,
four studies have been covered under the literature review. Sitati and Ondipo (2006),
Kiragu (1993) each used the Altman Z score model in assessing corporate financial distress
for companies quoted in the NSE. These studies were replicas to the original and the revised
Altman Z score model by stratifying sampled firms into failed and non-failed firms.
Nyamboga et al. (2014), however, sought to match the same ratios used by the researchers
with Debt Service Coverage as a proxy to financial distress as opposed to bankruptcy itself
and interpret the results there after. This study utilized logit regression model to determine
the predictive power of financial ratios on financial distress. This fact coupled with the
contextual gaps in the literature review justified this study.

2.4 Conceptual Framework

Profitability means ability to make profit from all the business activities of an organization,
Company, firm or an enterprise. It shows how efficiently the management can make profit
by using all the resources available in the market. Profitability is also the ability of a given
investment to earn a return from its use. However, the term “profitability is not
synonymous to the term “efficiency”. Profitability is an index of efficiency; and is regarded as a measure of efficiency and management guide to greater efficiency. Though, profitability is an important yard stick for measuring the efficiency, the extent of profitability cannot be taken as a final proof of efficiency.

**Independent Variable**

**Financial Ratios**

- Profitability ratio
  - ROA
  - ROE
  - Net Profit Margin
  - Gross profit margin

- Leverage ratio
  - Debt asset ratio
  - Debt to equity ratio
  - Equity ratio

- Efficiency ratio
  - Inventory turnover ratio
  - Fixed asset turnover ratio

- Market ratios
  - Earnings per share ratio
  - Market ratio

**Dependent Variable**

**Financial Distress**

**FINANCIAL DISTRESS**

- Financial distress
  - Working capital
  - Retained earning
  - EBIT
  - Sales
  - Total liabilities
  - Total asset
  - Market value of equity

**Figure 2.1  Conceptual Framework**

Sometimes satisfactory profits can mark inefficiency and conversely a proper degree of efficiency can be accompanied by an absence of profit. The net profit figure simply reveals
a satisfactory balance between the values receive and value given. The change in operational efficiency is merely one of the factors on which profitability of an enterprise largely depend. Moreover there are many other factors besides efficiency, which affect the profitability.

**Dependent variable**

Financial distress was measured using the Z-score for firm i in year t, developed and validated by Altman (1968) and reviewed by Altman & Hotchkiss (2006).

\[ Z = 1.2A \times 1.4B \times 3.3C \times 0.6D \times 0.99E \]

The letters in the formula designate the following measures:

\[ A = \text{Working capital / Total assets} \] [Measures the relative amount of liquid assets]

\[ B = \text{Retained earnings / Total assets} \] [Determines cumulative profitability]

\[ C = \text{Earnings before interest and taxes / Total assets} \] [measures earnings away from the effects of taxes and leverage]

\[ D = \text{Market value of equity / Book value of total liabilities} \] [incorporates the effects of a decline in market value of a company's shares]

\[ E = \text{Sales / Total assets} \] [measures asset turnover]
Independent variables

Profitability ratios is measured as Asset Turnover measured by ratio of net sales to total asset

Efficiency analysis ratios was measured by current ratio, which is obtained by dividing current asset over current liabilities

Leverage analysis ratios was measured by debt ratio which is Total Debt / Total equity

Market ratios is measured was measured by Price / Earnings
CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Research Design

This study adopted cross sectional research design. A cross-sectional study is an observational study. Explanatory research seeks to establish causal relationship between variables (Saunders et al., 2009 & Robson 2002). According to (Kerlinger & Lee, 2000) a cross sectional research design is appropriate where the researcher is attempting to explain how the phenomenon operates by identifying the underlying factors that produce change in it in which case there is no manipulation of the independent variable. This study therefore used panel data research design seeking to establish the relationship between accounting ratios and firm financial performance.

3.2 Study area

The study was conducted in all the firms listed in NSE in Kenya for a period of five years 2012 to 2016. The firms included firm agriculture, automotive and accessories, construction and Allied, energy and Petroleum, Insurance, Investment, Telecommunication and Technology, Growth Enterprise market segment, fixed income Segment. All the firms operate under the guideline of the registrar of the company Act Cap 486.

3.3 Target Population of the Study

A population is the total collection of elements about which inferences are made and refers to all possible cases which are of interest for a study (Sekaran, 2003). A target population
is the totality of cases conforming to the designated specifications as required by the study and could be people, events or things of interest. In this study the target population comprised all firms listed at the Nairobi Securities Exchange (NSE). The NSE had 51 firms as at August 10, 2016. This excluded the firms in the banking industry since they are highly regulated.

**Table 3.1: Target Population of the Study**

<table>
<thead>
<tr>
<th>Industry Name</th>
<th>Number of firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>7</td>
</tr>
<tr>
<td>Automobiles and Accessories</td>
<td>4</td>
</tr>
<tr>
<td>Commercial and Services</td>
<td>9</td>
</tr>
<tr>
<td>Construction and Allied</td>
<td>5</td>
</tr>
<tr>
<td>Energy and Petroleum</td>
<td>5</td>
</tr>
<tr>
<td>Insurance</td>
<td>6</td>
</tr>
<tr>
<td>Investment</td>
<td>3</td>
</tr>
<tr>
<td>Manufacturing and Allied</td>
<td>9</td>
</tr>
<tr>
<td>Telecommunication and Technology</td>
<td>1</td>
</tr>
<tr>
<td>Growth Enterprise Market Segment</td>
<td>1</td>
</tr>
<tr>
<td>Fixed income security market segment</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>51</strong></td>
</tr>
</tbody>
</table>

List of companies listed in NSE as at August 2016. Source CMA 2016
3.4 Sample and Sampling Technique

In this study the population of interest was the firms quoted at the Nairobi securities exchange, and a census of all firms listed at the Nairobi Securities Exchange excluding firms in the banking industry since they are highly regulated. The data were collected from firms from year 2012-2016 were employed. This will enable the researcher obtain 255 observations from 51 firms listed in NSE for the five years.

3.5 Data Collection Instruments

The study used secondary data, this was data collected by someone other than the user (Saunders, 2009). Common sources of secondary data for social science which this study used include census, organizational records and data collected through qualitative methodologies or quantitative research. Analysts of social and economic change consider secondary data essential, since it is impossible to conduct a new survey that can adequately capture past change and/or developments.

The study utilized panel data which consisted of time series and cross-sectional data. The data for all the variables in the study was extracted from published annual reports and financial statements of the listed companies at the NSE covering the years 2011 to 2015. The data was obtained from the NSE hand books for the period of reference. Data extracted included the income statement, statement of financial position, and notes to the accounts using a document review guide.
3.6 Data Analysis and Presentation

Analysis and interpretation of data was done bearing in mind the objectives and the research hypothesis of the study. Data collected was analyzed by use of quantitative technique; quantitative data was analyzed using descriptive statistical method, Regression analysis was used to analyze the data collected and data were presented using tables.

The data collected was analyzed using Karl’s pearson correlation model was used to measure the degree of relationship between the two variables (Saunders , 2009) With the aid of Stata. Hypotheses were tested at 0.05 level of significance (95% confidence level) from the multiple regression models which shows the relationship between the independent variable and dependent variable. The data was analyzed was presented in a tabular form.

The analysis of the data collected from financial statement followed a number of basic statistical techniques in order to identify and interpret the ratings of respondents such as means, standard deviations, T – test for independent variable,

The multiple regression model used in this study is given as;

Where,

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \]

\[ Y = \text{Financial Distress} \]

\[ \beta_0 = \text{constant.} \]
\( \beta_1 \ldots \beta_4 = \) the slope which represents the degree in which firm performance changes as the independent variable change by one unit variable.

\( X_1 = \) Efficiency analysis ratios

\( X_2 = \) Profitability analysis ratios

\( X_3 = \) Leverage ratios analysis ratios

\( X_4 = \) Market ratios

\( \varepsilon = \) error term

### 3.7 Diagnostic Tests

In this study, the statistical issues of concern were the usability of the data considering the methods of analysis that were used. Use of general linear regression analysis makes a number of classical assumptions surrounding the quality and distribution of the data and error terms. These included the assumptions that error terms are independent across observations, the residuals are normally distributed and that the parameters are linearly related to the response variables (Williams et al., 2013 and Yan & Gang Su, 2009). Statistical tests were carried out to test these assumptions before analysis was done. Additionally, tests on the distribution of the data were done to identify whether the predictor variables were highly correlated amongst each another, a condition known as collinearity (Bardia, 2012) and the stationarity of the variables or lack of unit roots (Buserete, 2015). The following section explains the tests that were done to test the various regression assumptions and conditions.
### 3.7.1 Test for Normality

In regression analysis, the assumption of normally distributed errors is relevant for any combination of values on the predictor variables. According to Williams et al., (2013) it becomes possible to make inferences about the regression parameters in the population that a sample was drawn from, even when the sample size is relatively small. Additionally, when errors are not normally distributed the coefficients t and F statistics may not actually follow t and F distribution. Normality assumption is mostly required for trustworthy significance tests and confidence intervals in small samples (Cohen et al., 2003) but becomes less important as the sample gets larger and larger. This study used the Jarque-Bera (JB) test proposed by (Bryset al., 2004) and the normal probability plots recommended by Hair et al., (2010) to test for normality. In the normal probability plots the standardized plots are compared with the normal distribution which makes a straight diagonal line and the plotted residuals are compared with the diagonal. If a distribution is normal, the residual line closely follows the diagonal (Hair et al., 2010).

### 3.7.2 Test for Independence of Errors

According to Weisberg (2005) and (Chatterjee & Hadi2012) the errors in a regression model are assumed to be independent or not serially correlated across different observations. This is important for time series data where data points are observed in some sort of meaningful sequence. Independence of errors means that error terms of two different periods must be linearly unrelated (Sosa-Escudero, 2009). A common violation of this assumption occurs when each error term is related to its immediate predecessor. Even though the estimates of regression coefficients remain unbiased when this assumption is
breached, the coefficients are rendered inefficient and estimates of standard errors and significance levels are biased (Chatterjee and Hadi, 2012).

The Durbin-Watson (D) test of serial correlations was used to test for independence of error terms. This statistic is typically used to test first order autocorrelations ($\rho$) with the statistic D ranging in value from zero to four. When the error terms are independent D is expected to be close to 2.00 (Shishia, 2012 & (Lind et al., 2015). Values of D closer to zero indicate positive autocorrelation whereas large values of D point to negative autocorrelations, which seldom occurs in practice (Lind et al., 2015). The D statistic normally tests the null hypothesis that there are no residual correlation (H0: $\rho$=0) against the alternative hypothesis that positive residual correlation exist (Ha: $\rho$> 0).

3.7.3 Test for Linearity in Parameters

A model relating the response variable to the predictors is normally assumed to be linear in the regression parameters (Chatterjee & Hadi, 2012). The linearity relationship between the dependent and the independent variables represents the degree to which change to dependent variable is associated with the independent variable (Hair et al., 2010). This implies that the response variable is assumed to be a linear function of the regression parameters ($\beta_1, \beta_2 ... \beta_n$) but not necessarily a linear function of the predictor variables ($X_1, X_2 ... X_n$). This permits modeling of not only linear but also non-linear relationships between the predictor and response variables especially quadratic relationships which are modeled by including both the predictor variable ($X_i$) and a squared predictor variable ($X_i^2$) in the regression model. By doing this, the regression model still remains a linear equation because the response variable is modeled as a linear function of the parameters $\beta_1, \beta_2 ... \beta_n$. The parameter linearity assumption was tested by plotting residuals against predicted
values of the response variable, whereby the relationship should take a linear form for this condition to be met (Osborne and Elaine, 2002).

3.7.4 Test for Multi-collinearity

According to William et al., (2013) multi-collinearity refers to the presence of correlations between predictor variables. In severe cases of perfect correlations between predictor variables multi-collinearity creates a shared variance between variables thus decreases the ability to predict the dependent measure as well as ascertain the relative roles of each independent variable (Hair et al., 2010). Whereas less severe multi-collinearity inflates the standard errors and confidence intervals leading to unstable estimates of the coefficients for individual predictors (Belsley et al., 1980). Still multi-collinearity can be identified by calculating the correlation coefficients for the predictor variables where a correlation coefficient above 0.9 shows high multi-collinearity (Hair et al., 2010). In this study, multi-collinearity was assessed by means of tolerance and Variance Inflation Factor (VIF). Normally, a tolerance of below 0.10 or a VIF greater than 10 is regarded as indicative of severe multi-collinearity problems (Hair et al., 2010).

3.7.5 Unit Roots Test

Time series data can either be stationary or non-stationary. According to (Gujrati, 2014) a stationary time series is one whose mean and variance are constant over time and the value of covariance between the two time periods depends only on the distance or gap or lag between the two time periods and not the actual time at which covariance is computed. In other words, the mean, variance and auto-covariance (at various lags) for a stationary time series are time invariant and the time series is mean reverting. Stationarity of data is necessary in panel and time series data analysis as it enhances forecasting and description
of future behaviour based on the analysis statistics. A characteristic of stationary time series data is that it does not have unit roots. Therefore, an initial step in panel data analysis is to conduct unit root tests to check for the stationarity of the data. The unit roots for the variables in this study were conducted using the Dickey Fuller unit-root test which tests the null hypothesis that the panels contain unit roots (or H0: \( \alpha = 0 \)) against the alternative hypothesis that panels are stationary/ do not have unit roots (or Ha: \( \alpha > 0 \)).

3.7.6 Model Specification Tests Statistics

The study conducted Hausman specification test (Wooldridge, 2002; Greene, 2002). According to Gujrat (2004) Hausman specification test should be used to determine between random and fixed effects. Hence, Hausman specification test was used to decide whether fixed or random effects regression models were appropriate for the study. Accordingly, the null hypothesis is rejected when Prob.\(>\chi^2 \) is less than the critical p-value and in such a case the fixed effects regression is appropriate.

3.7.7 Assumption on the regression model

i. The study was guided by the following assumption: William et al. (2013) Variables are normally distributed; Regression assumes that variables have normal distribution; none normally distributed variables can distort relationships and significance tests.

ii. Linear Relationship between I.V and D.V; Standard multiple regression can only accurately estimate the relationship between DV and IV if the relationships are linear in nature; Variables are measured without error (reliably) - unreliable measurement causes relationships to be under-estimated increasing the risk of Type II error. Normality-The assumption of normality states that the error terms at every level of the model are normally distributed. Multi-collinearity refers to the presence of high correlations between independent variables (Williams et al., 2013).
iii. In this study, multi-collinearity was assessed by means of tolerance and Variance Inflation Factor (VIF) values. Normally, a tolerance value of below 0.01 or a VIF value greater than 10 reveals serious multi-collinearity problem (Hair et. al., 2007; Leech et. al., 2011). Tolerance indicates the amount of variability of the particular independent variable not explained by other independent variables, whereas VIF is the inverse of tolerance statistic.

iv. Dickey-Fuller test (Dickey and Fuller, 1979) is one of the best known and most widely used unit root tests. It is based on the model of the first-order autoregressive process. The stationary or otherwise of a series can strongly influence its behavior and properties. For instance if the variables in the regression are not stationary, it can lead to what is referred to as spurious regression or valueless/nonsense regression which could suggest relationships even if there are none. Also if two variables are trending over time, a regression of one on the other would have a high R² even if the two are totally unrelated. Additionally, if the variables in the regression model are not stationary, then it can be proved that the standard assumptions of the asymptotic analysis will not be valid. In other words, the usual t-ratios will not follow a t-distribution, and hypothesis tests about the regression parameters cannot be validly undertaken. Due to these reasons, it is important to test the stationary or otherwise using a unit root test which tests whether a time series variable is non-stationary and possesses a unit root.

v. The Augmented Dickey Fuller (ADF) has was employed to test the unit roots of the concerned time series metric variables. The test will be performed using the McKinnon Critical Values. The ADF test with an intercept implies that all variables are stationary at levels at 1% level of significance except for those which is stationary at 5% level. The last assumption of the classic linear regression model (CLRM) is that the error (disturbance) terms have a covariance over time of zero, that is the errors are uncorrelated with one other. If the errors are not uncorrelated with one another, it would be stated that they are auto correlated or they are serially correlated. The consequences of ignoring autocorrelation when it is present are similar to those of ignoring heteroskedasticity.
vi. The coefficient estimates were derived using the OLS, though unbiased, can be said to be inefficient, that is they are not best linear unbiased estimators (BLUE). A test of this assumption was therefore required, and although the simplest statistical test for autocorrelation is the Durbin-Watson (DW) statistic, it has a limitation in that it is a test for first order correlation, that is, it tests for a relationship between an error and its immediate previous one (a test of whether consecutive errors are related to one another) and therefore it cannot be applied if certain circumstances are not fulfilled and may not be able to detect some forms of serial correlation. Therefore in order to have a joint test that allows examination of the relationship between the errors in time ($\mu_t$) and several of its lagged values at the same time (all at once), the Breusch-Godfrey test is used as a more general test of autocorrelation up to the order.

3.8 Ethical Consideration

Ethics is the principles and the guideline that assist the researcher to uphold the things they value (Johnson & Christense, 2004). Research ethics are the set of principles which guide the researcher in conducting ethical studies. Before researcher goes to collect the data in the field researcher will seek introduction letter from authority concern, will also seek permission from authority concern in various banks to be visited. The letter of permission will be shown to each respondent. Anonymity means identity of the participant is not known to the researcher, confidentiality and anonymity are important because of its consequence to the participants. The researcher will maintain confidentiality through the study more so the respondents will be made aware that this study will be undertaken for only academic purpose and as much as any information provided is confidential. The researcher will be able to access data and information and only be kept confidential; hence
this research study will apply all ethical guidelines to ensure that the study is ethically sound in all aspect.
CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Descriptive statistics

In panel data descriptive statistics are a collection of measurements of two things: location and variability. In this case, location tells the central value of the variable (where the mean is the most common measure). Variability refers to the spread of the data from the center value (that is, variance, standard deviation, in this case the standard deviation is inferred). Consequently, the study sought to determine the descriptive statistics of the panel data especially the mean, standard deviation and maximum and minimum values. The findings were summarized and presented in Table 4.1.

Table 4.1: Descriptive statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profitability ratio</td>
<td>240</td>
<td>0.767</td>
<td>1.075</td>
<td>0.000</td>
<td>7.703</td>
</tr>
<tr>
<td>Efficiency Ratio</td>
<td>240</td>
<td>1.675</td>
<td>1.029</td>
<td>0.000</td>
<td>6.209</td>
</tr>
<tr>
<td>Leverage Ratio</td>
<td>240</td>
<td>2.286</td>
<td>1.432</td>
<td>0.000</td>
<td>9.350</td>
</tr>
<tr>
<td>Marketing Ratio</td>
<td>240</td>
<td>0.811</td>
<td>0.171</td>
<td>0.000</td>
<td>1.619</td>
</tr>
<tr>
<td>Financial distress</td>
<td>240</td>
<td>1.152</td>
<td>0.113</td>
<td>0.000</td>
<td>0.947</td>
</tr>
</tbody>
</table>

Source field Data 2018)

The findings in Table 4.1 showed that assessment of the efficiency ratio analysis of the firms revealed a mean of 1.675 with a minimum of 0.000 and a maximum of 6.209 (std. dev. = 1.029) implying that majority of the firms were able to meet their current liabilities
comfortably using their current assets. The mean for financial distress was 1.152 with a minimum of 0.000 and a maximum of 0.947 (std. dev. = 0.113) while the mean for leverage ratio was 2.286 with a minimum of 0.000 and a maximum of 9.350 (std. dev. = 1.432). In addition the mean for the marketing ratios was 0.811 with a minimum of 0.054 and maximum of 1.619 (std. dev. = 0.171) while the mean profitability ratio was 0.767 with a minimum of 0.000 and a maximum of 7.703 (std. dev. = 1.075).

4.2 Multiple Regression Assumptions

4.2.1 Linearity test

Before conducting fixed and random analysis, the assumptions of linearity (that there must be a linear relationship between the outcome variable and the independent variables) which in many cases is tested using scatter plots to depict whether the relationship is linear or curvilinear. The findings on linearity test were presented in Table 4.2.
Table 4.2: Results of linearity test

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial distress</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Combined)</td>
<td>227.188</td>
<td>188</td>
<td>1.208</td>
<td>1.263</td>
<td>0.165</td>
</tr>
<tr>
<td>* Profitability</td>
<td>20.609</td>
<td>1</td>
<td>20.609</td>
<td>21.536</td>
<td>0.000</td>
</tr>
<tr>
<td>Linearity</td>
<td>206.579</td>
<td>187</td>
<td>1.105</td>
<td>1.154</td>
<td>0.278</td>
</tr>
<tr>
<td>Deviation from Linearity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Financial distress</strong></td>
<td>214.834</td>
<td>188</td>
<td>1.143</td>
<td>0.953</td>
<td>0.602</td>
</tr>
<tr>
<td>* Efficiency Ratio</td>
<td>4.35</td>
<td>1</td>
<td>4.35</td>
<td>3.627</td>
<td>0.062</td>
</tr>
<tr>
<td>Linearity</td>
<td>210.484</td>
<td>187</td>
<td>1.126</td>
<td>0.939</td>
<td>0.628</td>
</tr>
<tr>
<td>Deviation from Linearity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Financial distress</strong></td>
<td>172.773</td>
<td>87</td>
<td>1.986</td>
<td>2.924</td>
<td>0.000</td>
</tr>
<tr>
<td>* Leverage Ratio</td>
<td>9.518</td>
<td>1</td>
<td>9.518</td>
<td>14.015</td>
<td>0.000</td>
</tr>
<tr>
<td>Linearity</td>
<td>163.256</td>
<td>86</td>
<td>1.898</td>
<td>2.795</td>
<td>0.000</td>
</tr>
<tr>
<td>Deviation from Linearity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Financial distress</strong></td>
<td>174.095</td>
<td>99</td>
<td>1.759</td>
<td>2.416</td>
<td>0.000</td>
</tr>
<tr>
<td>* marketing Ratio</td>
<td>6.7</td>
<td>1</td>
<td>6.7</td>
<td>9.205</td>
<td>0.003</td>
</tr>
<tr>
<td>Linearity</td>
<td>167.395</td>
<td>98</td>
<td>1.708</td>
<td>2.347</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Source field data 2018
The findings in Table 4.2 highlighted the linearity test between the dependent variable (Financial distress) and the independent variables (profitability ratio, efficiency analysis ratio, leverage ratio and marketing ratio) as well as with the control variables firm size and firm age. A p-value of greater than 0.05 means that the inference is that there is no linear relationship. The findings shown that there is a linear relationship between Financial distress and efficiency analysis ($F(1) = 176.763, p\text{-value} = 0.000$). Furthermore, there is a linear relationship between Financial distress and capital structure ($F(1) = 9.205, p\text{-value} = 0.003$). In addition, there is a linear relationship between Financial distress and PES ($F(1) = 14.015, p\text{-value} = 0.000$). Furthermore, there is no linear relationship between Financial distress and firm age ($F(1) = 3.627, p\text{-value} = 0.062$) and a linear relationship between Financial distress. This means that the significant linear relationships indicate that the independent variables can be used to predict the behavior of the dependent variable. Thus, there is no violation of the linearity assumption except for activity analysis and firm age.

4.2.2 Normality test

Jarque-Bera (JB) test for normality was used to test for normality of error terms. According to Brys et al., (2004) the JB tests the hypothesis that the distribution of error terms is not significantly different from normal ($H_0: E(\varepsilon) \sim N(\mu=0, \text{Var.} = \sigma^2)$). The results of the tests are presented in Table 4.2. The results show that the significance levels for the Jarque-Bera statistics were greater than the critical p-value of 0.05 implying that the errors were not different from normal distribution (Tanweer, 2011). This can also be confirmed from the normal P-P plots.
Table 4.3: Test Statistics for Model Residual Normality

<table>
<thead>
<tr>
<th>Model</th>
<th>$JB$ (Prob)</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>3.637 (0.239)</td>
<td>Normal</td>
</tr>
</tbody>
</table>

Source: Research Data (2018)

The multiple linear regression analysis requires that the errors between observed and predicted values (that is, the residuals of the regression) should be normally distributed.

4.2.3 Multicollinearity

Multiple linear regression assumes that there is no multicollinearity in the data. Multicollinearity occurs when the independent variables are too highly correlated with each other. It can be tested using the Variance Inflation Factor (VIF) - the VIFs of the linear regression indicate the degree that the variances in the regression estimates are increased due to multicollinearity. VIF values higher than 10 indicate that multicollinearity is a problem. In addition, tolerance values of less than 0.1 indicate the presence of multicollinearity.
Table 4.4: Results of multicollinearity test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profitability ratio</td>
<td>0.960</td>
<td>1.041</td>
</tr>
<tr>
<td>Efficiency Ratio</td>
<td>0.927</td>
<td>1.079</td>
</tr>
<tr>
<td>Leverage Ratio</td>
<td>0.772</td>
<td>1.296</td>
</tr>
<tr>
<td>marketing Ratio</td>
<td>0.763</td>
<td>1.310</td>
</tr>
</tbody>
</table>

Source: Research Data (2018)

a. Dependent Variable: Financial distress

The findings in Table 4.4 revealed that the VIF values for all the independent variables were below 10. This means that for all the independent variables, there was no presence of multicollinearity.

4.2.5 Testing for Unit Roots

Before empirical estimations are conducted, the data series are subjected to unit root tests to establish their stationarity conditions, that is, their orders of integration. Therefore, the series must be primarily tested for stationarity in all econometric studies (Granger and Newbold, 1974). In case a series is found to be non-stationary at levels, it is differenced until it became stationary (Gujarati, 2004; 2007 and Baltagi, 2011). Since panel data models were used in this study and the data set had a time dimension, unit root existence was investigated by panel unit root tests. (Ntoiti, 2013) suggest that using panel unit root
tests yields statistically better results compared to the results of unit root tests like Philips-Perron, which are based on a single time series.

This study conducted unit root test for the variables using the Augmented Dickey Fuller unit root test. As shown in Table 4.5 the p-values for the Augmented Dickey Fuller Chi-square statistic were less than the critical values of 0.05 for financial distress, Profitability, efficiency, Leverage and Marketing. This implies that these variables/ panels (had no unit roots) and therefore suitable for modeling and forecasting. To correct for non stationarity in profitability, the first difference of the variables [D (var)] was used in the regression model.

**Table 4.5; Unit root test**

<table>
<thead>
<tr>
<th>Series</th>
<th>(χ²)</th>
<th>P-value</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Distress</td>
<td>396.84</td>
<td>0.000</td>
<td>Do not Reject H₀</td>
</tr>
<tr>
<td>Profitability</td>
<td>233.18</td>
<td>0.000</td>
<td>Do not Reject H₀</td>
</tr>
<tr>
<td>Efficiency</td>
<td>142.35</td>
<td>0.001</td>
<td>Do not Reject H₀</td>
</tr>
<tr>
<td>Leverage</td>
<td>256.52</td>
<td>0.002</td>
<td>Do not Reject H₀</td>
</tr>
<tr>
<td>Marketing</td>
<td>-2.842</td>
<td>0.013</td>
<td>Do not Reject H₀</td>
</tr>
</tbody>
</table>

Source: Research Data (2018)

4.3 Correlation Analysis test

Correlation analysis is usually used to establish the level to which two variables converge or diverge together depending on the case so as to determine the significance of the relationship. Normally, the Pearson's Product Moment Correlation Coefficient is used to make inference about the existing relationship between two variables. Generally,
correlation analysis depicts to a certain degree, the aspect of how one factor influences another. However, correlations do not imply or infer a cause-effect relationship. Consequently, a correlation analysis of the independent factors and the dependent factor (Financial distress) was conducted and the findings were summarized and presented in Table 4.6

**Table 4.6: Correlation analysis test**

<table>
<thead>
<tr>
<th></th>
<th>Financial Distress</th>
<th>Profitability Ratios</th>
<th>Leverage Ratios</th>
<th>Efficiency Ratios</th>
<th>Market Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Distress</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profitability</td>
<td></td>
<td>-0.057</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ratios</td>
<td>0.380</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leverage</td>
<td></td>
<td>-0.156*</td>
<td>-0.046</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Ratios</td>
<td>0.016</td>
<td>0.48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td></td>
<td>0.549**</td>
<td>0.135*</td>
<td>-0.083</td>
<td>1</td>
</tr>
<tr>
<td>Ratios</td>
<td>0.000</td>
<td>0.036</td>
<td>0.199</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Ratios</td>
<td>-0.186**</td>
<td>0.014</td>
<td>0.408**</td>
<td>-0.054</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.004</td>
<td>0.832</td>
<td>0.000</td>
<td>0.409</td>
<td></td>
</tr>
</tbody>
</table>

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

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

Source: Research Data (2018)
The findings in Table 4.5 revealed that profitability ratio has a negative relationship with financial distress that is not significant, $\rho = -0.057$, $p$-value = 0.380 at 1% and 5% level of significance. However, the findings show that leverage ratio has a negative and significant relationship with financial distress, $\rho = -0.157$, $p$-value = 0.016 at 5% level of significance indicating that there is a 15.6% chance that financial distress will decrease with increase in leverage ratio.

In addition, efficiency ratio was found to have a positive and significant relationship with financial distress, $\rho = 0.549$, $p$-value = 0.000 at 1% level of significance meaning that there is a 54.9% chance that financial distress will increase with increase in efficiency ratio. Finally, the findings also revealed that market ratio has a negative and significant relationship with financial distress, $\rho = -0.186$, $p$-value = 0.004 and this means that there is 18.6% chance that financial distress will decrease with increase in the market ratio.

The findings also showed significant inter-factor relationships between profitability ratios and efficiency ratios, $\rho = 0.135$, $p$-value = 0.036 and between market ratios and leverage ratios, $\rho = 0.408$, $p$-value = 0.000. Although these findings do not imply a cause-effect relationship, they point to the existence of a cause-effect linear relationship especially between the response and explanatory variables.

4.4 Regression Results

Regression analysis was done to test the dependence of firms’ financial distress on control variables and independent variables. Hierarchical regression method was used which
involved entering two blocks of variables and observing their results. Random effect regression models were run for the all the models as presented below.

4.5 Model Specification Tests Statistics

In this study the random effects model was used in constructing the panel regression models. The decision for using random effects models in this study was based on the Hausman specification test (Anggraini, 2014) between random and fixed effects. Accordingly, the null hypothesis is rejected when Prob.>χ2 is less than the critical p-value and in such a case the fixed effects regression is appropriate. All the models were run on random effects since the significance levels were greater than the critical value of 0.05.

Table 4.7: Model Specification Test Statistics for Z score

<table>
<thead>
<tr>
<th>Model</th>
<th>χ2 Statistic</th>
<th>χ2 d.f.</th>
<th>Prob.</th>
<th>Appropriate Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>4.578</td>
<td>14</td>
<td>0.764</td>
<td>Random Effects</td>
</tr>
</tbody>
</table>


4.6 Hypotheses Testing

To test the various hypotheses the various predictor variables were regressed against the response variable. Pool least squares regression models were run for all the models and using \( Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon \) the model the results presented. The F-statistics was used to test the regression models (Blackwell III, 2005) or simply the goodness of fit (Nyamboga et.al., 2014). The test-test was used to test significance of then
regression parameters at five percent significance level using the following criteria; \( H_0: B_j=0 \) and \( H_a: B_j\neq 0 \), thus \( H_0 \) being rejected if \( B_j\neq 0; p\)-value \( \leq 0.05 \).

Hypothesis \( H_{01} \) stated that there is no significant relationship between profitability ratios and financial distress of listed in the NSE. The results found a positive but insignificant relationship between profitability ratio and financial distress (\( \beta = -0.010; p > 0.05 \)). The results failed to reject the hypothesis \( H_{01} \) suggesting that profitability ratios had insignificant relationship with financial distress. Profitability ratio indicates the firm’s general efficiency (Clausen, 2011). These findings essentially mean that increased profitability ratio decreases financial distress by 0.01 units although this is not significant. The non-rejection of the hypothesis shows that the profitability ratios are not high enough to significantly ease the financial distress levels.

The second hypothesis stated that leverage ratio does not have significant effect on financial distress of firms listed on the NSE. The findings show that leverage ratio has a negative and significant effect on financial distress of firms listed on the NSE, \( \beta_2 = -1.852 \), \( p < 0.05 \) at 5% level of significance and this implies that with each unit increase in the leverage ratio, the financial distress of a firm decreases by 1.852 units. These findings mean that the hypothesis is rejected. In line with these findings, Hutchinson (1995) found out that financial leverage had a significant positive effect on the organizations profit on equity given that earnings’ power of the organization’s assets is in exceed of the average interest cost of debt to the firm. In addition, (Ntaoti, 2005) found a positive relation between profitability and total debt as a percentage of the total buyout-financing package. The leverage ratio shows how efficient the organization uses other people’s money and whether
it is using a lot of borrowed money (Lopuu, 2013). Thachappilly (2009) found that the Ratio of Debt to Equity has implications for return on equity debt ratios check the financial structure of the business by comparing debt against total capital, against total assets and against owners' funds. The ratios help check how "leveraged" a company is, and also the financial maneuverability of the company in difficult times.

Hypothesis H03 stated that efficiency ratios do not have significant effect financial distress of banks listed in the NSE. The findings showed that efficiency analysis ratio has a positive and significant effect on financial distress, β1 = 0.593, p < 0.05. This means that hypothesis 3 was rejected. This implies that with each unit increase in efficiency analysis ratio, financial distress would increase by 0.593 units. These findings correspond with literature that efficiency ratios determine the organization’s ability to pay debt in short term. Efficiency ratio measures the ability of the assets to generate sales. Thus, an increase in efficiency enhances firms’ financial position to remain stable. Any failure to meet these can damage its reputation and creditworthiness and in extreme cases even lead to bankruptcy.

Lastly, hypothesis H04 indicated that Market ratio does not have significant effect financial distress of firms listed on the NSE. The findings show that market ratio has a negative and significant effect on financial distress, β4 = -1.115, p< 0.05. Thus, the null hypothesis H04 was rejected. These findings imply that with each unit increase in the market ratio, financial distress decreases by 1.115 units. This essentially shows the importance of increased market ratio. This means that the higher the price or earnings per share the greater the
market ratio. In essence, this implies that more earnings in relation to the number of shares thus more profits and hence lower financial distress.

Table 4.8: Pooled least squares Regression model results

<table>
<thead>
<tr>
<th>Financial distress</th>
<th>Coef.</th>
<th>Std. Err.</th>
<th>t</th>
<th>P &gt; t</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>_cons</td>
<td>0.885</td>
<td>0.684</td>
<td>1.29</td>
<td>0.197</td>
<td>-0.462</td>
</tr>
<tr>
<td>Efficiency ratio</td>
<td>0.593</td>
<td>0.053</td>
<td>11.24</td>
<td>0.000</td>
<td>0.489</td>
</tr>
<tr>
<td>Leverage ratio</td>
<td>-1.852</td>
<td>0.549</td>
<td>-3.38</td>
<td>0.001</td>
<td>-2.933</td>
</tr>
<tr>
<td>Profitability ratio</td>
<td>-0.010</td>
<td>0.042</td>
<td>-0.23</td>
<td>0.818</td>
<td>-0.093</td>
</tr>
<tr>
<td>Market ratio</td>
<td>-1.115</td>
<td>0.374</td>
<td>-2.98</td>
<td>0.003</td>
<td>-1.852</td>
</tr>
</tbody>
</table>

Source Field Data 2018
CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS OF THE STUDY

5.1 Summary of Key Findings

The study probed the effectiveness of accounting ratios in predicting financial listed firms in NSE. Hypotheses were examined by regressing financial distress against profitability, efficiency, leverage and market ratios. The findings indicate that ratios predict effectively predict financial distress 47.7%. Below are the key findings of the study based on the objectives

5.1.1 Profitability Ratios on Financial Distress

The first objective of the study was to establish the effectiveness of profitability ratios on predicting financial distress of listed firms on the NSE. The findings illustrated that the mean profitability ratio of the firms is 0.767 (std. dev. = 1.075) which showed high variability among the firms. This is one of the reasons why there is a positive relationship between profitability ratio and financial distress that is not significant. Furthermore, the findings have showed that profitability ratio does have a significantly indicate on the financial distress of firms listed on the NSE.

5.1.2 Efficiency Ratios on Financial Distress

Secondly, the study sought to determine the effectiveness of efficiency ratios predicting financial distress of listed firms in NSE. From the findings of the study, the mean efficiency analysis ratio was 1.675 with a maximum of 6.209 and a minimum of 0.000 which
indicated that there are firms that do not have significant efficiency analysis ratios. Furthermore, the findings revealed that efficiency analysis ratios have a positive effect on financial performance of firms and the correlation results show a 54.9% of increasing financial distress with increased efficiency ratio. Although there has been varying findings concerning the relationship between efficiency analysis ratio and financial distress of firms in terms of profitability with some scholars indicating a negative relationship while some indicating a positive relationship, the findings in this study affirm that the return on asset is reduced by increasing the efficiency ratio.

5.1.3 Leverage Ratios in Predicting Financial Distress

The third objective of the study was to determine effectiveness of leverage ratios on financial distress of listed firms in NSE. The mean leverage ratio was 2.286 with a maximum of 9.350 and a minimum of 0.000. The correlation analysis showed a 15.7% chance of decreasing financial distress with increased leverage ratio.

The findings also revealed that activity ratio has a negative and significant effect on financial distress of firms controlling for firm age and firm size. This means that efficiency through activity ratios significantly influences financial distress. While some scholars have found a positive relationship, others have found a negative relationship while others have found weak relationships. This means that it all dependents on the type of industry as well as the policy environment in which the firm operates in.
5.1.4 Market Ratios in Predicting Financial Distress

The mean market ratio was 0.811 with a minimum of 0.054 and a maximum of 1.619. The findings revealed that market ratio has a negative and significant effect on financial distress controlling for firm age and firm size. The market ratio plays a pivotal role in investment practices and it has been found to reflect the market’s expectation of future growth and is associated with reduced financial distress. The market ratio is used to estimate the cost of equity capital and is also heavily used by financial analysts to justify their stock recommendations. Valuations and growth rates of companies may often vary wildly between sectors due both to the differing ways companies earn money and to the differing timelines during which companies earn that money. As such, one should only use market ratios as a comparative tool when considering companies within the same sector, as this kind of comparison is the only kind that will yield productive insight. Thus, the negative effect found here is against a background of comparing firms in different sectors.

5.2 Conclusion

The study successfully extended knowledge by studying and testing whether financial ratios predict financial distress. Based on the findings of this study, the following conclusions can be drawn; overall, the study is suggesting that the financial ratios plays a critical role in the prediction of financial distress.

The study showed that profitability ratio has a negative effect on financial distress although not significant. As an element of working capital, profitability ratios gauge an organization's operational efficiency and profitability. Profitability ratios are most useful
when compared to competitor or industry to establish whether an entity's processes are favorable or unfavorable. Profitability ratios can form a basis of comparison across multiple reporting periods to determine changes over time.

The showed that leverage ratio has a negative and significant effect on financial distress of firms listed in NSE. However, the findings show that leverage ratio indicates effectively financial distress. It is suggested that efficient management and financing options on the debt can increase the operational efficiency of the firm.

Efficiency ratios analysis ratios have been shown to have a positive effect on financial distress. Efficiency ratios measure a company's ability to convert assets into cash thus increasing margin of safety. Efficiency ratios are most useful when they are used in comparative form. This analysis may be performed internally or externally. In general, a higher efficiency ratio indicates that a company is more stable and has better coverage of outstanding debts.

Market ratio has been showed to have a negative and significant effect on financial distress of a firm. An individual company’s market ratio is much more meaningful when taken alongside market ratios of other companies within the same sector.

5.3 Recommendations

Financial ratios can provide small business owners and managers with a valuable tool with which to measure their progress against predetermined internal goals, a certain competitor, or the overall industry. In addition, tracking various ratios over time is a powerful means of identifying trends in their early stages. Ratios are also used by bankers, investors, and
business analysts to assess a company's financial status. Ratios are aids to judgment and cannot take the place of experience. But experience with reading ratios and tracking them over time will make any manager a better manager. Ratios can help to pinpoint areas that need attention before the looming problem within the area is easily visible. It is important to keep in mind that financial ratios are time sensitive; they can only present a picture of the business at the time that the underlying figures were prepared. Determining which ratios to compute depends on the type of business, the age of the business, the point in the business cycle, and any specific information sought. However, in this study, the firm age and firm size were controlled.

The two most prominent points of view in literature on the optimal amount of efficiency conclude that the firm should either hold large amount of liquid assets or no liquid assets. This will help financial accounting information users get of information asymmetry-induced financing constraints, firms should stock up on liquid assets to finance future investment opportunities with internal funds. Since there are no offsetting costs to liquid assets in their model, the optimal amount of efficiency is a corner solution. In addition firms should be forced to pay out funds in excess of the amount necessary to finance all positive 15 NPV investments to minimize the agency cost of free cash flow. In the absence of a benefit from liquid assets, this will imply that the firm should carry no liquid assets.

With regard to activity ratios, it is suggested that efficient management and financing of working capital can increase the operating profitability of firms. Effective policies must be formulated for the individual components of working capital.
Since a firm’s debt can affect both the prices of shares and the company’s earnings, leverage can skew market ratios as well. For example, suppose there are two similar firms that differ primarily in the amount of debt they take on. The one with more debt will likely have a lower market ratio than the one with less debt. However, if business is good, the one with more debt stands to see higher earnings because of the risks it has taken. Essentially, the type of firm and the industry in which it operates determines the market ratios. In addition, accurate and unbiased presentations of market ratios rely on accurate inputs of the market value of shares and of accurate earnings per share estimates. While the market determines the value of shares and, as such, that information is available from a wide variety of reliable sources, this is less so for earnings, which are often reported by companies themselves and thus are more easily manipulated. Since earnings are an important input in calculating market ratio, adjusting them can affect market ratio as well.

Investors and potential investors are expected to always pay attention to the ratio of leverage ratio, efficiency ratios, profitability ratios in that sequence and other financial ratios before investing so as not to put their funds in a distress company that will result in at least the benefits gained.

5.4 Suggestions for further research

The study determined effectiveness of four accounting ratios, efficiency analysis ratios, activity analysis ratios, capital structure analysis ratios and cash ratio on financial distress. The study only covered companies listed in the NSE, particularly those which have been consistently trading for the last six years. However, the firms listed on the NSE were from various sectors of the economy. This could lead to different and in some cases biased ratios.
It is thus, recommended to carry out a similar study on firms from the same industry such as agriculture etc.

Furthermore, it is also to get an understanding of the outcomes in the firms that are not listed on the NSE in order to obtain a foundation for comparison with the aim of enriching the findings for policy formulation.

In addition, a mix between primary data and secondary data and their analysis be conducted for a longer period this would provide a foundation of triangulation of the outcomes with the purpose of capturing diverse perspectives of the same phenomenon. This would call for a different research design approach.
REFERENCES


Imad Kutum (2015) Predicting the Financial Distress of Non-Banking Companies Listed


*Journal of Finance and Accounting ISSN 2222-1697 (Paper)*


# APPENDIX I: DATA COLLECTION TABLE

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Company Name</th>
<th>Working capital</th>
<th>Total assets</th>
<th>Retained earnings</th>
<th>Earning Before interest and tax</th>
<th>Receivables</th>
<th>Total asset</th>
<th>SALES</th>
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<td></td>
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<td>B.O.C. Kenya Ltd</td>
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<td></td>
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**APPENDIX II: DATA COLLECTION SCHEDULE**

\[ X_1 = \text{Working Capital/Total Assets}; \quad X_2 = \text{Retained Earnings/Total Assets}; \quad X_3 = \text{Earnings Before Interest and Tax/Total Assets}; \quad X_4 = \text{Book Value of Equity/Total Liabilities} \]

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<th>Year</th>
<th>Amount in financial year (Sh. 000,000)</th>
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<tr>
<td></td>
<td>Current Assets = CA</td>
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<td>Current Liabilities = CL</td>
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<td>Working Capital (WC) = CA - CL</td>
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<td>Total Assets = TA</td>
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<td>Retained Earnings = RE</td>
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<td>Earnings Before Interest and Tax = EBIT</td>
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<td>Book Value of Equity = BVE</td>
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<td>Total Liabilities = TL</td>
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<td>( X_1 = \frac{WC}{TA} )</td>
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<td>( X_2 = \frac{RE}{TA} )</td>
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<td>( X_3 = \frac{EBIT}{TL} )</td>
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<td></td>
<td>( X_4 = \frac{BVE}{TL} )</td>
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APPENDIX III: INTRODUCTORY LETTER

KISII UNIVERSITY
(ISO 9001:2008 Certified Institution)
ELDORET CAMPUS
OFFICE OF THE DEPUTY DIRECTOR-ACADEMIC AFFAIRS
Phone: 020-2610479
Email: eldoretcampus@kisiuniversity.ac.ke

6th October, 2017

TO WHOM IT MAY CONCERN

Dear Sir / Madam,

RE: RESEARCH DATA COLLECTION PERMIT.

KETER KIPKEMBOI JACKSON REG. NO: CBM12/10279/15

The above named is a bonafide student of Kisii University- Eldoret Campus pursuing a Masters Degree Course in Business Administration (Accounting Option) in the School of Business & Economics.

He is working on his research entitled “Effectiveness of Ratio Analysis as a Determinant of Financial Distress. A Case Study of Companies Listed in NSE” in partial fulfilment for the requirement of the Award of Masters in Business Administration (Accounting Option).

We are kindly requesting your office to provide him with the permit to proceed to the field for data collection and completion of his research.

Please do not hesitate to call the undersigned for any verification.

Any assistance extended to him will be highly appreciated.

Yours faithfully,

[Signature]

Dr. Charles O. Obando (0720986205)
DEPUTY DIRECTOR – ACADEMIC AFFAIRS
APPENDIX IV: RESEARCH PERMIT

THIS IS TO CERTIFY THAT:

MR. JACKSON KIPKEMBOI KETER

of KISII UNIVERSITY, 6434-30100

ELDORERT has been permitted to conduct

research in Uasin-Gishu County

on the topic: EFFECT OF ACCOUNTING
RATIO ANALYSIS ON FINANCIAL
DISTRESS OF COMPANIES LISTED IN
NAIROBI SECURITIES EXCHANGE, KENYA

for the period ending: 6th August, 2019

[Signatures]

Applicant's Signature

Director General
National Commission for Science, Technology & Innovation

CONDITIONS

1. The License is valid for the proposed research, research site specified period.

2. Both the Licence and any rights thereunder are non-transferable.

3. Upon request of the Commission, the Licensee shall submit a progress report.

4. The Licensee shall report to the County Director of Education and County Governor in the area of research before commencement of the research.

5. Excavation, filming and collection of specimens are subject to further permissions from relevant Government agencies.

6. This Licence does not give authority to transfer research materials.

7. The Licensee shall submit two (2) hard copies and upload a soft copy of their final report.

8. The Commission reserves the right to modify the conditions of this Licence including its cancellation without prior notice.

RESEARCH CLEARANCE PERMIT

Serial No.A 19900

CONDITIONS: see back page
APPENDIX V: RESEARCH AUTHORIZATION

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Ref: No NACOSTI/P/18/77841/22028

Date: 7th August, 2018

Jackson Kipkemboi Keter
Kisii University
P.O. Box 408-40200
KISII.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on “Effect of accounting ratio analysis on financial distress of companies listed in Nairobi Securities Exchange, Kenya” I am pleased to inform you that you have been authorized to undertake research in Uasin Gishu County for the period ending 6th August, 2019.

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

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

DR. STEPHEN K. KIBIRU, PhD.
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Uasin Gishu County.

The County Director of Education
Uasin Gishu County.
APPENDIX VI: PLAGIARISM REPORT

EFFECTIVENESS OF ACCOUNTING RATIOS IN PREDICTING FINANCIAL DISTRESS OF COMPANIES LISTED IN NAIROBI SECURITIES EXCHANGE, KENYA

ORIGINALITY REPORT

20% SIMILARITY INDEX
15% INTERNET SOURCES
3% PUBLICATIONS
7% STUDENT PAPERS

MATCH ALL SOURCES (ONLY SELECTED SOURCE PRINTED)

1%
★ ore.exeter.ac.uk
Internet Source

Exclude quotes Off Exclude matches Off
Exclude bibliography On
APPENDIX VII: CERTIFICATE OF PUBLICATION

Certificate of Publication

INTERNATIONAL JOURNAL OF ACADEMICS & RESEARCH

is hereby awarding this certificate to

Keter Kipkemboi Jackson

in recognition of the publication paper entitled

Effectiveness of Accounting Ratios in Predicting Financial Distress of Companies Listed in Nairobi Securities Exchange

Dr. Hagib Omar
Editor-In-Chief

Volume I, Issue 1