NON-FINANCIAL FACTORS INFLUENCING FINANCIAL DISTRESS OF FIRMS

LISTED AT THE NAIROBI SECURITIES EXCHANGE

PRESENTED BY:

SALAT ABDI

ADM NO.12/01504

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DECLARATION

This research project is my own original work and has not been submitted for any award in any university.

Signature_____Date_____

SALAT ABDI

ADM NO.12/01504

This research project has been submitted for examination with approval from the university supervisor.

Signature_____Date_____

Dr Christine Nanjala

School of Business & Public Management

KCA University

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ABSTRACT

The purpose of this study was to investigate whether non-financial factors matter in predicting financial distress with a keen look at firms listed at the Nairobi securities exchange. The study was grounded on six objectives; to determine the effect of ownership of the firms on financial distress of firms listed on the NSE, to establish the effect of size of organization on financial distress of firms listed on the NSE, to establish the effect of growth opportunities on financial distress of firms listed on the NSE, to determine the effect of firm category on financial distress of firms listed on the NSE, to establish the effect quality of human capital on financial distress of firms listed on the NSE and to determine the effect of length of period in the market on financial distress of firms listed on the NSE. Three theories will further form basis for the study; industrial organisation theory, pecking order theory, contingency theory and agency theory. The study adopted a descriptive research design while targeting all the 68 firms listed at the NSE. The research will analyze secondary panel data on the study variables from the individual company publications including company profiles, annual reports and financial statements and reports from the industry regulators. The data collected for a period of 10 years. Descriptive analysis will be applied in profiling the financial distress of the NSE firms. The Altman Z-score model was used to assess the financial distress in the listed firms while the RE probit model was used to evaluate the nature of relationship between the independent and dependent variables. The validity of the study model was to establish through an F-test. The findings were presented in tables and graphs.

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ABBREVIATIONS

AIMS   Alternative Investment Market Segment

BAP   Basel Accord Principles

CBK   Central Bank of Kenya

CDSC   Central Depository and Settlement Corporation

CMA   Capital Markets Authority

DPF   Deposit protection Fund

ETFs   Exchange Traded Funds

FISMS   Fixed Income Securities Market Segment

FTSE-NSE   Financial Times Stock Exchange – Nairobi Securities Exchange

GEMS   Growth Enterprise Market Segment

LDCs   Less Developed Countries

MIMS   Main Investment Market Segment

NPL   Non-Performing Loans

NSE   Nairobi Securities Exchange

ROA   Return on Asset

ROE   Return on Equity

DEFINITION OF TERMS

Altman Z-Score Model : A linear financial model that combines four or five ratios, weighted by coefficients used to measure financial distress in business organisation.

Financial Distress : Financial distress as a condition where firms' obligations are not met or meet with difficulty.

Firm Category : A firm's environment, with reference to the sector in which it operates in.

Growth Opportunities : New investment or project opportunities presented to possible investors.

Length of Firm Period in the Market : A firm', age, as measured by the number of years from the time an organisation was established.

Non-Financial Factors : Factor that are not measurable using financial parameters.

Quality of Human Capital : The standard of human capital that includes aspects such as education and professional work experience.

Random Effect Probit Model : A probability linked model based on the cumulative normal probability distribution applied in the analyses many behaviors or decisions that are to be measured in a non-continuous manner.

Size of the Organisation : The scale of work being conducted an organisation. Can be measured using the average number of employees, size of capital, size of assets and total sales.

Structure of Ownership : The structure explaining the distribution of persons or organisations that lend capital to an organisation.

CHAPTER ONE: INTRODUCTION

1.0 Introduction

Businesses are vital to the vibrancy of an economy, provision of employment, and creation of wealth (Craig et al., 2003). Besides being great contributors to economies worldwide, businesses experience financial distress especially small business firms (Carter & Van Auken, 2006). When organizations are exposed to extreme and persistent financial distress, it may often result to them being bankrupt (Timmons & Spinelli, 2004). According to Carter and Van Auken (2006), financial distress and bankruptcy are generally characterized as being disruptive and costly and cannot be ignored as a result of the impact they have on employees, stakeholders, clients, suppliers and the financial entities. This paper, as with the argument by Antonia, Domingo & Howard (2008), firms are termed as being in financial distress if their liquidity and profitability depict deterioration. This chapter will cover the background of the study; problem statement; objective, scope, limitation, significance and assumptions of the study.

1.1 Background Of The Study

A number of researchers (Carter & Van Auken, 2006; Sheppard & Chowdhury, 2005; Segarra & Callejón, 2002; Antonia, Domingo & Howard, 2008) have attributed financial distress to several factors that can be categorized as either financial or non-financial. The factors include degree of innovation, technology, age of the organization, economic turbulence, reduction in demand, increased debt, unfavorable monetary policies, increased interest rates and poor financial management. Failure of firms has become a common phenomenon as many firms have had to go through crises in the world' largest economy, the

United States of America, as well as all throughout the economies in the world (Shahnawaz, Sonia & Salim, 2016). The trio add that in corporate finance, a condition involving the failure of a bank is termed as "Financial Distress". On the other hand, Korteweg, (2007) defines financial distress as a condition where firms' obligations are not met or meet with difficulty while Ross et al (1999) linked financial distress to insolvency and defined it as the inability by one to pay his debt and a lack of ways of settling one's debts. A similar argument is raised by Abudo (2011) who asserts that financial distress is a term in corporate finance that describes a condition when a company breaks or with difficulty fulfills its promises to its creditors. However, according to Shahnawaz, Sonia and Salim (2016), financial distress may not be categorically defined partly as a result of the various parameters responsible to financial distress which include but not limited to sustained operating losses, increase in the amount of non-performing loans (NPL), reduction in dividends, branch closings, high volatility recorded through return on asset (ROA) and return on equity (ROE) measures. Generally, a reduction in an organization' financial efficiency that gives rise to cash shortage in the organization is termed as financial distress (Korteweg, 2007).

1.1.1 Financial Distress

Wruck (1990) pointed out several aspects that can be used as indicators of financial distress in an organization. These include a sustained decline in the dividend amounts paid-out over time or even in worst cases, a total failure by the organization to declare dividends and lay-offs involving retrenchment so as to save the firm from cumulating deficits. According to Mohammed and Ahmed (2011), predicting exposure to financial distress assists to contain the amount of losses recorded and also helps in avoiding wrong allocation of a firm's scarce

financial resources. The duo further argue that the financial crises negatively impact an economy as a unit with the real cost bore by firms being the huge losses that may further result to a change in the macroeconomic policies compelled by the crises (Mohammed and Ahmed, 2011). A contrary opinion is however raised by Bryant (1980) who asserts that mildly ranked crisis may have long-term advantages too, such as improving the overall efficiency of an industry through shaking-out the non-efficient firms of the industry and also keeping the industry vigilant since the decision makers are compelled to develop better methodologies towards the running of the financial systems. As per O'Neill (1986) financial distress has costs linked to it that can be categorized into direct and indirect costs. The direct expenses paid out by an organization in the event of a bankruptcy include auditor, legal and management fees among other payments whereas indirect costs impact the distribution of a firm' value before it lands to bankruptcy, including loss of goodwill. Organizations undergoing financial distress tend to concentrate more on short term profitability as compared to long-term profitability hence sustainability is mostly foregone; this may result to sub optimization by organizations (Hsiang-Tsai, 2005) and alternative consideration by staff (Abudo, 2011).

In their study, Gilbert et al. (1990) list 3 main probable reasons for financial distress as; asset mix (inappropriate and inefficient allocation of a firm's assets without being industry specific), financial structure (non-effective financial structure that results to liquidity constraints) and corporate governance (disagreements between the management and shareholders/stakeholders). However, according to Rose and Spiegel (2011), the outbreak of a financial crisis is a near impossible phenomenon to predict. More studies (Reinhart &

Rogoff, 2008; 2009) have dedicated in establishing early warning models by focusing on identifying underlying vulnerabilities, and unveiling common patterns that precede most financial crises. In measuring the financial performance of an organization, several applicable quantitative techniques exist. Mohammed and Ahmed (2011) identified three financial ratios (Ratio of Investment in securities to total assets; Ratio of Loans to total assets and Ratio of Loans to Deposits) as being the best predictors of financial distresses in a banking institution. However, according to Frank et.al. (2013), the Altman's Z-score has proved to be a more reliable tool in predicting financial distress. This model is an improvement of the discriminant analysis technique developed by Fisher (1936). The model provides between 80% and 90% level of accuracy in predicting a financial distress for a period as close as one year before the bankruptcy. The Z-score model utilizes a multiple corporate income and amounts obtained from balance sheet in measuring the financial muscle of a company. The model can be utilized in forecasting the probability of bankruptcy in both manufacturing and non-manufacturing spheres. Altman's work built upon research by accounting researcher William Beaver (1967) and Tamari (1966).

According to Gathecha (2016) determinants of financial distress can be classified into three categories financial factors, non-financial factors and macro-economic factors. Most of the studies carried out on financial distress use quantitative measures. However, using non-financial aspects enhances the understanding of the concept of financial distress and improves the precision level in the predictive capacity of financial distress models (Grunert, Norden and Weber, 2005). Several non-financial factors have been determined to influence financial distress within organizations. Antonia, Domingo and Howard (2008) categorize

these factors as either external or internal. They add that structural characteristics of an industry make the primary external determinants of financial performance of organizations. Mellahi and Wilkinson (2004) expressed their views on this issue by stating that financial distress resulting from non-financial external factors has the management having little or no control over the factors. On the other hand, Moreno and Casillas (2007) largely categorize a firm's resources and capabilities as being non-financial internal factors that may influence its financial performance as a result of their heterogeneity. They mention these internal factors as being comprised of human capital, strategic business planning, innovation, technology, quality and age of business. According to Doloreux and Dionne (2008) and Capeller and Greene (2008) technology, innovation and quality human capital have a vital contribution to a firm's competitiveness. Similarly, Carter and Van Auken (2006) argue that while planning generally gives rise to better decisions, poor planning may result to significant business distress. As they allow firms to fore plan for business environmental turbulence, allocate its resources efficiently hence improve performance (Rudd et al, 2008). This study therefore seeks to assess the influence of non-financial factors in predicting financial distress in firms that are listed at the Nairobi Securities Exchange with the findings seeking to enhance the knowledge within the Kenyan context.

1.1.2 Overview of Nairobi Securities Exchange

The NSE was established in 1954 as an association of volunteering stockbrokers who were registered with the provisions under the Societies Act (Nairobi Securities Exchange, 2015). NSE as a body has currently grown to comprise of four segments which include the Main

Investment Market Segment (MIMS), the Alternative Investment Market Segment (AIMS), Growth Enterprise Market Segment (GEMS) and the Fixed Income Securities Market Segment (FISMS). The Nairobi Securities Exchange operates under the regulation of the Capital Markets Authority (CMA) and the Central Depository and Settlement Corporation (CDSC). The Capital Markets Authority is charged with the process of licensing and overall regulation of the capital markets in the country. The regulator is also approves public offers and public listings of securities that are to be traded at the NSE (Nairobi Securities Exchange, 2012). On the other hand, The Central Depository and Settlement Corporation provides services that entail clearing, delivery and settlement in relation to securities traded at the NSE. The body also regulates the conduct of all agents at the Central Depository that include stockbrokers and investment banks who are both members of the NSE and custodians (Nairobi Securities Exchange 2012).

The NSE has registered several milestones in the recent past. Some of these accomplishments include in July 2011, when it changed its name from the Nairobi Stock Exchange Limited to Nairobi Securities Exchange Limited, and later in the same year, changed from a company limited by guarantee to one limited by shares (Nairobi Securities Exchange 2012). In November 2011, the partnership between NSE and FTSE International resulted to FTSE NSE Kenya 15 and 25 indices (FTSE, 2012). The indices sought to enhance the extent of information available and are also befitting as the anchorage for Exchange Traded Funds (ETFs) and other index-related products that attract global investors (Nairobi Securities Exchange, 2012). The indices have as a result improved capital flows into the domestic market, enhanced its liquidity and improved market capitalization. NSE also

launched live trading on the automated trading systems, improved the integrity of its trading system through operating on a system that allows for internet trading at the NSE Broker Back office (Nairobi Securities Exchange, 2015) and launched a new system for trading corporate and treasury bonds that is integrated with the Central Bank of Kenya (CBK) systems. NSE also established a derivatives and related market after being admitted as an associate member by the Board of Association of Futures Markets.

The Nairobi Securities Exchange has undergone privatization since 1988 since the initial selling of the Kenyan Government 20% shareholding. The market operates through a Central. NSE currently operates with 68 listed firms. These firms listed at the NSE are constantly expected to be financially stable so as to build investors' confidence and enhance the overall economic growth of the country. To achieve this, CMA sets a list of criteria that the firms need to attain during their listing period. However, despite meeting the set listing requirements, market dynamics in which the firms operate in impact them in either way. These market dynamics may result from government policies, risk perceptions, decisions by the various managements and general investment decisions (Nairobi Securities Exchange, 2015). So far, several firms have been delisted as a result of financial distress with others being placed under receivership.

1.2 Statement Of The Problem

Financial distress is an elusive concept in most businesses worldwide (Carson, 1995). Given the important role that various firms play in any economy, it is crucial to understand the factors that influence their viability and survival (Porter, 1980). The researcher adds that the

core aim of any business organization is to generate profit and by extension, maximize its wealth. However in a distress situation, a firms' performance, hence stability is affected and this with time has real implications for the business community (Grunert et al., 2005). Extended periods of financial distress will eventually result in liquidation especially for business organizations in Less Developed Countries (LDCs) due to limited resources to withstand long periods of poor performance (Ihsan et al., 2015). Instances of business failures thus raise valid concerns to both local and foreign investors in any country. Several factors, both financial and non-financial, have been determined to be good indicators of probability of financial distress of firms in varied sectors within diverse economies (Antonia, Domingo and Howard, 2008; Aragon and Sanchez, 2005; Bashar, 2015; Ihsan, et. al., 2015).

Despite their economic contributions, a research gap on the influence that non-financial aspects have on financial distress facing firms in Kenya is evident from the limited number of studies conducted on the subject. Kogi (2003) did a study to develop a discriminant model incorporating financial ratio stability that could be used to predict corporate failure. He sought to identify critical financial ratios with significant predictive ability. His findings showed that it was possible to predict corporate failure with up to 70% accuracy 3 years before the actual occurrence using his stability discriminant model. Benard and Antony (2014) conducted a study on corporate financial distress determinants on non-financial firms listed in the NSE. They measured financial variables such as leverage, liquidity, growth and profitability. Similarly, Antonia, Domingo and Howard (2008) conducted a study on Spanish manufacturing firms in relation to non-financial factors associated with financial distress

while Gathecha (2016) studied size of the company, foreign ownership, BOD local and liquidity as measures of firm characteristics and their effects on financial distress on non-financial firms listed in the Nairobi Securities Exchange (NSE). The results obtained are different hence there has been no consensus and therefore no universal non-financial factors that can be used to predict financial distress within firms. Therefore effects of non-financial factors on financial distress is still a less explored area as the findings so far are inconclusive. This study was specifically assessing the effect of non-financial factors on financial distress in companies listed at the NSE compared to other studies that dwelt on other areas. This enhanced a new knowledge in a diverse environment.

The study therefore sought to empirically assess whether non-financial factors matter or have an influence to whatever degree in predicting financial distress in firms that are listed at the Nairobi Securities Exchange. This was significant since it tested the applicability of the Capital Structure and Resource based theories in the Kenya economy and also increase the knowledge on the effects of non-financial factors in predicting financial distress of various business organizations. This further facilitates stakeholders in the in the varied sectors to be able to react to distress signals in their organizations early enough to avoid complete failure.

1.3 Objectives of the Study

The study had both general and specific objectives as indicated below;

1.3.1 General Objective

The general objective of this study was to determine whether non-financial factors matter in predicting financial distress of firms listed in the Nairobi securities exchange.

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1.3.2 Specific Objectives

i. To determine the effect of ownership of the firms on financial distress of firms listed on the Nairobi security exchange.

ii. To establish the effect of size of organization on financial distress of firms listed on the Nairobi security exchange.

iii. To establish the effect of growth opportunities on financial distress of firms listed on the Nairobi security exchange.

iv. To determine the effect of firm category on financial distress of firms listed on the Nairobi security exchange.

v. To establish the effect quality of human capital on financial distress of firms listed on the Nairobi security exchange.

vi. To determine the effect of length of period in the market on financial distress of firms listed on the Nairobi security exchange.

1.4 Research Questions

i. What is the effect of ownership of firms on financial distress of firms listed on the Nairobi security exchange?

ii. How does size of organization affect financial distress of firms listed on the Nairobi security exchange?

iii. What is the effect of growth opportunities on financial distress of firms listed on the Nairobi security exchange?

iv.   What is the effect of firm category on financial distress of firms listed on the Nairobi security exchange?

v.   How does quality of human capital affect financial distress of firms listed on the Nairobi security exchange?

vi.   How does length of period in the market affect financial distress of firms listed on the Nairobi security exchange?

1.5 Scope of the Study

The study focus on whether non-financial factors matter in predicting financial distress of firms listed at the Nairobi Securities Exchange. The Nairobi Securities Exchange is one of the largest arm in the country's economy and coupled with both challenges and benefits; economic and social hence provided an interesting case for analysis. The economic arm has been chosen as the study area since in the recent past, Kenyan has recorded a number of firms listed at the NSE going into receivership. The study's population comprised of all firms listed at the Nairobi Securities Exchange whereas the main source of data from secondary origins; published journal and reports from the CBK and the individual institutions.

1.6 Significance of the Study

Theory-wise, the findings of the research sought to advance the capital structure theory by Miller and Modigliani (1968) and the resource based theory Collis and Montgomery (1995) within the Kenyan economy. The theories relate to financial distress in relation to value of an

organization and the importance of firm's resources and capabilities on organisational performance respectively. The conclusions and recommendations of the study aided further research on phenomenon relating to performance evaluation and distress prediction in all economic sectors in the country, through providing a reference platform to other researchers.

The companies listed at the NSE are very vital such that they cannot be ignored since they give rise to both social and economic benefits that entail provision of sustainable livelihood the populous through direct and indirect employment and also acting as a source of revenue to the nation. Therefore policy-wise, the study provided policymakers including the management of the various organizations, CMA and the ministry of finance with relevant information that was used to enhance the developing of policies, regulations and guidelines in relation to prediction of financial distress in the various industrial sectors in the country' economy hence avoiding future losses. The study will also provide useful information to the finance professionals and various level decision makers through facilitating them implement strategies on predicting hence curbing financial distress as they as seek to remain competitive in their customer-aggressive industries.

With the country's economy exposed to some degree of uncertainty, amid recording rapid growth, the study will be an information platform to investors in the economy through enhancing their knowledge on the overall performance of the economy, since the NSE comprises of firms that cut across nearly all the industries in the economy, and revealing some of the key indicators that was used to predict a financial distress hence facilitate an informed investment decision.

1.7 Limitation of the Study

The following are the limitations for the study;

i.   Prediction of financial performance is a matter that is of interest to all sectors in the country's economy. However, the study was limited to only the firms listed at the Nairobi Securities Exchange. This was due to various constraints including time, finances and other resources.

ii.   Several factors have been cited as being good predictors of financial distress within organizations. The study was limited to seven non-financial factors including ownership of the firms, size of organization, growth opportunities, firm category, human capital and length of period.

iii. Assessment of financial performance within any business organization or industry is viewed as a demanding task as financial strategies within the organizations remain a secret as a result of stiff competition within their respective industries. The research therefore relied on published financial documents for the various firms so as to increase the ease and speed, accuracy in attaining its objective.

iv.   The study subject of determining the viability of non-finacial factors in predicting financial distress still remais a pretty eminent area of study, since little is still known as a result of few researches having been undertaken on the same. Therefore, scholarly articles in relation to the subject of study in the country scarcely exist. The researcher was therefore mostly depend on publications and journals on financial performance and financial distress and their prediction within varied industries from other countries and regions.

1.8 Assumptions of the Study

The study was carried out under the following assumptions;

i. The firms listed at the NSE, as it is in other sectors within the country, experience financial distress.

ii. Financial distress within the firms listed at the NSE results to a negative impact on the firms

iii. The findings, conclusions and recommendations obtained by the study will be applicable and a reflection of all sectors within the country's economy since most of the sectors are represented at the NSE.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter covers different debates on non-financial factors and highlights the major issues relating to financial distress in with a keen look at the firms listed at the Nairobi Securities Exchange. The research reviews literature relating to the current study, namely: ownership of the firms, size of organization, growth opportunities, firm category, human capital and length of period in the market. The chapter also discusses empirical literature, conceptual framework, operational framework and research gaps.

2.2 Theoretical Framework

The study will be anchored on three theories that support the objectives of the study; Industrial Organisation Theory, Pecking Order Theory and Contingency theory. These theories relate to the influence of non-financial factors on financial distress and the general concept of financial distress.

2.2.1 Industrial Organisation Theory

The theory of Industrial Organization contends that an organisation' environment has a greater impact on business distress than the organisation specific factors (Bowman and Helfat, 2001). Industry organizational theory works on the assumption that an organisation' environment has a greater influence on aspects relating to business distress than organisation specific factors (Bowman and Helfat, 2001). According to Porter (1980), the key argument is that structural traits of industries are the main determinants of performance. Mellahi and Wilkinson (2004) supported this viewpoint by indicating that business distress emanates

from external factors which management of the affected organisation has little or no control at all. The relevancy of this theory to the current study is that it links an organisation' external non-financial factors such as growth opportunities and the category of industry in which the firm operates in, which are factors addressed in this research, to financial distress.

2.2.2 Pecking Order Theory

According to the argument by Myers and Majluf (1984), the pecking order theory has its anchorage on the simple assumptions that an organisation' managers are better informed pertaining the organisation' prospects than outsiders hence their actions, as it may appear, the best interest of the existing shareholder (Sheikh & Wang, 2011). The organisation will as a result forego a project with a positive net present value in the event that the equity issued to new investors will be undervalued. In accordance to Upneja and Dalbor (2001), it is also assumed that there exists asymmetry of information pertaining the correct value of the organisation between current and potential shareholders. The pecking order theory argues that organisations use a hierarchy in settling for a capital structure. With this theory, organisations would prefer to use internal funding to outside funding, corporates would also opt to use debt as opposed to using equity anytime they require external financing (Viviani, 2008).

Therefore organisations will initially utilize their retained earnings, then if this proves insufficient they move to debt. If debt is also insufficient then the organisation will be compelled to issue new shares. Firms usually avoid the utilization of equity due to the tedious process of involved in issuing new equity. Besides, the cost of equity is also usually high

because the debt holders will always be allowed the first claim on the funds and therefore resulting to a higher risk for the equity holders. However, only firms that are profitable can produce the much needed funds to use internal funds (Upneja & Dalbor, 2001). According to (Viviani, 2008), the leverage that is observed speaks of both the past organisational profitability as well as the investment opportunities available for the firm. The theory addresses aspects relating to ownership of the firm and growth opportunities available to a firm which form part of this study' objectives.

2.2.3 Contingency Theory

Contingency theory is a category of a behavioral theory that argues that no best way exists to organize, lead or settle for decisions in a firm. Instead, the best action is contingent (dependent) on both external and internal factors. Woodward (1998) developed different contingency approaches in the late 1960s. History wise, this theory has continuously sought to establish wide generalizations relating to the formal structures that are basically linked with or best fit the utilization of varied technologies. This view emanated from the work by Woodward (1998), who argued that technologies directly influence the variations in such organizational characteristics including width of control, centralized authority and the formalization of procedures and regulations.

Contemporary management view/management approach points at adapting management behavior to specific circumstances within the organization and to every given condition. This view however is different from the single best way that the theorists in the classical management sought since they based their assumption on management principles being

universal or applicable in all situations, without considering the organization's unique conditions. According to Woodward (1998), apart from disregarding the past management perspectives, the contingency theorists acknowledge any correct and applicable principles that facilitate managers to effectively manage. Specifically, theorists have applied this theory to management issues relating to leadership, making of decisions, organizational change and structure, motivation of employees, human resource management. This therefore provide managers with a new set of methodologies to try which include situational leadership and participative work groups. Even though critics realize the benefits that accrue from applying management principles to individual circumstances, they also argue that the contingency theory does not provide useful generalizations for leaders to apply Barney (1985). The theory is relevant to the current study as it is directly linked to an organisation' internal characteristics that in relation to this research include quality human capital, size of the organisation and length of period in the market.

2.2.4 Agency Theory

The theory explaining the relationship between principals, such as a shareholder, and agents, such as a company executive. In this relationship, the principal delegates or hires an agent to perform work. The theory attempts to deal with two specific problems, first, that the goals of the principal and agent are not in conflict (agency problem), and second, that the principal and agent reconcile different tolerance for risk (Eisenhardt, 1989). Agency theory suggests that the firm can be viewed as a nexus of contracts loosely defined between resource holders. An agency relationship arises whenever one or more individuals, called principals, hire one or more other individuals, called agents, to perform some service and then delegate decision-

making authority to the agents. The primary agency relationships in business are those (1) between stockholders and managers and (2) between debt holders and stockholders. These relationships are not necessarily harmonious; indeed, agency theory is concerned with so-called agency conflicts, or conflicts of interest between agents and principals. This has implications for, among other things, corporate governance and business ethics. When agency occurs it also tends to give rise to agency costs, which are expenses incurred in order to sustain an effective agency relationship e.g., offering management performance bonuses to encourage managers to act in the shareholders' interests. Accordingly, agency theory has emerged as a dominant model in the financial economics literature, and is widely discussed in business ethics texts, Eisenhardt, (1989).

Agency theory raises a fundamental problem in organizations—self-interested behavior. A corporation's managers may have personal goals that compete with the owner's goal of maximization of shareholder wealth. Since the shareholders authorize managers to administer the firm's assets, a potential conflict of interest exists between the two groups. The theory therefore argues that, in imperfect labor and capital markets, managers will seek to maximize their own utility at the expense of corporate shareholders. Agents have the ability to operate in their own self-interest rather than in the best interests of the firm because of asymmetric information e.g., managers know better than shareholders whether they are capable of meeting the shareholders' objectives and uncertainty e.g., myriad factors contribute to final outcomes, and it may not be evident whether the agent directly caused a given outcome, positive or negative).

2.3 Empirical Review

Previous studies have linked financial distress to several factors that are categorized as either internal or external organisational factors. Such factors include; human capital, economic turbulence, change in demand, debt level, monetary policies that are restrictive, capital structure, organisational management among others (Carter and Van Auken, 2006; Capeller and Greene, 2008). Most of these studies have measured financial distress using quantitative parameters. This research however focuses on the non-financial factors and their effect on financial distress.

2.3.1 Structure of Ownership and financial distress

Hansmann (1988) defined ownership of a firm as the structure explaining the distribution of persons or organisations that lend capital to an organisation. Firms are categorized as either private or public owned. An organisation may be privatized through a privatization process that includes the sale of government ownership to private investors. This is mostly viewed as a solution in transforming State Owned Enterprises (SOEs) into efficient and profitable organisations (Esther et. al, 2016). They add that, the government being a commercial enterprise owner is argued to be inefficient as a result of a wide gap between ownership of the firm and its control which results to difficultly in monitoring managers. According to Shleifer and Vishny (1997), the property rights theory supports privatization through the assertion that private owned firms are more efficient as a result of focusing on profit and decision making which creates room in monitoring of managers. In support, the agency theory argues that private shareholders impact organisational performance through monitoring of managers while seeking to protect their investments. On the other hand, the

resource based theory identifies that private shareholding always seeks to bring on board resources and expertise needed by an organisation to enhance governance therefore financial performance. According to Esther et. al (2016), the overall success of the privatization process of SOEs rely on altering the ownership structure of an organisation in order to bring in benefits linked to private ownership. They however further argue that the ownership structure of organisations that are privatized are made up of varies shareholders with varied magnitudes of ownership, diverse incentives and different abilities to influence performance.

The existing empirical evidences relating to the influence of structure of ownership and organisational performance stands inconclusive. Some of the researchers found that government ownership positively associates with firm' financial distress (Ongore et al., 2011; Pervan et al., 2012). A contrary opinion is however raised by Trien and Chizema (2011) who states that large state ownership positively affect performance. Esther et. al (2016) assert that the lack of consensus on the findings of the various empirical studies is not surprising as the performance rely on the effectiveness of ownership structure adopted and may also differ not just based on organisations but also on the institutional specificities. Domestic private institutional investors (DPIIs) mostly play a more important role in monitoring managers in an effective manner because they have enough expertise to monitor the organisation and at a reduced cost in comparison to retail investors (Pound, 1988). Therefore, organisations that have the participation of Domestic private institutional investors may have a lower likelihood of experiencing distress.

2.3.2 Size of the Organisation and financial distress

According to Antonia, Domingo and Howard (2008), size of an organisation refers to the scale of work being conducted by the organisation. Several factors can be used to measure the size of the company including the average number of employees, size capital, size of assets and total sales. Several researchers have associated organisational size to the level of exposure a firm has in relation to financial risk (Antonia, Domingo and Howard, 2008; López, et al., 1998). In their study on Spanish manufacturing firms, Fariñas and Moreno (2000) established that a negative relationship exists between the financial distress and organisational size implying that the larger the firm the less likely it is for the organisation to be under distress financially. However, Gathecha (2016) in his study on non-financial firms listed at the NSE states that there exists a negative non-significant relationship between financial distress and variables such as size of the company, foreign ownership, BOD local and liquid. A similar argument is raised by Robert (2016) who argues that non-financial factors such as firm size, and the listing sectors have a significant moderating effect on relationship between capital structure and financial distress. Esteve-Pérez and Mañez-Castillejo (2008) indicate that an organisation' size explains a firm's ability to adapt to the ever varying and competitive business environment. According to Mata and Portugal (1994), the current size of a firm is a better predictor of the firm' performance and future survival than its initial size since it best contains information on the firm over time.

2.3.3 Growth Opportunities and financial distress

According to Porter (1980), there exists five competitive forces that can be used to measure an industry performance in relation to the existing growth opportunities and competitiveness

of business environment and ultimately the survival of an organisation. Porter asserts that growth opportunities refer to new investment or project opportunities presented to possible investors while competitiveness of business environment is the dynamic external system in which an organisation operates or competes. He adds that the combination of these five forces influence the attractiveness of the industry. Porter names these forces as threat from new entrants; threat of substitute product or services; the bargaining power of buyers; bargaining power of suppliers and the level of rivalry between the existing competitors. An increase in the intensity of these forces results to a reduction in the competitiveness of an industry or organisation which further increases the industry' or organization's chance of running into financial distress. According to Narayanan and Fahey (2005), each of the force will determine the choice of the type of strategy the firm settles for and the chance of failure. Narayan and Fahey add that the stronger the five forces, the lower the likelihood of an organisation attaining profitability within an industry therefore the higher the chance for the organisation to into distress. The level of inter-organisational rivalry is anchored on a number of aspects including type of competition, service or product differentiation, industry growth and entry barriers, among others.

In the event of high levels of bargaining power among buyers, the organisation may not be able to charge higher prices compared to the average market price since the buyers will push for price concessions (Song et al, 2002). Firms can enhance their growth through managing costs, efficient production and adopting new technology would facilitate this. On the other hand, Porter (1979) states that bargaining power of supplier in an industry is tagged on its

capacity to increase prices or reduce the standard of purchased goods and services. The result of these actions is a decline in the industry' profitability in the event that the organisations are not able to recover the cost incurred through increasing their own prices. Generally, the threat of new entrants into an industry increases with increase in profitability of the industry. According to Antonia, Domingo and Howard (2008), the greater the number of the new entrants, the lower the profitability. The threat is however dependent on the nature of the existing barriers and the ability of the existing firms to react (Porter, 1980). Substitute products reduce an industry' attractiveness established ceilings by products that meet the same functions. According to Porter (1980), the substitute products reduce profits in the case of stable economic cycles and further reduce the higher earnings within an industry especially in strong economic times. Brixy and Grotz (2007) argue out in their findings that very competitive business environment encourage business distress whereas growth opportunities reduce distress. The financial distress as a result of competitive environment is attributed to the reducing revenues (Carter and Van Auken, 2006). Similarly, growth opportunities reduce a firm's financial distress due to the promise of increased revenues (Brixy & Grotz, 2007). Brixy and Grotz therefore assert that growth opportunities of a firm negatively relate to its financial distress.

2.3.4 Firm Category and financial distress

The Industry organizational theory argues that a firm's environment, with reference to the sector in which it operates in, greatly influence the factors associated with business distress (Bowman & Helfat, 2001). According to these researchers, a business' financial distress negatively correlates to the firm' environment such that a strong sector reduces an

organisation' exposure to financial distress. A similar argument is raised by Alkhatib (2012) in his study on the determinants of leverage of listed companies. In qualifying this argument, the researcher stated that organisations are faced with different economic, cultural and sectorial dynamics which act as an influence in determining the organisation' long run financial stability hence its likelihood of being in distress. The stronger the economic, cultural and sectorial sector dynamics, the lower the chance of the sector running into a distress. This study divides the organisational sectors into two main division namely; financial and non-financial sectors which have varying degrees of business distress at specific economic, cultural and sectorial dynamics. The financial sector however embodies the banking, insurance and micro-finance sectors while the non-financial sector includes the manufacturing, communication, motor and electrical sectors. The importance of sector as a variable in assessing organisational financial performance was also emphasized in a study conducted by Sabido and Mulato (2006) that assessed growth in profit margins of listed organisations in Eastern Africa. The results indicated that changes in profit margins for organisations operating within the same sectors were near level and the profit margins, hence financial performance, varied depending on sector. However, most of these factors are beyond the firm' control. In adddition, Schoubben and Van Hulle (2004) determined that factors that are sector-specific also play an important role in determining the various organisation leverage behavior.

2.3.5 Quality of Human Capital and financial distress

According to Capeller and Greene (2008), the standard of human capital that includes education and professional work experience has often been linked to the organisational

performance. They also define quality of human capital as the level of knowledge and social and personal traits that influence the standard of labor so as to produce economic value. Although both theoretical and empirical studies relating to human resources management (HRM) reveal that hiring the rightly qualified employees improve an organisation' performance (Terpstra et al, 1993), training of employees greatly improves and sustains the performance levels in an organisation. A huge section of an organisation' capacity hence its performance, are linked to the capabilities of human capital inside the firm Ooghe and De Prijcker (2008). According to the argument by Schutjens and Wever (2000), both educational qualification and professional work experience influence a firm' performance and its future survival. With the study Lee and Tsang (2001) it is evident that a lack of professional experience among the management of an organisation is a major cause of financial distress within the distresses. The researchers generally, concluded in their study that financial distress negatively correlates with a firm' quality of human capital, more specifically the management professional experience. A similar argument is raised by Headd (2003) who also concluded that a manager's level of education was an ingredient to an organisation' good performance hence better education reduces the organisation' chance of falling into distress while Van Gils (2005) generally asserted that a manager' experience is an important aspect to a firm' future survival.

A finding by Galloway & Jones (2006) reveals that a firms in financial distress does not always plan at all for a top management succession. They add that this could result to hiring an unbalanced management team which may further lack vital skills that may be necessary in pushing the organisation ahead. However, any wrong business decision may result to the

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organisation being under financial distress because some of the decisions require huge cash investments that are irreversible. Pearce & Robbins (1993) also stresses on how important management in organisations seeking to be turned around. They add that a less skilled management that has a responsibility to respond both efficiently and timely may result to sustained decline and finally the failure of the company hence further indicating a negative association between financial distress and an organisation' quality of human capital.

2.3.6 Length of Period in the Market and financial distress

A Firm' age, as measured by the number of years from the time an organisation was established, was deployed by Yasuda (2005) to conduct a study on financial distress. Yasuda concluded that a firm's age negatively associates with financial distress such that the older the firm the lower its chance of being in distress. Audretsch and Mahmood, (1994) in their study on the relationship between financial distress and age of the firm found out that financial distress was established to have a negative relationship to the number of years from the time the firm began its operations. A similar argument was floated by Fariñas and Moreno (2000) who found out that a negative relationship exists between a firm' length of time in the market and financial distress in their study that focused on the Spanish manufacturing firms. Adding to this, Lane and Schary (1991) suggested that the length of time an organisation has been in existence influences three key aspects including the rate of flow for entrants and exits in an economy, the probability of failure of a firm decreases as the organisation' age increases and that the industrial population distribution by length of existence is influenced by the rate industrial failure.   Similarly, the theory of industrial

organisation, according to Erickson and Pakes (1995), the rate of an organisation experiencing distress declines with the firm' age and time.

A contrary opinion is raised by Claudio and Urs (2009) who argues that, in line with an obsolescence of organisation' endowments, with organizational rigidity, and the adoption of seniority rules, the organisation' performance worsens with age such that profits drop, margins reduce, growth of sale reduces and the operational costs rise. In addition, old age may result into an organisation' knowledge resource, employee abilities and skills run obsolete therefore inducing organizational decay (Agarwal & Gort, 2002). Leonard-Barton (1992) asserted that, when organisations focus on their core capabilities, with time they result into core rigidities that make it impossible for the organisation to adapt to changes in their business environment. On the other hand, Agarwal and Gort (1996, 2002) argued that an organisation' hazard rates initially reduce and then start to increase as the organisation get older. One of the reasons cited by the researcher is that the adaptability of old endowments reduces and the investment opportunities in new technology shrink as the organisation' product market ages.

2.3.7 Summary Of The Literature And Research Gap

Several studies have been conducted by different researchers on financial distress that have measured both financial and non-financial factors. A study carried out by Hamid and Nasil (2014) on the manufacturing sector in Pakistan between July 2003 and June 2010 that incorporated all the manufacturing sectors on the Karachi Stock Exchange, concluded that

the probit model performed best on predicting both financially distressed firms and non-distressed firms based on three variables including net income, shareholders equity and cash flows. The study deployed the Zmijewski model in testing the distress level of the studied companies. The researcher however relied mostly on ratios while overlooking the other factors that give rise to financial distress. Antonia, Domingo and Howard (2008) analyzed several non-financial factors associated with financial distress in their study which deployed a cross-sectional survey method. The trio, using the derived logit estimates showed that in the low-tech industry, financial distress was associated with firms that were younger, less technologic, and operated in intensive rivalry environments whereas degree of technology, innovation, or environmental factors were revealed as not being key variables associated with financial distress within firms operating in high tech industries.

A descriptive research design was used by Aragon-Sanchez and Sanchez-Marin (2005) in their study on strategic orientation, management characteristics and performance that investigated the Spanish Small and Medium Enterprises. The study however limited its scope to small sized organisations and concluded that there is a significant impact of strategic orientation and management characteristics on the overall performance of the SMEs. A multiple regression analysis was used by Bashar (2015) on their empirical model for predicting financial failures. The results of the study indicated that working capital to asset, current asset to current liability, market value to of equity to book value of debt retained earnings to total assets are good indicators of probability of bankruptcy in Jordan that the four variables significantly affect and predict a great amount of the variance in customer

loyalty. This study was however limited to financial variables as the indicators of financial distress.

While carrying out a factor analysis on SMEs in Bangladesh, Mohammad and Nasrul (2012) in their research titled financial distress in small and medium enterprises (SMEs) of Bangladesh: Determinants and remedial measures concluded that sales trends, rate adequacy, indebtedness, management capabilities and financial planning as potential problem areas linked to financial distress. The research also identified causes of financial distress as fund management, poor accounting systems, poor productivity and management succession. On the other hand, Mohammad and Ahmad (2011) limited their study on commercial banks and used financial ratios in their study on prediction of financial distress for commercial banks in Kuwait concluded that three ratios were crucial variables in predicting financial distress of the banks: Investment in Securities to Total Assets, Loans to Total Assets and the Loans to Deposits. This study used the regression analysis method (Logistic). Similarly, in a study on predicting distress in European banks, Frank et al. (2013) deployed the use of the early-warning models. The findings indicated that complementing bank specific vulnerabilities with indicators for macro-financial imbalances and banking sector vulnerabilities improves model performance and yields useful out-of-sample predictions of bank distress during financial crisis.

A study on the effect of firm characteristics on financial distress of non-financial firms listed at Nairobi Securities Exchange conducted by Gathecha (2016), concluded that among the tested variables, Tobin Q (investment), leverage and systematic risk were significant as they

explained the financial distress of the companies listed at NSE. A further conclusion was arrived at of there being a negative non-significant relationship between financial distress and variables such as size of the company, foreign ownership, BOD local and liquidity. The study used a logit regression model. Abudo (2011) carried a study on Applicability of Altman (1968) model in predicting financial distress of commercial banks in Kenya using a descriptive research design. He concluded that Edward Altman's financial distress prediction model is found to be 80 % valid for the failed firms and the sampled for non-failed majority proved Altman's financial distress prediction model was a 90% validity of the model. A similar study by Shahnawaz, Sonia, and Salim (2016) on Private Commercial Banks in Bangladesh revealed that that among the selected commercial banks 24% were in the safe zone, 20% were in the distress zone and 56% were in the grey zone. With the greatest indication occurring in EBIT to total asset ratio.

Benard and Antony (2014) used a descriptive research design (univariate, multivariate and regression analyses and pearson correlation) to analyze corporate financial distress determinants: a survey of non-financial firms listed in the NSE. They concluded that leverage and liquidity have no significant effect on corporate financial distress unlike growth and profitability that had significant effect. Altman Z-score model was also determined as being a significant model in predicting financial distress. This study however excludes the non-financial factors. A study by Robert (2016) on the effect of capital structure of on financial distress of non-financial companies listed in the NSE and concluded that non-financial factors such as firm size, and the listing sectors have a significant moderating effect on

relationship between capital structure and financial distress while explaining financial difficulties based on previous payment behaviour, management background variables and financial variables, Back (2005) used a descriptive research design. The study found out that an organization's previous payment behaviour, management background and financial variables have a significant effect in explaining financial difficulties within the organizations. This research was restricted to only non-financial organisations leaving out on the financial firms.

From the literature review, although there exist several empirical studies on factors influencing financial distress, that further provide recommendations to effective prediction of financial distress in-order to ensure continuity of business. Most of these already conducted studies majorly address financial factors and their use in predicting financial distress but are further limited to financial institutions. Therefore, little is still known by the researchers on non-financial factors and their influence in predicting financial distress within organisations in the country. This study therefore will seek to fill this gap by assessing the influence of non-financial factors in predicting financial distress with a keen look at the Nairobi Securities Exchange.

2.4 Conceptual Framework

A conceptual framework is diagrammatic presentation indicating the association between the independent and dependent variables under study. The conceptual framework depicts how non-financial factors under the two categories influenced financial distress. The independent variables were categorized into external and internal non-financial variable. Internal factors

include; ownership of the firms, size of organization, quality of human capital and length of period in the market while external factors include; growth opportunities and firm category. This was demonstrated in the framework below.

Figure 2.1: Conceptual Framework

Ownership

Growth

Financial Distress

Firm category

Size of organisation

Length   of   market

Quality   of   human

Independent Variable   **Dependent Variable**

Source: Researcher (2017)

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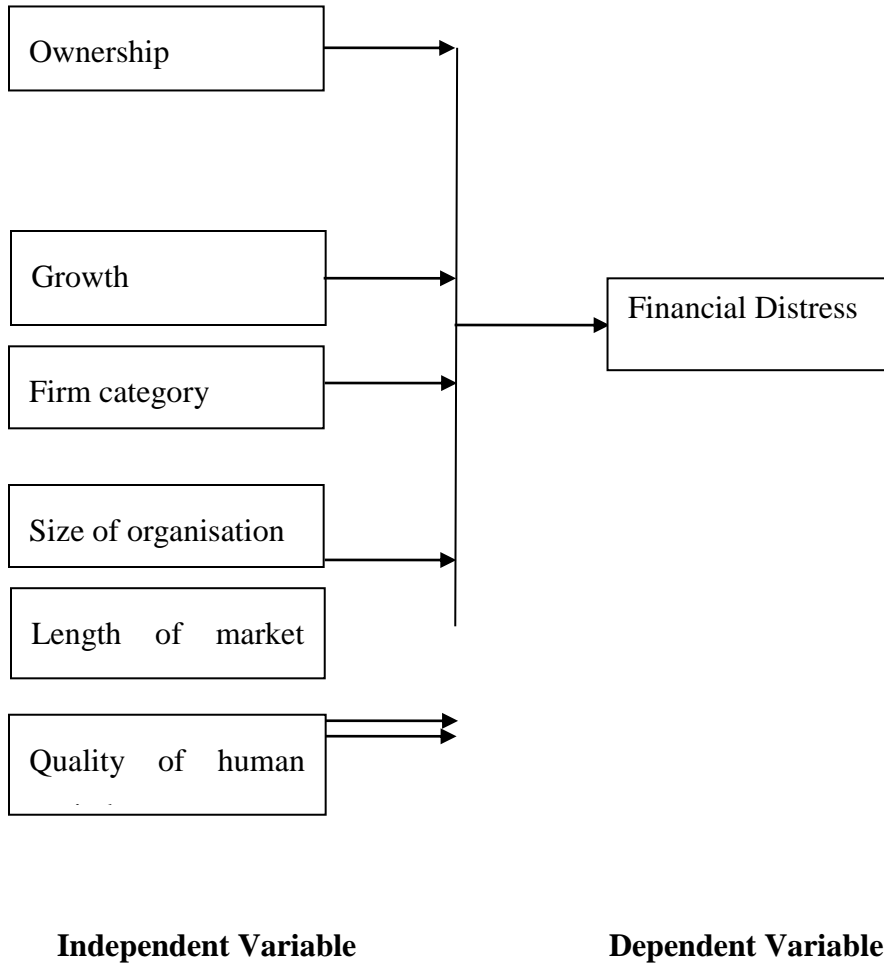
2.5 Operational Framework

The operational framework as represented in figure 2.2 describes the various variables considered in the study and how the variables was measured.

Table 2.1: Operational Framework

Category of Variable	Variable	Definition	Proxy of measure	Frequency of data collection	Reference
Independent Variables	Ownership of the firm	The structure explaining the distribution of persons or organisations that lend capital to an organisation.	Type of ownership: Private or Government	Annual data	Parkers, Peters and Turetsky (2002), Haat, et. Al (2016), Eloumi and Gueyie (2001) and Hansmann (1988).
	Size of the organization	Scale of work being conducted.	Number of employees	Annual data	Antonia, Domingo and Howard (2008)
	Growth opportunities	New investment or project	Count of diversifiable products	Annual data	Porter (1980)

	opportunities presented to possible investors.			
	Firm Category	Industrial environment within which an organisation operates.	Type of sector: Financial or Non-financial	As at 2007	Bowman & Helfat (2001)
	Quality of Human capital	Level of knowledge and social and personal traits that influence the standard of labor so as to produce economic value.	CEO' years of experience	Annual data	Capeller and Greene (2008),
	Length of period in the market	Refers to the number of years the	Number of years from the time the	Between 2007 and 2015	Yasuda (2005)

		organisation has been in operation	organisation was established		
Dependent Variables	Financial Distress	A condition when a company breaks or with difficulty fulfills its promises to its creditors	Altman Z-score model; $Fd_i = a + b_j$ non-financial variable $_j + \varepsilon_j$ (1= Firm in Financial Distress, 0= Firm not in Financial Distress)	Annual data	Altman (1968) and Abudo (2011)

Source: Researcher (2017)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section presents a detailed explanation of the research methods that was adopted while undertaking this study. The chapter covers the research design, population targeted by the study, sampling frame, techniques of data collection and analysis as well as ethical considerations by the researcher. This section also specifies the empirical models to be deployed by the study.

3.2 Research Design

According to Kothari (2004), a research design refers to the master plan that indicates the methods and processes for collecting and analyzing the required information. A similar argument is raised by Wanjiru (2015). Wanjiru described a research design as the blueprint that leads the steps in a research undertaking right from the formulation of the research questions to the point of reporting the findings of the study. The study used a descriptive research design to assess whether non-financial factors matter in the process of predicting financial distress within organisations listed at the NSE. This research design was selected for the study since the study is predictive in nature. A descriptive research is connected to particular predictions, fact narration and characteristics of variables being studied (Kothari & Garg, 2014). The non-financial variables was computed for each organisation during the period of study then transformed into panels. This design is therefore vital in this type of study where both the cross-sectional and longitudinal characteristics of the variables being analyzed make-up a vital component of the study (Gujarati, 2003).

3.3 Target Population

According to Mugenda and Mugenda (2003), population implies the entire group of objects, individuals that bear a common characteristic that sinks with a given specification. The study' population comprised of all the companies, financial and non-financial, listed in the NSE as at December 2015. In total, there were 68 firms listed in the NSE as at the research date that participated in the research. The companies were listed as indicated in Table 3.1 below.

Table 4.2: Firms Listed at the NSE

CATEGORY	SECTOR	NO. OF FIRMS	PROPORTION
Financial	Banking	11	16%
	Insurance	6	9%
	Investment & Funding	8	12%
	Automobiles & Accessories	3	4%
	Commercial & Services	12	18%
	Construction & Allied	5	7%
	Energy & Petroleum	5	7%
	Manufacturing & Allied	10	15%
	Telecommunication	1	1%
TOTAL		**68**	**100%**

Source: NSE (2015)

3.4 Data

The research employed secondary data that was obtained from audited financial statements, annual reports and organisational profiles of the individual companies; reports by the various industry regulators and NSE reports for the 10-year study period; 2007 to 2015. The researcher settled for 2007 as the base year as a result of the economic impact of the post-election violence the country experience. From the secondary sources, data was collected on financial performance; liquidity (current asset to current liability), profitability (net income to sales) and efficiency and profit (operating revenue to operating expenses) that facilitated the computation of the Altman's Z-score of financial distress. In addition, data relating to ownership of the firms, size of organization, quality of human capital, length of period in the market, growth opportunities and firm category will also be collected from the documents. Data in relation to these variables; independent and dependent, was captured and summarized in data sheets for further analysis.

3.5 Data Collection Procedures

The procedures involved in the collection of data entailed visiting the websites of the targeted companies and downloading their financial statements published for the 10 years period of study. A data sheet summarizing all the specific information to be captured from the data sources will be developed. Using this data summary sheet, the information on the various variables and their related inputs was keyed in for each of the company depending on the set frequency of data collection for the individual variables. Reports from the NSE' and the industry regulators' websites was used to verify and authenticate the validity of the data obtained from the individual company publications. In the vent of conflicting data, the

researcher gave preference to the data obtained from the individual organisation' reports since the same had been published for public consumption hence more reliable. The data was uploaded in the MS Excel program for ease assessment or conversion into ratios. The ratios and results were converted into panels to further facilitate analysis.

3.6 Data Analysis and Presentation

The research collected secondary data from the 68 companies listed in NSE for the period 2007 – 2015. According to the argument by Baltagi, Bratberg and Holmås (2005), this methodology was grounded on the econometric theory that advocates for panel data analysis towards attaining better regression results. They add that one of the key advantage of panel data is that it facilitates in controlling against heterogeneity that is yet to be observed while providing the researcher with both time-series and cross-sectional dimensions; that further minimizes the probability of bias in the estimators of the parameters. After obtaining the data from the audited financial statements, annual reports and company profiles of the individual organisations and reports from the NSE and regulators, MS Excel was used to calculate the ratios relevant in the variables under study in each organisation through the study period. Descriptive statistics entailing measures mean, mode and standard deviation was used to summarize and profile the financial distress obtained of the NSE firms. The panel regression analysis using Stata Version 13 was employed to determine how the independent variables influence financial distress of the NSE firms. Inferential statistics including F-test was used to establish the significance of the model employed in determining the relationship between

financial distress and independent variables. The results obtained in the study was presented using tables and graphs.

3.7 Empirical Model

The study mainly employed two models in carrying out data analysis; the Altman' Z-Score Model and the Random Effect Probit Model.

3.7.1 Altman' Z-Score Model

The Altman's Z-Score model was used to measure financial distress. Bwisa (2010) in his study assessed Altman's model applicability in prediction of financial distress in Kenya and found the model to be 80% applicable. The Z-score model linearly combines four or five ratios, weighted by coefficients. The coefficients are estimated through identifying a group of companies which entered into bankruptcy which are matched by a sample of companies that had survived; the matching is carried out based on industry and asset size. The Z score formula below was applied;

$$Z = 0.012X1 + 0.014X2 + 0.033X3 + 0.006X4 + 0.999X5$$

Where: Z   = score

X1 = working capital/total assets

X2 = retained earnings/total assets

X3 = earnings before interest and taxes/total assets

X4 = market value of equity/book value of total liabilities

X5 = sales/total assets

Zones of discrimination are such that Z-Score greater than 2.99 fall into the non-bankruptcy sector, while those firms having a Z-Score below 1.81 were bankrupt. Scores of between 1.81 and 2.99 lied in the grey area. The study was therefore set dummy variables such that; 1 (Z>1.81) = not distressed firm; 0 (Z<1.81) = distressed firm.

3.7.2 Random Effect Probit Model

This study was embraced the R.E probit model in analyzing the relationship between the dependent and explanatory variables. According to Liao (1994), the model is efficient in analyzing many behaviors or decisions that are to be measured in a non-continuous manner. Liao adds that the model is a probability linked model bearing two categories in the dependent variable. The model is based on the cumulative normal probability distribution with the binary dependent variable, y, taking on two values: zero and one. The results of y are both mutually exclusive and exhaustive.

Y normally depends on K observable variables, X_k, where k ranges from 1 to K (Aldrich and Nelson 1984). The model was analyze the predictor models as indicated below;

i.   Ownership of the firm = (1 = Private, 0 = Otherwise)

ii. Size of the organisation = Number of employees (continuous)

iii. Growth opportunities = Count of diversifiable products (Continuous)

iv. Firm Category = (1 = Financial, 0 = Otherwise)

v.   Quality of Human capital = CEO' years of experience (Continuous)

vi.   Length of period in the market = Age of organisation (Continuous)

The model was analyzed as;

$$y* = \sum_{i=1}^{k} \beta_{it} X_{it} + \mu_{it}$$

$$= \beta_0 + \beta_{1t} X_{1t} + \mu_{1t} + \beta_{2t} X_{2t} + \mu_{2t} \ldots + \beta_{6t} X_{6t} + \mu_{6t}$$

The dummy variable, y, is observed and is determined by y* as follows:

$$y = \begin{cases} 1 \text{ if } y* > 0, \\ 0 \text{ otherwise} \end{cases}$$

Where;

y*=unobserved continuous variables

y = dependent variable

x = independent variables

i = observations

t = 2007-2015 (Period/ time)

β = the coefficient of the predictor variables

μ = error term

The R.E probit model further assumes that the data to be analyzed is generated from a population or sample of size N. The population or the sample observations are presented by i, i = 1, . . . ,N. Therefore, the observations of y need to be mutually exclusive. The model also assumes that there exists no linear dependence among the independence variables.

CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the research findings compare Financial Distress Prediction Models used in listed firms in Kenya. Secondary Data was collected from the Capital Market Authorities, Nairobi security Exchange and company websites.

4.2 Background of Information

The researcher targeted firms listed in the Nairobi Security Exchange from 2007 to 2015 and studied whether the Altman's model would predict financial. Firms used were from eleven in banking, 6 in insurance, 8 in investment, 12 in Commerce and Service, 3 Automobile & Accessories, 5 constructions & Allied, 5 energy and petroleum, 10 manufacturing & Allied sector and 1 from telecommunication. The study used the CMA 10 year market survey report for period of 2007 to 2015. The emerging market Z-score model and its zone of discrimination was then used to classify the firms in the below zones;

a. Zone 1; $Z > 2.60$ -"Safe" Zones

b. Zone 2; $1.10 < Z < 2.60$ -"Gray" Zones

c. Zone 3; $Z < 1.10$ -"Distress" Zones

All conclusions were based on the overall Z score and not the value of each individual ratio. In addition the study used the R.E probit model in analyzing the relationship between the dependent and explanatory variables. The aim of the study was to determine

whether non-financial factors matter in predicting financial distress of firms listed in the Nairobi securities exchange.

4.3 Applicability of Altman' Z-Score Model

4.3.1 Investment and Funding sector
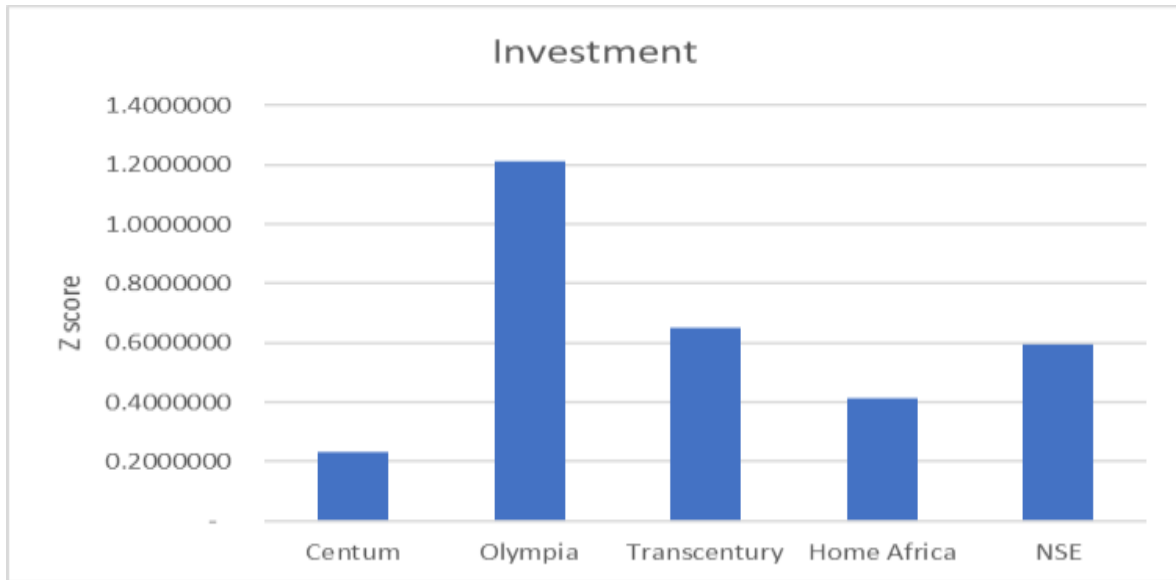
Figure 4.2: Investment and Funding Sector

Zones of discrimination are such that Z-Score greater than 2.99 fall into the non-bankruptcy sector, while those firms having a Z-Score below 1.81 were bankrupt. Scores of between 1.81 and 2.99 lied in the grey area. The study will therefore set dummy variables such that; 1 (Z>1.81) = not distressed firm; 0 (Z<1.81) = distressed firm. From the figure above, the listed firms in the investment sector have a score of below 1.81. This shows that they are in the grey area hence the firms were financially distressed and hence faced bankruptcy between 2007 and 2015. Centum is the most distressed with a z-score of 0.23 followed by home Africa.

4.3.2 Banking Sector
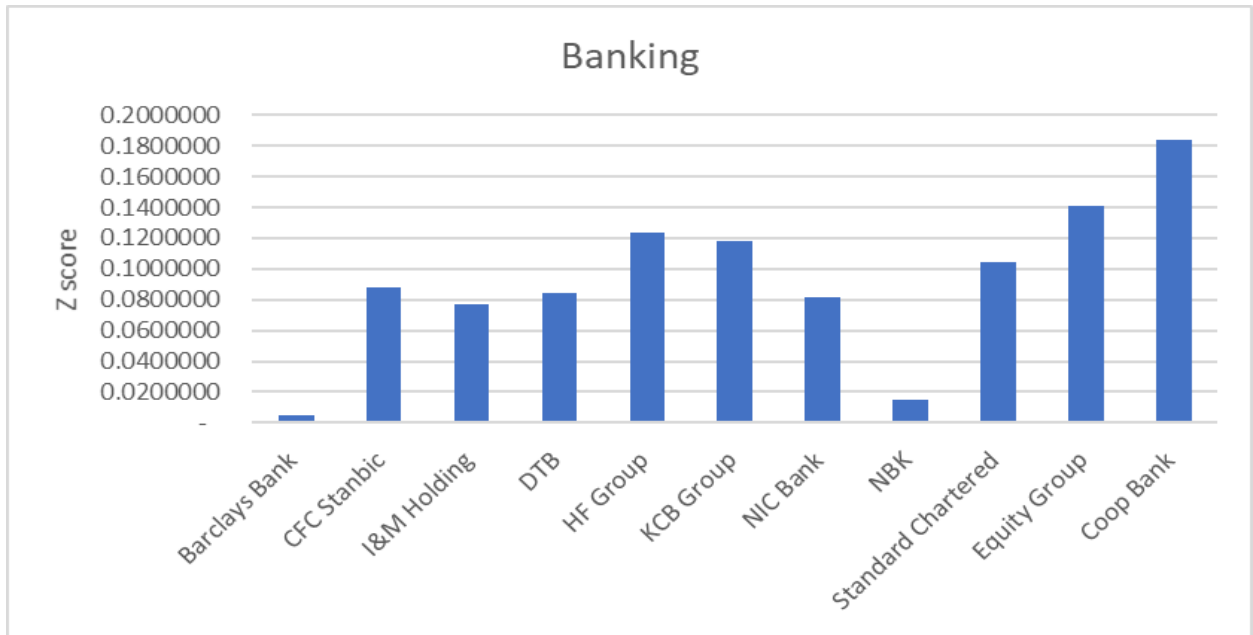
Figure 4.3: Banking sector

Zones of discrimination are such that Z-Score greater than 2.99 fall into the non-bankruptcy sector, while those firms having a Z-Score below 1.81 were bankrupt. Scores of between 1.81 and 2.99 lied in the grey area. The study will therefore set dummy variables such that; 1 (Z>1.81) = not distressed firm; 0 (Z<1.81) = distressed firm. From the figure above, the listed firms in the banking sector had a score of below 1.81. This shows that they are in the grey area hence the firms were financially distressed and hence faced bankruptcy between 2007 and 2015. Barclays bank is the most distressed with a z-score of 0.005 followed by National bank of Kenya.

4.3.3 Insurance Sector

Figure 4.4: Insurance sector

Zones of discrimination are such that Z-Score greater than 2.99 fall into the non-bankruptcy sector, while those firms having a Z-Score below 1.81 were bankrupt. Scores of between 1.81 and 2.99 lied in the grey area. The study will therefore set dummy variables such that; 1 (Z>1.81) = not distressed firm; 0 (Z<1.81) = distressed firm. From the figure above, the listed firms in the insurance sector had a score of below 1.81. This shows that they are in the grey area hence the firms were financially distressed and hence faced bankruptcy between 2007 and 2015. Liberty holdings are the most distressed with a z-score of 0.21 followed by Britam.
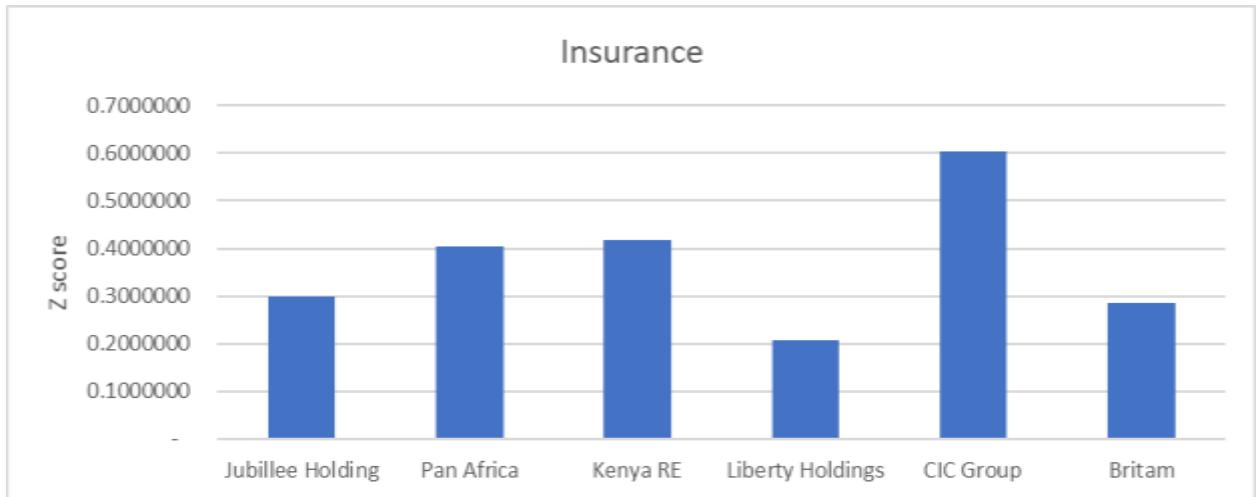
4.3.4 Agriculture Sector

Figure 4.5: Agricultural sector

Zones of discrimination are such that Z-Score greater than 2.99 fall into the non-bankruptcy sector, while those firms having a Z-Score below 1.81 were bankrupt. Scores of between 1.81 and 2.99 lied in the grey area. The study will therefore set dummy variables such that; 1 (Z>1.81) = not distressed firm; 0 (Z<1.81) = distressed firm. From the figure above, the listed firms in the agricultural sector have a score of below 1.81. This shows that they are in the grey area hence the firms were financially distressed and hence faced bankruptcy between 2007 and 2015. Sassini tea was the most distressed followed by Williamson Tea.
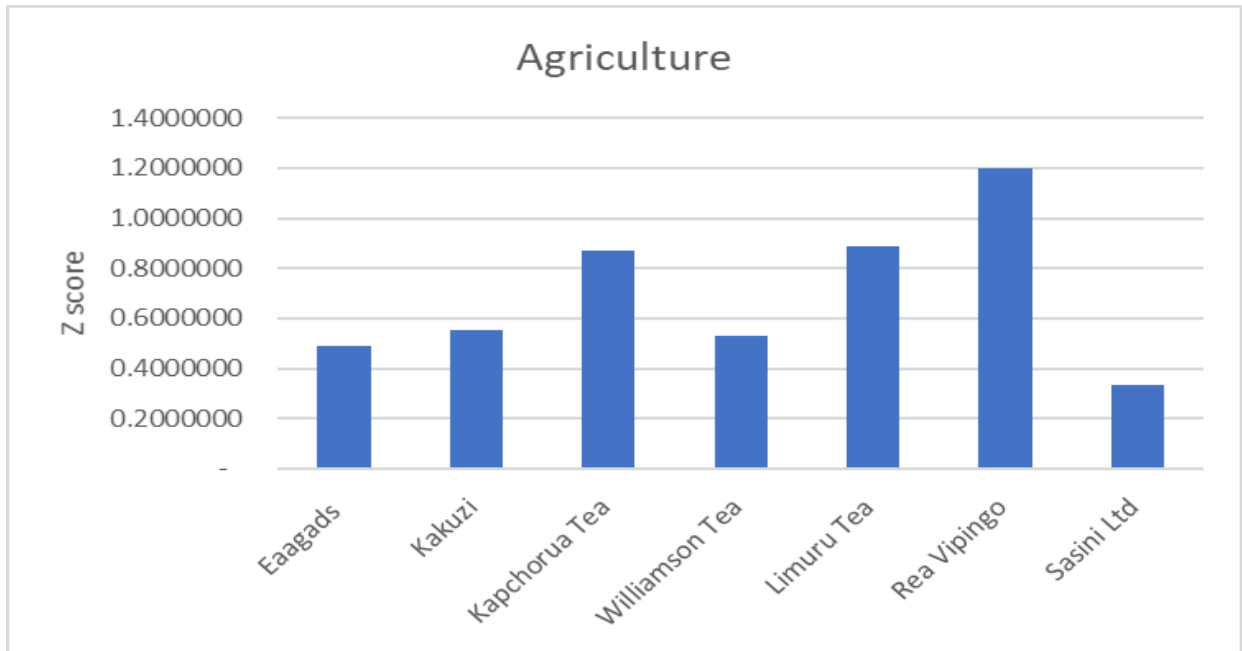
4.3.5 Automobiles and Accessories Sector

Figure 4.6: Automobile sector

Zones of discrimination are such that Z-Score greater than 2.99 fall into the non-bankruptcy sector, while those firms having a Z-Score below 1.81 were bankrupt. Scores of between 1.81 and 2.99 lied in the grey area. The study will therefore set dummy variables such that; 1 (Z>1.81) = not distressed firm; 0 (Z<1.81) = distressed firm. From the figure above, the listed firms in the Automobiles & Accessories Sector have a score of below 1.81. This shows that they are in the grey area hence the firms were financially distressed and hence faced bankruptcy between 2007 and 2015. Marshalls is the most distressed with a z-score of 0.8 followed by Sameer.
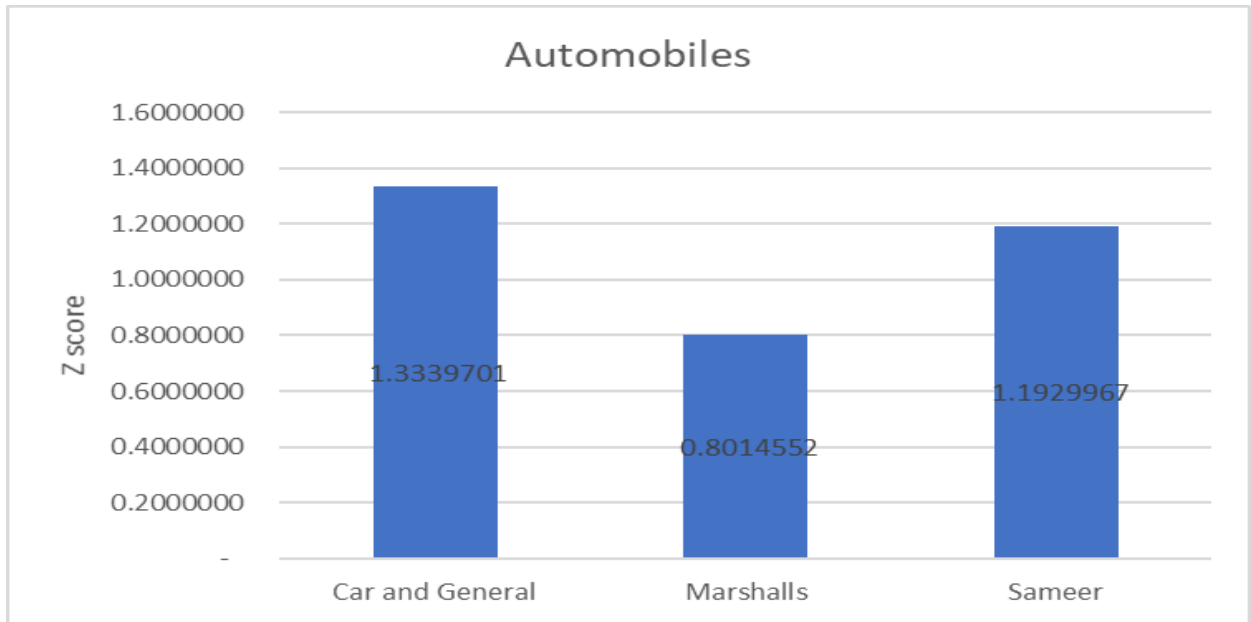
4.3.6 Commercial and Services Sector
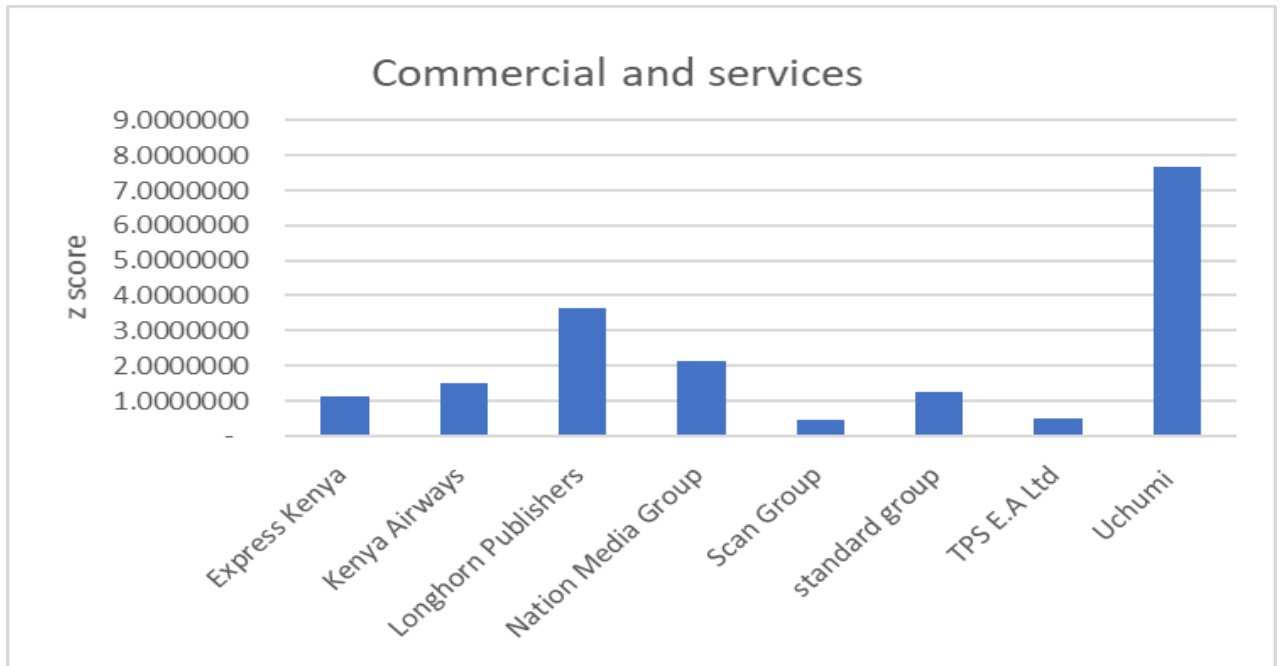
Figure 4.7: Commercial and services

Zones of discrimination are such that Z-Score greater than 2.99 fall into the non-bankruptcy sector, while those firms having a Z-Score below 1.81 were bankrupt. Scores of between 1.81 and 2.99 lied in the grey area. The study will therefore set dummy variables such that; 1 (Z>1.81) = not distressed firm; 0 (Z<1.81) = distressed firm. From the figure above, longhorn publishers and Uchumi supermarket displayed a z score of above 2.99. This shows that the firms were not distressed and did not face bankruptcy. Nation Media Group displayed a z score between 1.81-2.99 indicating that the firms were bankrupt but not distressed. However, express Kenya, Kenya airways, scan group, standard group and TPS E.A. Ltd displayed a z score of below 1.81. This shows that they are in the grey area hence the firms were financially distressed and hence faced bankruptcy between 2007 and 2015.

4.3.7 Manufacturing and Allied

Figure 4.8: Manufacturing and allied

Zones of discrimination are such that Z-Score greater than 2.99 fall into the non-bankruptcy sector, while those firms having a Z-Score below 1.81 were bankrupt. Scores of between 1.81 and 2.99 lied in the grey area. The study will therefore set dummy variables such that; 1 (Z>1.81) = not distressed firm; 0 (Z<1.81) = distressed firm. From the figure above, BAT Kenya, Eveready and Unga group displayed a z score between 1.81-2.99 indicating that the firms were in the safe zone and not distressed within the period of study. However, BOC Kenya, Carbacid, EABL, Kenya Orchards and Mumias Sugar display a z score of below 1.81. This shows that they are in the grey area hence the firms were financially distressed and hence faced bankruptcy between 2007 and 2015.
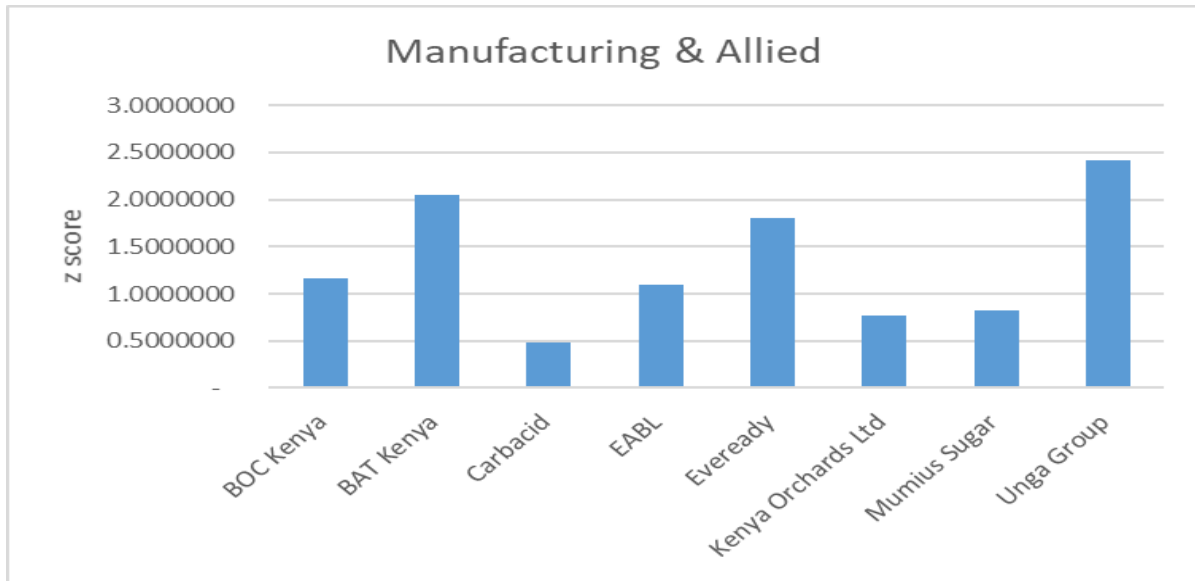
4.3.8 Construction and allied
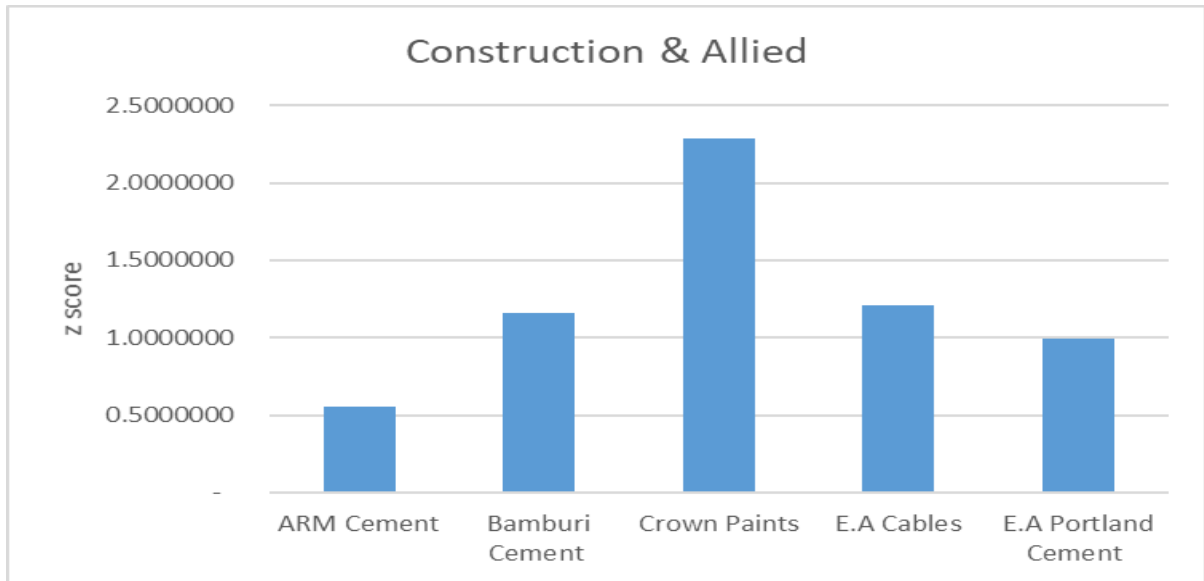
Figure 4.9: Construction and Allied

Zones of discrimination are such that Z-Score greater than 2.99 fall into the non-bankruptcy sector, while those firms having a Z-Score below 1.81 were bankrupt. Scores of between 1.81 and 2.99 lied in the grey area. The study will therefore set dummy variables such that; 1 (Z>1.81) = not distressed firm; 0 (Z<1.81) = distressed firm. From figure, Crown paints displayed a z score between 1.81-2.99 indicating that the firm was in the safe zone and not financially distressed between 2007 to 2015. However, ARM cement, Bamburi cement, E.A cables and E.A. Portland cement displayed a z score of below 1.81. This shows that they are in the grey area hence the firms were financially distressed and hence faced bankruptcy between 2007 and 2015.

4.3.9 Energy and Petroleum
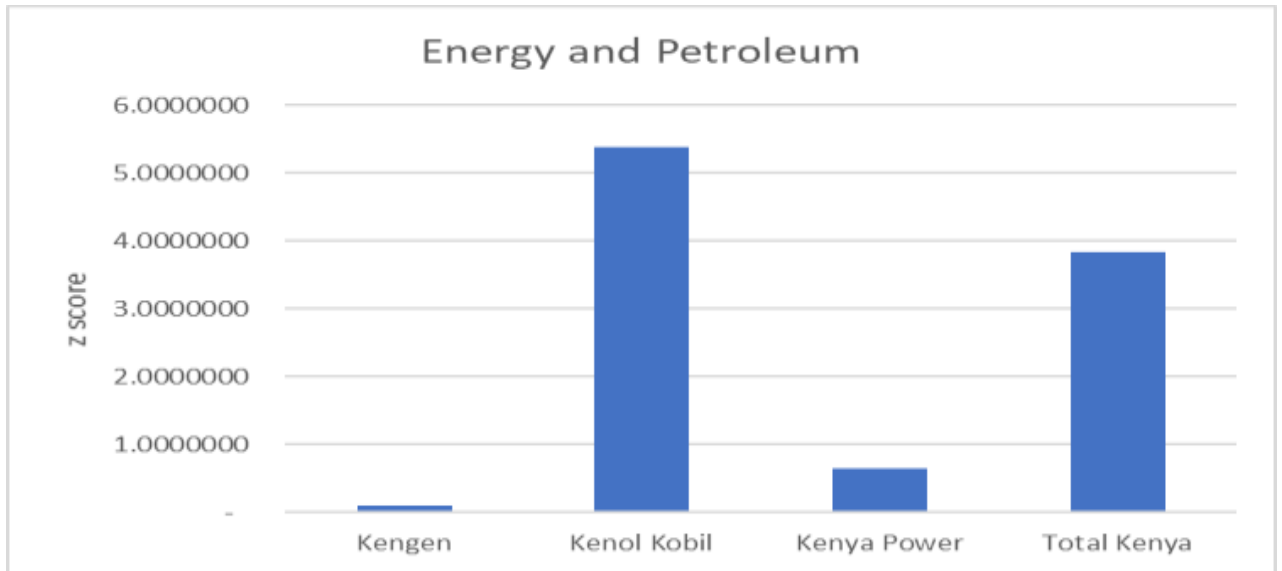
Figure 4.10: Energy and Petroleum

Zones of discrimination are such that Z-Score greater than 2.99 fall into the non-bankruptcy sector, while those firms having a Z-Score below 1.81 were bankrupt. Scores of between 1.81 and 2.99 lied in the grey area. The study will therefore set dummy variables such that; 1 (Z>1.81) = not distressed firm; 0 (Z<1.81) = distressed firm. From the figure above, Kenl Kobil and Total Kenya display a z score of above 2.99. This shows that the firms were not distressed and did not face bankruptcy between 2007 and 2015. However, express kenya, Kenya power and Kengen display a z score of below 1.81. This shows that they are in the grey area hence the firms were financially distressed and hence faced bankruptcy between 2007 and 2015.

4.3.10 Telecommunication

Safaricom had a z score of 1.0150584. The score was below the recommended score of 1.81 indicating that between 2007 and 2015 Safaricom faced cases of bankruptcy and was financially distressed. This shows that the model cannot be used to predict financial distress in the listed firms in the telecommunication sector.

4.4 Regression analysis

Table 4.3: Regression analysis

```
Fitting comparison model:

Iteration 0:   log likelihood = -205.46467
Iteration 1:   log likelihood = -199.86599
Iteration 2:   log likelihood =  -199.7795
Iteration 3:   log likelihood = -199.77611
Iteration 4:   log likelihood = -199.77611
```

```
Random-effects ordered probit regression        Number of obs       =         52
Group variable: Y                               Number of groups    =         52

Random effects u_i ~ Gaussian                   Obs per group: min =          1
                                                               avg =        1.0
                                                               max =          1

Integration method: mvaghermite                 Integration points =         12

                                                Wald chi2(6)        =       9.61
Log likelihood  = -199.77611                    Prob > chi2         =     0.1420
```

Y	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
X1	.0551907	.4376206	0.13	0.900	-.8025298	.9129112
X2	-.0000519	.000022	-2.37	0.018	-.000095	-8.90e-06
X3	-.0036864	.0211377	-0.17	0.862	-.0451156	.0377427
X4	.6778086	.3606992	1.88	0.060	-.0291488	1.384766
X5	.0055055	.0220995	0.25	0.803	-.0378086	.0488197
X6	-.0009455	.0051519	-0.18	0.854	-.0110429	.009152

The table 4.2 shows that the fitted random probit model is;

$$Y = \beta_0 + \beta_{1t}X_{1t} + \mu_{1t} + \beta_{2t}X_{2t} + \mu_{2t} \ldots + \beta_{6t}X_{6t} + \mu_{6t}$$

$$Y = -205.4647 + 0.0552_tX_{1t} - 0.0001_tX_{2t} - 0.0036_tX_{3t} + 0.6778_tX4_t + 0.0055_tX_{5t} - 0.0009_tX_{6t}$$

Table 4.2 shows that ownership of the firm, firm category and quality of human capital display negative coefficients showing that they are the major factors contributing to the financial distress in listed firms. However, size of organization, growth opportunities and age of organization display positive coefficients hence they affect the z-score values positively and hence hinder financial distress. This means that ownership of the firm, firm category and quality of human capital are negative factors to financial freedom. The LL

values stabilize showing that financial distress of the listed firms due to ownership of the firm, firm category, quality of human capital, size of organization, growth opportunities and age of organization.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents and discusses the key data findings from the study, draws conclusion from the findings, and makes appropriate recommendations. The conclusions and recommendations drawn were focused on addressing the major objective of the study. The researcher intended to determine non-financial factors predicting financial distress of firms listed in the Nairobi securities exchange.

5.2 Summary of the Study

The study found that the listed firms in the investment sector had a score of below 1.81. Centum is the most distressed with a z-score of 0.23 followed by home Africa. The listed firms in the banking sector have a score of below 1.81. Barclays bank is the most distressed with a z-score of 0.005 followed by National bank of Kenya.

The listed firms in the insurance sector have a score of below 1.81. Liberty holdings were the most distressed with a z-score of 0.21 followed by Britam. This shows that the model cannot be used to predict financial distress in firms in the insurance sector. The listed firms in the agricultural sector had a score of below 1.81. Sassini tea was the most distressed followed by Williamson Tea.

The listed firms in the automobiles have a score of below 1.81. Marshalls is the most distressed with a z-score of 0.8 followed by Sameer. In the commercial and services sector, longhorn publishers and Uchumi supermarket displayed a z score of above 2.99. This shows that the firms were not financially distressed and did not face bankruptcy.

Nation Media Group displayed a z score between 1.81-2.99 indicating that the firms were bankrupt but not distressed. However, express Kenya, Kenya airways, scan group, standard group and TPS E.A. Ltd displayed a z score of below 1.81. This shows that they are in the grey area hence the firms were financially distressed and hence faced bankruptcy between 2007 and 2015. This shows that the model cannot be used to predict financial distress in the listed firms in the commercial and services sector.

From the figure above, BAT Kenya, Eveready, Unga group, and crown paints displays a z score between 1.81-2.99 indicating that the firms were in the safe zone and not distressed within the period under study. However, BOC Kenya, Carbacid, EABL, Kenya Orchards, Mumias Sugar, A.R.M cement, E.A cables and E.A Portland Cement display a z score of below 1.81. This shows that they are in the grey area hence the firms were financially distressed and hence faced bankruptcy between 2007 and 2015. This shows that the model cannot be used to predict financial distress in the listed firms in the commercial and services sector.

From the figure above, Kenol Kobil and Total Kenya display a z score of above 2.99. This shows that the firms were not distressed and did not face bankruptcy between 2007 and 2015. However, express kenya, Kenya power and Kengen display a z score of below 1.81. This shows that they are in the grey area hence the firms were financially distressed and hence faced bankruptcy between 2007 and 2015. This shows that the model cannot be used to predict financial distress in the listed firms in the energy and petroleum sector.

Safaricom had a z score of 1.0150584. The score was below the recommended score of 1.81 indicating that between 2007 and 2015 Safaricom faced cases of bankruptcy and was

financially distressed. This shows that the model cannot be used to predict financial distress in the listed firms in the telecommunication sector.

$$Y = -205.4647 + 0.0552_t X_{1t} - 0.0001_t X_{2t} - 0.0036_t X_{3t} + 0.6778_t X4_t + 0.0055_t X_{5t} - 0.0009_t X_{6t}$$

Table 4.2 shows that ownership of the firm, firm category and quality of human capital display negative coefficients showing that they are the major factors contributing to the financial distress in listed firms. However, size of organization, growth opportunities and age of organization display positive coefficients hence they affect the z values positively and hence hinder financial distress. This means that they are negative factors to financial freedom.

5.3 Conclusions

From the finding on Altman Z score, the study concludes that listed firms in investment, banking, insurance, agriculture, automobile and telecommunication sectors are financially distressed and hence faced bankruptcy between 2007 and 2015.

The study also concludes that the Altman' Z-Score Model predicts the financial distress in these sectors. However, the firms in commercial and services, manufacturing and allied and energy and petroleum display mixed results. The Altman' Z-Score Model does not predict the financial distress in these sectors within 2007 and 2015.

Among the listed firms Uchumi supermarket has the highest z-score an indication that it is the least financial distressed firm listed between 2007 and 2015. Barclays bank displayed the lowest z-score an indication that it was the most financially distressed firm listed in the NSE between 2007 and 2015.

The study concludes that ownership of the firm; firm category and quality of human capital are the major factors contributing to the financial distress of listed firms. Size of organization, growth opportunities and age of organization are the major factors hindering financial distress.

5.4 Recommendations

The study recommend that a combination of models could be used to predict financial distress of firms that are faced with the distress, this should take into account such things as data smoothing from management, one off financial event like write off and other factors likely to affect the financial performance of the companies.

From the findings of this research, the study recommends that Kenya market regulators like Capital market authority and Central bank should explore avenues to create models that can be used to predict financial distress of companies and by so doing; they can easily monitor and ensure stability of the economy. This could assist the regulator to create some awareness of a likely financial distress of a firm and early intervention would be implemented. The regulator would also be able to create Policies that can be applicable in detecting a financial distress.

The research identifies the need for a better model for investors to predict a financial distress or non-financial distress in a firm. This will enable the investor to increase their return on capital for their investments as they are likely to hold stocks in companies that are not experiencing financial difficulties. Investors will also be able to know when to buy new stock or even to sell depending on the results of the predicting models.

The creditors also need to know the credit worthiness of a company, from the research, we find that Altman's model can be used to give this prediction and that better models need to be created especially a combination of several models. With a model to predict financial distress, the creditors will be able to make judgment whether to lend more to their customers.

5.5 Recommendations for Further Research

This research study shows that Altman's model is 66.7% applicable to determine financial distress of the NSE listed sectors. This creates a gap for academicians and scholars to find out which other models can be more applicable to predict a financial distress, to what extent the model can predict such distress and what causes the 32.3% prediction gap. The study recommends that studies should be done on how to eliminate the type II errors.

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APPENDICIES

Appendix I: Secondary Data Collection Instrument

Variable	Description	Year									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Assets	Non-current assets										
	Current assets										
	Total asset										
	Cash flow from operations										
Sales	Sales										
Liabilities	Total liabilities										

Earnings	Retained earnings										
	EBIT										
	Net Earning										
Equity	No. of outstanding shares										
	Current top price										

Appendix II: Primary Data Collection Instrument

Organisation Code	Year	Independent Variable						Z-Score
		Ownership of the firm	Size of organisation	Growth Opportunities	Firm Category	Quality of Human Capital	Age of Organisation	
1	2007							
	200							

	8						
	2009						
	2010						
	2011						
	2012						
	2013						
	2014						
	2015						
	2016						
2	2007						
	200						

	8						
	2009						
	2010						
	2011						
	2012						
	2013						
	2014						
	2015						
	2016						

Appendix III: List of Companies at the NSE

No.	Company	Industry	Category
1	Centum Investment	Investment	Financial
2	Olympia Capital Holdings Ltd	Investment	Financial
3	Trans-century Investment	Investment	Financial
4	Home Afrika Ltd	Investment	Financial
5	Kurwitu Ventures	Investment	Financial
6	NSE Ltd	Investment Services	Financial
7	New Gold Issuers	Exchange Traded Funds	Financial
8	Barclays Bank Ltd	Banking	Financial
9	CFC Stanbic Holding Ltd	Banking	Financial
10	I&M Holding Ltd	Banking	Financial
11	DTB Kenya Ltd	Banking	Financial
12	HF Group Ltd	Banking	Financial
13	KCB Group Ltd	Banking	Financial
14	NBK Ltd	Banking	Financial
15	NIC Bank Ltd	Banking	Financial
16	Standard Chartered Bank Ltd	Banking	Financial

17	Equity Group Holdings Ltd	Banking	Financial
18	Co-operative Bank of Kenya Ltd	Banking	Financial
19	Jubilee Holdings Ltd	Insurance	Financial
20	Pan-Africa Insurance Holdings Ltd	Insurance	Financial
21	Kenya Re-Insurance Corporation Ltd	Insurance	Financial
22	Liberty Kenya Holdings Ltd	Insurance	Financial
23	Britam Holdings Ltd	Insurance	Financial
24	CIC Insurance Group Ltd	Insurance	Financial
25	Eaagads Ltd	Agriculture	Non-Financial
26	Kapchorua Tea Ltd	Agriculture	Non-Financial
27	Kakuzi	Agriculture	Non-Financial
28	Limuru Tea	Agriculture	Non-Financial
29	Rea Vipingo Plantations Ltd	Agriculture	Non-Financial
30	Sasini Ltd	Agriculture	Non-Financial
31	Williamson Tea Ltd	Agriculture	Non-Financial
32	Car and General Ltd	Automobile and Accessories	Non-Financial

33	Sameer Africa Ltd	Automobile and Accessories	Non-Financial
34	Marshall E.A Ltd	Automobile and Accessories	Non-Financial
35	Express Ltd	Commercial and Services	Non-Financial
36	Kenya Airways Ltd	Commercial and Services	Non-Financial
37	Nation Media Group	Commercial and Services	Non-Financial
38	Standard Group Ltd	Commercial and Services	Non-Financial
39	TPS Eastern Africa (Serena) Ltd	Commercial and Services	Non-Financial
40	Scan Group Ltd	Commercial and Services	Non-Financial
41	Uchumi Supermarket	Commercial and Services	Non-Financial
42	Hutchings Biemer Ltd	Commercial and Services	Non-Financial
43	Longhorn Publishers Ltd	Commercial and Services	Non-Financial
44	Atlas Development and support services	Commercial and Services	Non-Financial
45	Deacons (East Africa) plc	Commercial and Services	Non-Financial
46	Nairobi Business Ventures Ltd	Commercial and Services	Non-Financial
47	Athi River Mining	Construction and Allied	Non-Financial
48	Bamburi Cement Ltd	Construction and Allied	Non-Financial

49	Crown Berger Ltd	Construction and Allied	Non-Financial
50	E.A Cables Ltd	Construction and Allied	Non-Financial
51	E.A Portland Cement Ltd	Construction and Allied	Non-Financial
52	KenolKobil Ltd	Energy and Petroleum	Non-Financial
53	Total Kenya Ltd	Energy and Petroleum	Non-Financial
54	KenGen Ltd	Energy and Petroleum	Non-Financial
55	Kenya Power and Lighting Co. Ltd	Energy and Petroleum	Non-Financial
56	Umeme Ltd	Energy and Petroleum	Non-Financial
57	B.O.C Kenya Ltd	Manufacturing and Allied	Non-Financial
58	BAT Kenya Ltd	Manufacturing and Allied	Non-Financial
59	Carbacid Investment Ltd	Manufacturing and Allied	Non-Financial
60	East Africa Breweries Ltd	Manufacturing and Allied	Non-Financial
61	Mumias Sugar Ltd	Manufacturing and Allied	Non-Financial
62	Unga Group Ltd	Manufacturing and Allied	Non-Financial
63	Eveready East Africa Ltd	Manufacturing and Allied	Non-Financial
64	Kenya Orchards Ltd	Manufacturing and Allied	Non-Financial
65	A Baumann Ltd	Manufacturing and Allied	Non-Financial
66	Flame Tree Group Holdings Ltd	Manufacturing and Allied	Non-Financial

| 67 | Safaricom Ltd | Telecommunication | Non-Financial |
| 68 | Stanlib Fahari | Real Estate Investment Trust | Non-Financial |