THE APPLICABILITY OF TEXTUAL DISCLOSURES AND SELECTED BANKRUPTCY PREDICTION MODELS IN ASSESSING THE GOING CONCERN RISK OF LISTED FIRMS IN KENYA

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DEDICATION

To my late Dad Stephene Macharia, and Mum, Mary Wanjiru, you are the best. To my adorable husband, Fred Obande, you are my inspiration. To our children; Collins, Esther and Irene, thank you for creating a study environment conducive for mum.

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ABSTRACT

Going concern risk disclosures by companies in financial reports as required by the IFRS helps investors and financial analysts to establish if going concern is in jeopardy. The management complies with IFRS but still companied end up being delisted due to going concern issues. This study was guided by three objectives: to establish if there are textual disclosures on going concern risk by listed firms in Kenya, to determine the extent of prediction of going concern risk using the selected bankruptcy predicting models on listed firms in Kenya and to establish whether the textual disclosures and selected bankruptcy predicting models are statistically significant in assessing the going concern risk of listed firms in Kenya. The population of the study comprised of firms listed at the NSE from 2000 to 2015. Proportionate sampling was adopted where six firms that were either delisted or placed under statutory management were analysed alongside the corresponding thirteen going concern firms from the same sectors. The annual financial reports collected from the Capital Market Authority (CMA) resource centre were analyzed five years prior to going concern risk. Data was presented in tables and statements. In a sample of 13 going concern firms and 6 non going concern firms, the study established that there were textual disclosures for the entire period of analysis. On the extent of prediction of going concern risk using the selected bankruptcy predicting models, the study found that the means of the going concern firms in all the sectors were above the cut off scores at 1.10 for Altman revised four variable model, above 0.862 for Springate model and above 0 for Fulmer model. Sector wise the results showed that the three selected bankruptcy prediction models can, to a significant extent assess going concern risk in the manufacturing, commercial and telecommunication sectors. Results from the regression matrix for both samples, showed a positive relationship between the selected bankruptcy predicting models in assessing the going concern risk. Further, using the T test results failed to accept the null hypothesis at 5% significant level as the p values were all below 0.05, implying that the selected bankruptcy predicting models were not significant in assessing the going concern risk. Finally, results from the T test, provided a p value of 0.902 in a going concern sample and 0.810 in a non going concern sample and showed that textual disclosures are not statistically significant in assessing going concern. The study failed to reject the null hypothesis that textual disclosures were not significant in assessing the going concern risk. This study recommends that textual disclosures be used alongside selected bankruptcy prediction models in financial management decisions.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURE

Page

LIST OF ABBREVIATIONS

AICPA   American Institute of Certified Public Accountants

AASB   Auditing and Assurance Standards Board

CMA   Capital Market Authority

FASB   Financial Accounting Standards Board

GC   Going Concern

GAAP   Generally Accepted Accounting Principles

ICPAK   Institute of Certified Public Accountants of Kenya

IFAC   International Federation of Accountants

IFRS   International Financial Reporting Standards

IAASB   International Auditing and Assurance Standards Board

IASB   International Accounting Standards Board

ISA   International Standard on Auditing

MDM   Multivariate Discriminant Models

NGC   Non Going Concern

NSE   Nairobi Securities Exchange

SAS   Statements on Auditing Standards

TX   Textual Disclosures

CHAPTER ONE

INTRODUCTION

1.1: Background of the Study

Several topical financial researches, investors and financial analysts emphasise the need for a timely model of financial failure prediction to help determine if business firms' are reasonably going concerns. Textual disclosure on going concern, made from financial statements is the act of releasing all relevant information pertaining to a company that may influence an investment decision. Textual disclosure provides information about presence or absence of a going concern or a potential warning to users that the company is in danger of failure based on the last available financial reports (Boritz and Sun, 2004). Key symptoms of non-going concern or business failure identified from company's financial statements include a company's declining profitability, substantial operating losses, decreasing sales at a constant price, increased borrowing, a decline in liquidity, a net liability position, withdrawal of financial support, adverse key financial ratios, negative cash flows, arrear dividends, inability to pay creditors, change to cash on delivery basis and inability to obtain finance for essential needs (International Standard on Auditing (ISA) 570, 2011).

Financial Accounting Standards Board, (2008) argues that the company's success and going concern is of great concern to interested parties such as companies' management, stockholders, creditors and employees who are all concerned about the going concern of the company as presented in the audited financial reports. The going concern textual disclosure aspect is fundamental in the preparation of a company's financial statements as required by the generally accepted accounting principles (GAAPs). This postulate states that, in the absence of evidence to the contrary, the firm should be viewed as remaining in operation indefinitely (The American Institute of Certified Public Accountants, 2010). Similarly, FASB (2008) indicates that accounting standards makes it mandatory for the registered companies to disclose, in the form of notes to the accounts any information that may jeopardize the going concern status. Financial analysts are guided by the going concern requirement and a company facing going concern threat will present its assets and liabilities at net realizable value followed by the auditors qualified audit report (FASB, 2008)

On the other hand, the International Federation of Accountants (IFAC) (2010) requires that assets and liabilities of a going concern entity should be recorded on the basis that the company will be able to realize its assets and discharge liabilities in the normal course of business. Njoku and Inanga (2010) found that just as the auditors must evaluate the company's ability to continue as a going concern, financial analysts have a duty to evaluate going concern abilities. Traditional accounting practice gives directors the responsibility for assessing the going concern risk but the auditor has a legal responsibility to evaluate whether audit procedures carried out can reveal conditions and events of substantial doubt about company's continuity as a going concern (Marshall & Dasaratha; 2006 AICPA, 2010)

In Kenya, the institute of certified public accountants of Kenya (ICPAK) maintains a close working relationship with other regulatory institutions such as the central bank of Kenya (CBK) and the capital markets authority (CMA) to ensure high standards of financial reporting. Financial analysts rely on published financial statements which are required to conform to International Financial Reporting Standards (IFRS) (Accountants Act, 2008). Of much importance to the financial analysts is the Companies Act, Cap 486 (2009) which sets out the responsibilities for both management and the auditor to ensure proper use of the going concern assumption in preparation of a company's financial statements. In addition, all listed companies are required by CMA to disclose periodic financial information on going concern basis which is also enforced through the CMA guidelines (CMA Handbook, 2012).

The going concern concept use in financial reports is important to investors whose major desire is to maximize returns of their investments in businesses that will continue in operational existence into the foreseeable future, and such companies must have no intention to go into liquidation or make drastic cutbacks to the scale of operations (Collier, 2003). The Textual disclosure on going concern therefore interrogates the ability of a company to continue functioning as a business entity into a foreseeable future, unless there is reasonable doubt to assume otherwise (AASB, 2009).

There exists a challenging in predicting going concern risk, even for auditors who have a good knowledge of firms' financial position as they often fail to make an accurate judgment on firms' going concern conditions (Lili, 2014). These challenges necessitate the use of bankruptcy prediction models which rely on financial statement data to detect sensitive bankruptcy risks and the ability of firms' to experience business failure. These models

effectively predict going concern risks by focusing on company's profitability, liquidity, cash flow generation, and leverage (Boritz and Sun, 2004). The Multivariate Discriminant Models (MDM) using linear combination of bankruptcy scores of certain discriminatory variables have been instrumental detecting firms potential of failure and success (Altman, 1968; as cited in Obande, 2008). Rahnama et al., (2009) posit that a firm that is able to predict the going concern risk more accurately and swiftly is capable of protecting shareholders interests in addition to minimizing the danger of bankruptcy. Financial analysts therefore use bankruptcy prediction models in advising clients and to make judgment on companies' abilities to continue as a going concern (Altman & McGough, 1974 study as cited in Grice, 2010). Similarly, Boritz and Sun, (2004) suggest that a well-developed statistical model serves as a decision aid for managers to make better going concern judgments. Further, Elizabeth (2004) appreciates that the auditor's assessment of the going concern issue can be a complex process. This is because it requires the use of a decision aid such as bankruptcy prediction models to provide information and indicate to the financial analysts of certain problems that may be difficult to detect using traditional auditing procedures.

The emphases on this study were firms listed in Nairobi Securities Exchange which is regulated by the CMA in Kenya. The interest in the area of going concern prediction has increased due to considerable number of firms that have been delisted since the early 1990s. The NSE and CMA have a regulatory responsibility of surveillance on firms listed in NSE with overall aim of ensuring that listed firms are financially stable (Barako, 2007). Nairobi Securities Exchange has been in existence for over 60 years to date but has failed to pick the growth momentum. Currently the market has just 63 listed firms with some firms' not in a financially sound position. Nairobi Securities Exchange has a responsibility to develop and regulate the market operations to ensure efficient trading and ensure that companies listed are financially healthy. The Accountants Act (2008) ensures that the CMA issues guiding regulatory requirement on going concern textual disclosures, allows ICPAK representation on the disclosures and standards committee to ensure adherence to the requirements of financial reporting standards and going concern textual disclosures. This population was also important in this study since annual financial statement and information, including the management report for most of the companies was readily available.

It is important to explore the relative performance of MDMs and managements' textual disclosures on going concern in predicting going concern risk due to the challenging nature of going concern prediction not only to managers but also to the financial analysts. Several

studies have been done to compare the performance of managements' going concern textual disclosures with MDMs in predicting going concern risk with mixed results. Some studies show that MDMs outperform textual disclosure on going concern, while others find that statistical models and auditors' opinions are inconsistent in their prediction ability. It is on this understanding that the study evaluated the applicability of textual disclosure and selected bankruptcy prediction models in assessing the going concern risk of listed firms in Kenya.

1.2: Statement of the Problem

When a firm is established, the belief is that it will be operational into perpetuity but shockingly many firms collapse unexpectedly bringing to an end the assumption of going concern raising a number of questions on the agency and principal relationships. The stakeholders normally are major losers bringing into perspective the importance of bankruptcy prediction models and textual disclosures ongoing concern by regulators and financial analysts.

The Accountants Act CAP 531, laws of Kenya, requires that annual financial reports be prepared on a going concern basis except where a firm is to cease operations of companies as a disclosure to potential users. Many companies have complied with this requirement but some companies have still been delisted from the NSE due to their being non going concerns. This has prompted a number of researchers to use bankruptcy prediction models in testing going concern issues in companies and this has resulted into the development of a number of bankruptcy prediction models with mixed results.

Mohamed (2013) used Altman revised four variables model to study bankruptcy in listed firms and found that the model was suitable for non-manufacturing firms. However, this study did not incorporate textual disclosures on going concern. In another study, Boritz and Sun (2004) used Springate, Altman (1968) and Ohlson models and found that all the three bankruptcy prediction models significantly outperformed the textual disclosures in identifying bankrupt firms. A study by Unegbu and Adefila (2013) which did not consider the effect of textual disclosures on going concern found that the operating cash flow model had a higher going concern risk prediction than the Z-score models. Similarly, Grice (2010) used Zmijewski, Ohlson, and Altman (1968) bankruptcy prediction models and found that there was no consistency between the models' predictions and textual disclosures. In view of these contradicting findings, the study sought to evaluate the applicability of textual disclosures and

selected bankruptcy predicting models in assessing the going concern risk of listed firms in Kenya for a period of five from when a firm is delisted in each sector.

1.3: Main Objective of the Study

To evaluate the applicability of textual disclosures and selected bankruptcy prediction models in assessing the going concern risk of listed firms in Kenya.

1.4: The Specific Objectives:

1. To establish textual disclosure practices on going concern risk by listed firms in Kenya.

2. To determine the extent to which the selected bankruptcy predicting models can assess the going concern risk of listed firms in Kenya.

3. To establish whether the textual disclosures and selected bankruptcy predicting models are statistically significant in assessing the going concern risk of listed firms in Kenya

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1.5: Research Hypotheses

Ho_1: There are no textual disclosure practices on going concern risk by listed firms in Kenya.

Ho_2: There is no significant extent to which the selected bankruptcy predicting models can assess the going concern risk of listed firms in Kenya.

Ho_3: Textual disclosures and the selected bankruptcy predicting models are not statistically significant in assessing the going concern risk for listed firms in Kenya.

1.6: Significance of the Study

Findings of this study are useful to investors in that they are not only going to rely on the management and financial analyst' opinion which may in some situation be misleading. Investors can supplement the auditor's opinion with the results of the Multivariate Discriminant Models (MDMs) to establish the going concern status of the companies they have invested their resources in and avoid situations of hostile takeovers due to business failures.

On the other hand, investors with the intentions of increasing their investments portfolios in firms that are going concerns will find the results of this study useful. Similarly, financial analyst and advisors can appreciate the need for more insight into the financial reports and accordingly advise investors on firms facing going concern risk and recommend them to buy

shares in going concern companies. Management of companies and financial analysts will be well acquainted with going concern issues through financial statements. They will easily determine the future of the firm using MDMs and comparing the results with the auditors' or directors textual disclosures on going concern.

Consequently, the results of this study will be beneficial to auditors as it will assist them in the subjective evaluation of the going concern assumptions, as an analytical tool to discuss problems with clients and recommend changes to the financial statements, to assess risk and come up with improved audit procedures. Additionally, the study will help auditor's judge companies' abilities to continue as a going concern by alerting management on certain problems that may be difficult to detect using traditional auditing procedures. Finally, the study will be a contribution to the body of finance and a reference by scholars and researchers on going concern risk assessments.

1.7: Scope of the Study

The study covered listed firms from 2000 to 2015. Annual financial reports between these periods were collected from CMA resource centre. The tools of analysis were Altman's revised four Z-score, Springate and Fulmer models whose scores were determined from the income statement, statement of financial position, statement of changes in equity and the cash flow statements.

The annual financial reports were for five years prior to going concern risk. Textual disclosures on going concern were determined from the statements of the directors. The selected MDMs were unique in that the Springate and Altman's revised four z-score model share two ratios. The Fulmer model is special in the sense that it is the only MDM with the highest number of ratios, of up to nine. Similarly, the period between 2000 and 2015 has been selected since different firms were delisted at different periods.

1.8: Limitations and Delimitations of the Study

The study could have used a larger sample for both going concern and non going concern firms but some companies could not be selected due to unavailable of data for at least one financial period. Secondly, the delisting of firms occurred at different periods and thirdly, sectors have different number of listed companies which led to different number of observations for different sectors.

To overcome the first limitation, only those firms that had data available for the period under study were considered. To overcome the second limitation the study used the same number of years and observations on all the delisted firms that had readily available data for the period under study which increased the period of analysis. To overcome the third limitation, the study adopted proportionate sampling technique.

1.9 Operational Definition of Terms

Agents — Managers and directors who are elected to undertake the affairs of a company on behalf of the shareholders. They represent the shareholders in a firm.

Delisted firms — Non going concern firms' not allowed transacting or trading on the floors of the NSE after complying with the CMA regulation for listing.

Dichotomous variable — A dichotomous variable is a variable with only two values, a one and a zero.

Financial statements — The financial statements of an enterprise present the summarized data of its assets, liabilities, and equities in the statement of financial position and its revenue and expenses in the income statement

Financial performance: — A measure of how well a firm can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period of time.

Going Concerns — The view that an organization will continue in operation in the foreseeable future and its assets are accounted for on the basis of continued use rather than on the basis of market or liquidation value.

Listed Companies — Going concern firms' allowed transacting or trading on the floors of the NSE after complying with the CMA regulation for listing.

Multivariate **Discriminant Analysis:** — A Multivariate Discriminant Analysis (MDA) is a linear combination of bankruptcy score of certain discriminatory variables.

Principals — The owners or shareholders of a company who invest their funds by buying the shares of a firm with an aim of maximizing their returns and wealth.

Textual disclosures — Going concern assumption in the annual reports by management indicating that the business will/ will not be in operation for the foreseeable future.

CHAPTER TWO

LITERATURE REVIEW

2.1: Introduction

This chapter presents a theoretical literature on the agency theory and the stakeholder theory, textual disclosures and importance of going concern textual disclosures. Further, the chapter reviews literature on global trends in textual disclosures and textual disclosures requirements in Kenya. On the same note, the role of management on textual disclosures, role of auditors on textual disclosures, Information on Companies Act Cap 486 and the going concern, CMA guidelines on going concern textual disclosures is also provided. Further, the chapter explains the legal requirements in the accountants Act Cap 531 on going concern textual disclosures. Consequently, an explanation of workability of bankruptcy predicting models namely; Altman original z-score model, Altman revised five z-score model, Altman's revised four z-score model, Springate's model and Fulmer's model is also provided. The dependent variable, going concern risk is also discussed. Finally, the section ends with the empirical studies and the conceptual frame work.

2.2: Theoretical background

 In financial analysis, two issues can be addressed through theories of finance and these are how financial disclosures provide information stakeholders from the financial statements and how disclosures can be used by a financial analyst in making going concern assessment. Secondly, disclosures affect users' decisions and the financial analysts use the theoretical lens to establish the validity of textual disclosures as provided in the financial statements on the going concern position.

The theoretical review on the applicability of selected bankruptcy prediction models in assessing the going concern risk provide reasons for disclosure issues that are complex and often require constant monitoring by interested parties. Ii is on this background that the study considered the agency theory and stakeholder theory.

2.2.1 Agency Theory.

This theory was originated by Berle and Means (1932) who found that the fundamental agency problem was inherent in modern firms where separation of ownership and control exist. According to Fama and Jensen (1983), the agency theory implies that firms'

operational position depends on their efficiency in reducing the agency costs that originate from the separation of ownership from control. This theory was found important because modern corporations have a separation of ownership and management with dispersed ownership which necessitate agency costs in resolving the conflict between the owners and the agents (Jensen and Meckling, 1976). Similarly, Syriopoulos and Tsatsaronis (2012) posit that the agency theory provides a theoretical basis on which firms management identify mechanisms that can minimize the conflict of interests resulting from the separation of ownership and management of firms' resources. The monitoring and associated costs imply that when shareholders delegate their decision-making power to management as suggested in agency theory, the agent must agree to be monitored if the benefits from such activities exceed the related costs.

This theory implies that since going concern risks have occurred management cannot be trusted, in that way calling for strict monitoring by the Board is required in order to protect shareholders' interest. The major apprehension is how monitoring can be effective when Board has majority of Directors' from outside in addition to being ideally independent. Secondly, if the positions of Chairman and CEO are held by different persons, then firms' then the two participants namely, managers and shareholders have clear and consistent interests. But cases of non-going concern exhibit a fact that managers are self-interested and disinclined to sacrifice their personal interests for the interests of the others through earnings management (Daily, et al., 2003). This theory is important in this study because despite monitoring and bonding, the interest of managers and shareholders are still unlikely to be fully aligned. Awotundum, et al. (2011) posits that the major focus of the theory is for firms to design effective firm control and to ensure that executives act in the best interest of stakeholders.

2.2.2: Stakeholder Theory

The stakeholder theory was championed by Freeman (1984). The theory challenges the agency theory and argues that every firm has relationships with many stakeholders. The theory also proposes that firms' have a corporate social responsibility where management ought to consider the interest of all parties affected by their operations. In the study context, the theory was used to examine the relationship of board composition, leadership and structure on sustainability disclosure. Textual disclosure is seen as complementary mechanisms of legitimacy which companies may use to dialogue with stakeholders on going

concern risks (Adams, 2002). According to Adams and McNicholas (2007), this theory provides an understanding of disclosure policies of firms' which ought to emanate from the board of directors. They affirm that this is critical in not only establishing sustainability and financial performance of firms' but also the relationship between different characteristics of the boards of companies.

In finance literature, the issue of non-going concern risks and scandals serve as evidence of the failure of the shareholder theory where managers primarily have a duty to maximize shareholder returns (Adams & McNicholas 2007). Financial analysts have concerns about the independence of accountants who are charged with auditing financial statements with unqualified disclosure and which turn up to be non-going concerns like the scandals at Enron (Gray, 2006). This provides rich fodder for questioning the principle of shareholder theory supremacy. The importance of stakeholder theory points to the fact that a manager's duty is to balance the shareholders' financial interests against the interests of other stakeholders such as employees, customers and the local community, even if it reduces shareholder returns in textual disclosures. The stakeholder theory regards disclosed information as important in reflecting the relationships between a company, its stakeholders and the firm's responsibility for its investment activities. It is the responsibility of firms' to legitimize their behaviour by educating, informing and changing stakeholders' perceptions and expectations (Gray, 2006).

2.3: Textual Disclosures

The accounting profession is guided by Accounting Concepts and principles which are broad basic assumptions that underlie the periodic financial accounts of firms for uniformity in the preparation of financial reports (IFAC, (2010). According to AICPA (2010), going concern is a fundamental principle underlying the preparation of the financial reports. A financial report comprises the statement of financial position, statement of comprehensive income, statement of changes in equity, statement of cash flows, textual disclosures and the directors' declaration.

Similarly, FASB (2008) define textual disclosures as well organized and numbered notes to the financial statements. Grice (2010) explains that textual disclosures are notes to the accounts that give the stakeholders of the firm information that may jeopardize the going concern aspect for such a firm. Additionally, the Accountants Act (2008) sets out the responsibilities for both management and the auditor with respect to the use of textual

disclosures when preparing the company's financial statements. In concurrence, AICPA (2010) reports that Companies are required to make such disclosures since it is a GAAP requirement in the preparation of a company's financial statements.

2.3.1: Importance of Textual Disclosures on Going Concern

The AASB (2009) observes that the going concern principle interrogates the ability of a company to continue functioning as a business entity for into a foreseeable future, unless there is reasonable doubt to assume otherwise. Lewis and Pendrill (2000) observe that the main significance of the going concern concept is to establish if the assets of the business should or should not be valued at their 'break-up' value, which is the amount that they would sell for if they were sold off piecemeal and the business thereafter liquidated or ceases operation.

Jeffry (2004) posits that a company whose going concern is at stake could suffer the impairment of its assets. The consequences would be forced sale values and an up-ward adjustment of liabilities due to penalties to suffer for early settlement and or breach of loan terms or covenants. Equity holders in such a company risk losing part or all of their equity investments when a company is not a going concern. Wood and Sangster (2005) are in agreement that the going concern assumption is fundamental in the preparation of a company's financial statements as it impacts the basis upon which the assets and liabilities are recorded.

IFAC (2010) reports that the going concern concept is important as the assets and liabilities of a going concern entity are recorded on the basis that the company will be able to realize its assets and discharge liabilities in the normal course of business. In concurrence are Lewis and Pendrill (2000) who emphasize that the going concern concept is extremely important and a key reason why it was adopted to the generally accepted accounting principles (GAAPs). Importance of going concern is that without it companies wouldn't have the ability to prepay or accrue expenses. Accordingly, FASB (2008) argues that the going concern assumption or textual disclosures should indicate that the businesses will continue to operate indefinitely or at least long enough to accomplish their objectives. In support, Evans (2000) argues that the going concern concept assumes that businesses will have a long life and will not close or be sold in the near future. Similarly, Lewis and Pendrill (2000) affirm the importance of going concern principle and that it shows the shareholders the financial stability of the business, which affects stock price. Likewise, Evans (2000) argues that incase the auditors doubt the

going concern reported by the directors, it will become harder for the business to get any long term finances or invest in the company

2.3.2: Global Trends in Textual Disclosures

Public companies whose shares and other securities are publicly traded regard reporting disclosures a major issue while to private companies it is not a major issue. IAASB (2011) explain that financial reporting disclosures are seen in the context of the larger corporate financial information environment and that the present system of disclosures assumes a particular model of corporate governance. The board emphasizes that within this model, the level of disclosure is effectively a compromise between owners and managers, and between preparers and users, and it therefore requires a balancing of interests, not a single-minded pursuit of transparency. To date, increase transparency demands that financial disclosures take into consideration the analysis of all internal and external sources of liquidity; beyond cash on hand and as of the balance sheet date. These disclosures ought to highlight cash needs over the next twelve months, including any significant planned capital expenditures whether these capital expenditures are necessary or discretionary (Ernest and Young 2001, as cited in AASB, 2009) posit that. In that respect, the disclosures require a report on an analysis of cash flows that address material changes in the underlying drivers of cash flows for all periods presented in the financial statements, rather than a recitation of items that are readily apparent from the statement of cash flows.

Deloitte (2012) surveyed Annual Reports and noted that 'the average length of annual reports has doubled over the past 16 years. The reasons for the increase were attributed to the increased demand for more information and an instinctive response to a wide range of problems that have emerged in the financial services sector. To this extent disclosure and transparency have become mantras in policy and in regulation of firms'

2.3.3: Textual Disclosures Requirements in Kenya

The financial reporting and disclosure of going concern is fundamental in building investor confidence and trust because it signals whether a firm would land in financial stress in the future.
Barako (2007) reports that, the Kenyan government initiated reforms at the NSE which included improved going concern disclosure by listed firms' to ensure a speedy mobilizing of savings and attraction of capital for investments. Barako et al., (2006) established that before

reforms at the NSE there were unique disclosure techniques by Kenyan companies of less financial information and more general and strategic information. A report by World Bank (2010) in agreement also finds that Kenyan companies prefer presenting in detail the factors affecting their poor financial performance not only in the Kenya context, but also in the East and Central Africa region.

In Kenya, disclosures by private firms are not mandatory through published financial statements but for public companies it is a statutory requirement. This is enforced through regulatory bodies such as the central bank of Kenya, CMA and the NSE (CMA Handbook, 2012). The companies Act, cap 486 also requires that the management of companies to provide to users of accounting information an assessment of the company's ability to continue operating as a going concern (companies Act, cap 486, 2009). NSE (2013) reports that financial performance disclosures have contributed to an upward trend of delisting of companies by NSE as a measure to protect investors. Similarly, Odipo and Sitati (2010) emphasize that the Kenyan corporate history is besieged with a number of companies which have faced problems of failure to disclose going concern requirements followed by bankruptcy of such firms'. These has affected companies such as Kenya Planters Co-operative Union KPCU in 2010, Ngenye Kariuki Stockbrokers in 2010, Standard Assurance in 2009, Invesco Assurance in 2008, Hutchings Beimer in 2010, Discount Securities in 2008, Uchumi Supermarkets in 2006 and Pan Paper Mills in 2009 who have at least been put under statutory management. Milkette (2001) argues that registered companies are expected to grow and be sustained for a foreseeable future but these expectations are usually cut short by corporate bankruptcy which exerts negative pressures on the economy.

2.3.3.1: Companies Act Cap 486 and the Textual Disclosures

Auditors are responsible for assessing management's use of the going concern assumption in the financial statements. Causes of high profile corporate failures is a problem that financial analysts seek to establish and more so the reason why the auditors cannot warn the public about the firms' failures in time (Boritz & Sun, 2004). The Companies Act, Cap 486 (2009) is a key reform agenda that sets out the responsibilities for both management and the auditor with respect to the use of the going concern assumption in preparation of a company's financial statements. Maina and Sakwa (2010) point out that the Act summarizes the legal requirements regarding the regulatory requirements for the management and auditor of a company facing going concern uncertainties.

The Companies Act, Cap 486 (2009) requires the management to take the responsibility of preparing the financial statements on a going concern assumption and disclosing such information in the financial reports. Similarly, the Act lays down the responsibilities of the auditor in expressing an opinion based on true and fair view of the prepared and presented financial statements which must be based on going concern assumption. The Companies Act, Cap 486 (2009) requires that the management to assess the company's ability to continue operating as a going concern, the information of interest to financial analysts and that, together with directors, to clearly disclose any uncertainties around the going concern assumption and propose ways of dealing with them. The financial analysts information is heavily reliant on this act while analyzing financial information to produce forecasts of business, industry, and economic conditions in order to make informed investment decisions

2.3.3.2: CMA Guidelines on Textual Disclosures

The CMA has a regulatory responsibility to keep surveillance on firms listed in NSE with regards to capital, liquidity and other aspects with overall aim of ensuring financial stability of these firms (Barako, 2007). Financial analysts heavily rely on the Accountants Act (2008) which affirms that the CMA issues guiding regulatory requirement on going concern disclosures. This also allows ICPAK to monitor the disclosures through their standard committees and ensure adherence to the requirements of financial reporting standards and going concern disclosures. The CMA is another securities exchange market regulator which clearly provides guidelines that disclosure of periodic financial information on going concern in Kenya is adhered to.

Similarly, the CMA guidelines stipulate that the quarterly, interim and final reports of a registered company must be approved by the board of directors and signed by a director authorized by the board of directors, the Chief Executive Officer and the Chief Finance Officer prior to their issuance and circulation to shareholders and third parties. The other requirement is that the quarterly reports covering three months be issued in the course of the year as a best practice basis while Interim reports which are half year financial reports be published and issued by every issuer of securities to the public within sixty days of the interim reporting date. Such interim financial reports at minimum should have the following components not necessarily audited: Condensed balance sheet; Condensed income statement;

condensed cash flow statement; condensed statement of changes in equity and selected notes which have the potential of revealing a going concern. (CMA Handbook, 2012).

CMA guidelines (2012) further provide that interim reports should be simultaneously submitted to the NSE and the capital markets Authority at the time of release to the public. Further, every issuer of securities to the public should prepare an annual report containing audited annual financial statements within four months after the close of its financial year. The CMA guideline (2012) requires that components of such a report should include balance sheet; income statement; cash flow statement; statement of changes in equity, accounting policies and explanatory notes to the accounts prepared in full compliance with the International Accounting Standards (IAS).

The CMA guidelines require that every issuer should notify the NSE, the Capital Markets Authority and the media of its annual results within twenty four hours following approval of the issuer's directors for submission to shareholders. Further, every issuer is required within six months after the financial year end, but at least twenty one clear days before the annual general meeting date to distribute reports to all securities' holders: A notice of the annual general meeting should be issued along with the relevant year's annual financial statements and the auditor's report on the issuer's financial statements (CMA Handbook, 2012). The CMA guidelines are useful to financial analysts who are bound to maintain the knowledge and keep abreast with new regulations or policies that may affect the investments they analyze and monitor so as to determine their effect on company earnings.

2.3.3.3: Accountants Act Cap 531 on Going Concern Textual Disclosures

The IFRS provides the basis for financial reporting framework applicable to registered companies in Kenya. The Accountants Act, Cap 531 (2008) deals specifically with accountancy matters, and contains a statutory framework governing the accounting profession in Kenya. Section 10 of the Act authorizes a council to establish a committee to set the appropriate accounting standards relevant in Kenya. The Accountants Act (2008) further observes that the provisions and guidelines in financial reporting regulations and standards have been adopted by the council of ICPAK which is manifested in the adopted International Financial Reporting Standards.

According to World Bank (2010), ICPAK is responsible for the development and implementation of accounting and auditing standards in Kenya. The Kenyan accounting standards (KASs) were set by ICPAK in early 1980s but are now outdated. The Accountants Act (2008) points out that ICPAK has to maintains a close working relationship with regulatory institutions such as the central bank of Kenya and the CMA so as to ensure high standards of financial reporting. On the regulatory front, CMA Handbook, (2012) reports that ICPAK is represented by the disclosures and standard committee at the CMA to ensure adherence with the requirements of financial reporting and going concern disclosures

2.3.3.4: Role of Management on Textual Disclosures

Directors plan and apply an appropriate degree of rigour and formality throughout the assessment process which may include the involvement of the audit committee in the assessment process and use of the processes and procedures required to support the going concern assessment and reporting in the financial statements (FASB, 2008). International Accounting Standard 1 (IAS 1) and IFRS indicate that the presentation of financial statements requires directors to prepare the financial report and make an assessment of a company's ability to continue as a going concern. Disclose of the uncertainties aware to the directors are a must in making assessments of going concern (IAASB, 2011). Further, FASB (2008) provide that directors are responsible for ensuring that management prepare financial reports that gives a true and fair view of the company's financial position, cash flows and its results from operations. The financial analysts rely on such report when preparing plans of action for investment based on financial analyses for general economic trends, individual corporations, and entire industries (Njoku & Inanga, 2010)

IFAC (2010) add that the assessment of an entity's ability to continue as a going concern is the responsibility of the entity's management and not the auditors. Likewise, Lewis and Pendrill (2000) emphasize that directors should satisfy themselves that management has adequate supporting documentation to support the going concern assessment and reporting of the same in the financial statements. Njoku and Inanga (2010) argue that directors need to evaluate and report on any material uncertainties that can lead to significant doubt about the company's ability to continue as a going concern. They further suggest that if there are material uncertainties that can lead to significant doubt about the company's ability to continue as a going concern then the use of the going concern basis is not appropriate. In concurrence, FASB (2008) affirm that directors' have a responsibility to document their

assessment in the financial statements while AASB (2009) advise that directors have a responsibility to ensure that management has appropriate processes in place to provide sufficient evidence needed by the auditor. Compliance by firms' management makes the work of a financial analyst in interpreting data affecting investment programs, such as price, yield, stability, future trends in investment risks, and economic influences easier.

2.3.3.5: Role of Auditors on Textual Disclosures

The role of auditors in reviewing the financial report considers whether all the disclosures present a true and fair view of the company (AASB, 2009). According to IFAC (2010), the auditor has a responsibility to evaluate the directors' going concern assessment. AASB (2009) concurs with IFAC by indicating that the auditor is required to review the directors' going concern assumption and determine if in the auditor's judgment has an event or condition, which cast significant doubt on the company's ability to continue as a going concern.

FASB (2008) posit that when significant doubt on the company's ability to continue as a going concern are identified, the auditor should use professional judgment to ascertain if a material uncertainty that leads the same exists. IAASB (2011) explains that material uncertainty exists when the magnitude of its potential impact is to the auditor's professional judgment clear. IAASB further adds that the disclosure of the nature and implications of the uncertainty is necessary for the presentation of the financial report not to be misleading.

On the regulatory front, Porter and Norton (2011) emphasize that going concern requires the auditor to consider the appropriateness of the directors' use of the going concern assumption in the preparation of the financial report and whether there are material uncertainties about the company's ability to continue as a going concern needs to be disclosed in the financial report. Financial analysts perceive the auditor's going concern opinion as useful for pricing stocks in a manner that controls for the influence of auditor liability and audit quality and examine the information content of the audit opinion as moderated by market expectations for a specific audit opinion (O'Reilly, 2010).

2.4: Bankruptcy Predicting Models

Argenti (2003) study (as cited in Odipo and Sitati, 2010) established that bankruptcy prediction models are broadly classified into two: quantitative models, which are based largely on published financial information and qualitative models, which are based on an internal

assessment of the company. Qualitative models such as Artificial Neural Network, Support Vector Machine and Merton-KMV assume that the use of financial measures as the sole indicator of organizational performance is limited. Argenti (2003) study (as cited in Odipo and Sitati, 2010) found that quantitative models which include the univariate, Multivariate Discriminate models and Logistics Regression analysis identify financial ratios are important in classifying firms into surviving and failing companies. Odipo and Sitati (2010) posit that a univariate analysis model assumes a single variable for predictive purposes and it can only achieve a moderate level of predictive accuracy in identifying failing companies. Bellovary et al., (2007) points out the weakness of bankruptcy prediction models is that they can only predict failing companies on a narrower perspective compared to MDMs.

On the other hand, the Multivariate Discriminant Model (MDM) is a linear combination of bankruptcy score of certain discriminatory variables was introduced to detect and distinguish firms that had potential of failure and/from those that were successful (Altman, 1968 study as cited in Obande, 2008). Haseley (2012) finds that a good MDM model is one which is formed by using more than one financial ratio in predicting the company's bankruptcy. Furthermore, Bellovary et al., (2007) assert that ratios and their coefficients must be summed up to give a discriminant score to allow for a classification of the firm as either going concern firm or otherwise. But Hair et al., (2007) add that Multivariate discriminant models overcame the potentially conflicting indicators resulting from using single variable indicators of bankruptcy. Similarly, Bărbută-Misu (2009) classifies the MDMs as: Anghel model, Beaver model, Altman models, Edmister models, Diamond model, Deakin probabilistic model, the Springate model, Ohlson model, Zavgren model, the Fulmer model, the Koh model, the Shirata model, the Yves Collongues model and the Conan and Holder model.

Another classification of a quantitative model is the Logistics Regression analysis. According to Nyakio (2013), Logistics regression analysis are also called Logistics regression model and they estimate a non-linear function that maximizes the probability of observing the sample of dichotomous events such as success or failure, through the use of logit transformation based on predictor variables. Yu et al., (2009) described the Logit model as a non-linear transformation of the linear regression and a technique that weights independent variables and assigns a score. Nyakio (2013) points out that the major weakness of this model is that the techniques work well only when aiming to reach discrete outcomes and when there is a non-linear relation between discrete variable and the predictor variable. Bankruptcy prediction

models are important to financial analysts because of their critical analysis ability of financial statements to such users as banks, investors, credit rating agencies, underwriters, auditors and regulators .Further during a period of financial and economic crisis, models can be used to predict and present bankruptcy signs as early as possible (Altman, 1968; Altman, 1983).

2.4.1: Altman Original Z-Score Model

Many studies have examined the projecting ability of the Altman Model for bankruptcy in developed and developing countries. This study focused on Kenya which is a developing country which has a centralized securities exchange market together with a significant government intervention. Altman (1968) study (as cited in Obande, 2008) formulated the originally Z-Score model and signaled out five statement of financial position and income statement variables, with an additional stock market variable useful for predicting the likelihood of a company going bankrupt.

The chosen variables namely liquidity, profitability, leverage, solvency and activity were based on two distinct criteria which are; their popularity in literature and their potential relevance for the study. Each company was given a Z-Score composed by a discriminant function of the five variables weighted by coefficients. Altman (1977, as cited in Obande, 2008) indicates that the Z-score model was not intended for small, non-manufacturing, or private companies, although many credit granters today still use the original Z score for credit assessment of all types of customers. Altman's original model was given as:

$Z = 0.012X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5$ (Obande, 2008)

Where;

X_1 = Working capital to total assets

X_2 = Retained earnings to total assets

X_3 = earnings before interest and taxes to total assets

X_4 = market value of equity to book value of total debt

X_5 = sales to total assets

The advantage of this model is its straightforwardness, the low cost of its application and an objective, quantitative indicator represented by a single number by which credit risk can be estimated (Obande, 2008).

2.4.2: Altman Revised Five Z-Score Model

Altman (1983) study (as cited in Odipo and Sitati (2010) revised the five Z-score model for privately held firms as a modification of the original Z-Score model which was meant for public firms. Credit analysts, private placement dealers, accounting auditors and firms were concerned that the original model was only applicable to publicly traded entities since X_4 required stock price data. The revised five Z-scores model for manufacturing and service industry substituted the book value of equity for the market value in X_4 with Net Worth (Altman (1983) study (as cited in Vasantha et al., 2013). The Altman revised five Z-score model was given by Altman (1983) study (as cited in Odipo and Sitati (2010) as:

$Z = 0.717X_1 + 0.847X_2 + 3.107X_3 + 0.420X_4 + 0.998X_5$ Where;

X_1 = Working capital to total assets

X_2 = Retained earnings to total assets

X_3 = Earnings before Interest and Taxes to total assets

X_4 = book value to total liabilities

X_5 = Sales to total assets

Altman (1983) study (as cited in Odipo and Sitati (2010) indicated that the cut off scores were also adjusted so that scores of less than 1.23 indicated bankrupt firms while the scores of more than 2.90 indicated non bankrupt firms. Firms with scores between 1.23 and 2.90 were considered to exist in the grey area or zone of ignorance. Altman's new sample produced similar results as the original Z-score model, indicating 90.9% accuracy in bankruptcy forecasting at least one year prior to actual failure. Firms with scores over 2.90 had a 97% chance of continuing operations with financial health. The 1968 Altman's Z-score model was designed to predict failure of publicly traded listed manufacturing firms but a modified Altman model was to predict failures in private and in publicly traded listed non-manufacturing firms, known as alternate 1984 Z"-score model. The revised Altman's Z-Score formula has achieved abundant acceptance by management accountants, auditors and financial analysts. The bankers and courts have appreciated it for loan evaluation and claims settlements. Altman's Z-score model can be applied to modern economy to predict distress and bankruptcy 2 to 3 years in advance (Obande, 2008).

2.4.3: Altman's Revised Four Z-score Model

As a modification of the original Z-Score model which was meant for public firms and revised five Z-score model for private firms, Altman Revised Four Z-score was introduced for the non-manufacturing as well as manufacturing companies (Vasantha et al., 2013). Eidleman (1995) study (as cited in Mohamed, 2013) states that this was after establishing that in the original Z-score model the sales to total asset ratio was significantly by industry higher for merchandising and service firms than for manufacturers, yet the former are typically less capital intensive. Similarly, Eidleman (1995) study (as cited in Obande, 2008) posits that in above circumstances non-manufacturers would have significantly higher asset turnover and thus higher Z score.

The Altman's Revised Four Z-score Model was given Kemboi (2013) as;

$$Z' = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

Where:

$\beta_1 = 6.56$, $\beta_2 = 3.26$, $\beta_3 = 6.72$, $\beta_4 = 1.05$

Z = Weighted average of selected ratios

X_1 = (Current Assets-Current Liabilities) to Total Assets

X_2 = Retained Earnings to Total Assets

X_3 = Earnings before Interest and Taxes to Total Assets

X_4 = Book Value of Equity to Total Liabilities

The cut off scores were also adjusted so that z- scores of less than 1.10 indicated bankrupt firms while the z-scores of more than 2.60 indicated non bankrupt firms. Z-scores of between 1.10 and 2.60 indicated that the firm was in a grey or ignorant zone Altman, (1983) study (as cited in Vasantha et al., 2013)

The first ratio is Working capital divided by Total assets ratio which is frequently found in studies of corporate problems. It measures net liquid assets of the firm relative to the total capitalization. Liquidity and size characteristics are explicitly considered in this ratio and ordinarily a firm experiencing consistent operating losses will have shrinking current assets in relation to total assets. Pandey, (2011) asserts that inclusion of this variable is consistent with the fact that the net working capital to total asset ratio as the best indicator of ultimate discontinuance.

The second ratio which is retained earnings divided by total assets and it measures cumulative profitability over time. The age of a firm is implicitly considered in this ratio where a relatively young firm is identified by the low retained earnings to total assets ratio reason being that it has not had time to build up its cumulative profits. Arasu et al., (2013) argue that the young firm is discriminated against in such analysis as it has a high chance of being classified bankrupt than older firms, other factors being constant. However, this is precisely the situation in the real world because the incidence of failure is much higher in a firm's earlier years (Pandey, 2011).

The third ratio is earnings before interest and taxes divided by total assets. It is a measure of the true productivity of the firm's assets and it's affected by tax or leverage factors. Lewis and Pendril (2000) state that a firm's ultimate existence is based on the earning power of its assets, and that this ratio appears to be particularly appropriate for studies dealing with corporate failure. Furthermore, insolvency in a bankruptcy sense occurs when the total liabilities exceed a fair valuation of the firm's assets with value determined by the earning power of the assets (Srinivasan and Tiripura, 2011).

The last ratio is the book value of equity divided by book value of total debt. This ratio measures by how much the firm's assets can decline in value as measured by market value of equity plus debt before the liabilities exceed the assets and the firm thus becoming insolvent. Further, Altman, (1983) study (as cited in Vasantha et al., 2013) posits that this ratio makes the model to be a more effective predictor of bankruptcy than a previously used ratio which was Net worth divided by book value of total debt. The financial analysts appreciate the use of a revised Altman model because it's intended to measure and predict the likelihood of bankruptcy for non-manufacturing firms (Altman, 1983)

2.4.4: Springate's Model

Arasu et al., (2013) explains that Springate model is a step-wise multiple discriminate analyses which was developed by using and selected four out of nineteen popular financial ratios that most accurately distinguished between going concern businesses and those that had actually failed. Arasu et al., (2013) reports that Springate model was tested using forty companies and achieved an accuracy bankruptcy prediction rate of 92.5%. Haseley (2012) explains that Springate focused on manufacturing firms in Canada where four financial ratios;

net working capital to total assets, return on total assets, assets turnover, and earnings before taxes to total liabilities were used.

Springate (1978) study (as cited in Boritz and Sun, 2004) formulated the model as;

$$S = K_1 A + K_2 B + K_3 C + K_4 D$$

Where:

$K_1 = 1.3$, $K_2 = 3.07$, $K_3 = 0.66$, $K_4 = 0.4$

A = Working Capital to Total Assets

B = Net Profit before Interest and Taxes to Total Assets

C = Net Profit before Taxes to Current Liabilities

D = Sales to Total Assets

If S is less than 0.862; then the firm is classified as failed.

According to Arasu et al., (2013), the Springate model is important for the firm's investors and creditors as it provides information on how close the firm is to a possible insolvency. The critical importance of this model is that if the value is below 0.862 it means that the possibility of a firm's insolvency is high, so the firm's going concern is at stake.

In the Springate S-score, the first ratio which is the working capital divided by the total assets measures liquid assets in relation to the firm's size. Fabozzi and Peterson (2003) explain that the current assets of a firm include cash on hand, accounts receivable, and inventories; the latter two assets are considered current, if cash conversion is expected within an operating cycle of a business. Current liabilities consist of the firm's financial obligations-short-term debt and accounts payable which will be met during the operating cycle. Simpson and Kohers (2002) argue that a business entity with a negative working capital will experience difficulty meeting its obligations when due. This ratio was found to be more helpful than other liquidity ratios, such as the current ratio or the quick ratio (Porter and Norton, 2011).

The second ratio namely Net profit before interest and taxes divided by total assets estimates the cash supply available for allocation to creditors, the government, and shareholders. This ratio is a measure of an organization's operating efficiency separated from any leverage effects and it is a true depiction of asset production (Pandey, 2011). The third ratio was Net profit before taxes divided by current liabilities estimates the cash supply available from operation, for honouring the short-term obligations of the firm. Lastly, the Springate's ratio is

sales divided by total assets which measure the capital turnover. This ratio measures the management's capability in dealing with competition (Fabozzi and Peterson (2003).

Financial analysts find the Springate model useful in that it can increase the power of decision for investors and suppliers of financial resources to sustain financial markets (Security Exchange) for insuring the allocation of optimal financial resource (Arasu et al., 2013)

2.4.5: Fulmer's Model

Rahnama et al., (2009) posits that Fulmer model is a step-wise multiple discriminate analyses used to evaluate forty financial ratios using a sample of sixty companies in the US, with average assets of $455,000. In the sample of sixty companies, thirty had failed and thirty were successful and using the Fulmer model the results showed a 98% accuracy rate in classifying the test companies one year prior to failure which was an 81% accuracy rate. Finacial analysts and managers could use the model as an internal control guideline, investors could use it as one criterion in the selection firms for their Portfolios and auditors could apply it to firms with respect to going concern consideration (Fulmer, 1984, as cited in Srinivasan and Tiripura, 2011)

According to Fulmer (1984) study (as cited in Srinivasan and Tiripura, 2011) the model was given as;

$H = \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 - \alpha_5 X_5 + \alpha_6 X_6 + \alpha_7 X_7 + \alpha_8 X_8 + \alpha_9 X_9 - \varepsilon$

Where;

H: total index

$\alpha_1 = 5.52$, $\alpha_2 = 0.212$, $\alpha_3 = 0.073$, $\alpha_4 = 1.27$, $\alpha_5 = -0.12$, $\alpha_6 = 2.335$, $\alpha_7 = 0.575$, $\alpha_8 = 1.082$, $\alpha_9 = 0.894$, $\varepsilon = 6.075$

X_1: Average Retained Earnings to Average Total Assets

X_2: Revenues to Average Total Assets

X_3: profit before taxation to owners' equity

X_4: operational cash flows to total liabilities

X_5: liabilities to total assets

X_6: current liability to total assets

X_7: logarithm of tangible assets

X_8: Average working capital to average total debt

X_9: logarithm earnings before interest and tax to interest cost

If H is less than 0, the company will be categorized as a bankrupted firm.

X_1 as the first ratio and is given as average retained earnings to average total assets. Lewis and Pendrill (2000) refer to this ratio as the return on assets ratio (ROA) and considered it an overall measure of profitability. Fabozzi and Peterson (2003) indicate that this ratio measures how much net income was generated for each one shilling of assets the company has. Firer et al., (2004) found that retained earnings to average total assets are a combination of the profit margin ratio and the asset turnover ratio.

The second ratio X_2 is determined by revenues to average total assets. Simpson and Kohers (2002) explained that this ratio indicate amount of sales revenue generated from utilization of each amount of total asset and that the ratio measures how efficiently a company is using its assets. The turnover value varies by industry. It is calculated by dividing net sales by average total assets. Lewis and Pendrill (2000) refer to this ratio as the asset turnover ratio and further added that the total asset turnover ratio is helpful in evaluating a company's ability to use its asset base efficiently to generate revenue.

The third ratio X_3 is earnings before interest and tax to total equity. Lewis and Pendrill (2000) suggest that this ratio measures how much net income was earned relative to each dollar of common stockholders' equity. It is calculated by dividing net income by average common stockholders' equity. Fabozzi and Peterson (2003) indicate that in a simple capital structure (only common stock outstanding), average common stockholders' equity is the average of the beginning and ending stockholders' equity.

The fourth ratio X_4, is cash flows from operations to average total debt Fabozzi and Peterson (2003) indicate that this ratio indicate the amount of Cash from operations of the firm for every amount of total debt (total liabilities). Pandey (2011) explains that the ratio measures a company's operating efficiency, including its ability to generate income and therefore, cash flow. Cash flow affects the company's ability to obtain debt and equity financing. Further, Porter and Norton, (2011) add that if average total debt is Zero, this quantity will be assumed to be zero.

The fifth ratio which is X_5 is determined by debt to total assets ratio. The debt to total assets ratio calculates the percent of assets provided by creditors. Simpson and Kohers (2002) expound that debt to total assets ratio is calculated by dividing total debt by total assets and

that total debt is the same as total liabilities. Similarly, Collier (2003) show that the debt to total assets ratio compares total liabilities (total debt) to total assets and indicates the percentage of total funds obtained from creditors. Additionally, Simpson and Kohers, (2002) add that creditors would rather see a low debt ratio because there is a greater cushion for creditor losses if the firm goes bankrupt.

The sixth ratio X_6 is calculated as total current liabilities to average total measures how efficiently a company is using its assets. The value varies by industry. It is calculated by dividing Current Liabilities by average total assets. The debt ratio compares Current liabilities to total assets. However, Lewis and Pendrill (2000) added that total current liabilities to average total assets shows the percentage of total funds obtained from Current liabilities. This ratio indicates the efficiency with which management has used its available resources to honour its Current liabilities (Firer et al., 2004; Brealey et al., 2001).

The seventh ratio X_7 is the natural logarithm of average tangible assets and it measures firm size. Jeffry (2004) explains that tangible assets are the resources that a firm owns and can physically be seen and touched. They are assets that can be counted and measured in quantitative terms. Additionally, Firer et al., (2004) posit that tangible assets are the resources that a firm owns and are not for resale but are used for generating revenues in the company.

The eighth ratio X_8 is determined by average working capital to average total debt. The working capital is the difference between current assets and current liabilities. Firer et al., (2004) explains that this ratio measures the ability of a company to pay its current obligations using current assets. Additionally, However, Brealey et al., (2001) suggest that this ratio is calculated by dividing average working capital by average total debt current liabilities.

The ninth ratio X_9 which is natural logarithm of earnings before interest and tax to Interest Expense measures the firm's ability to meet interest payment obligations with business income. Firer et al., (2004) indicate that a ratio close to 1 indicates company having difficulty generating enough cash flow to pay interest on its debt. Lewis and Pendrill (2000) referred to this ratio as times interest earned and added that it is an indicator of the company's ability to pay interest as it comes due. Ideally, a ratio should be over 1.5. The financial analysts find the Fulmer's model important because it considers more indicators than other MDMs and, hence,

more reliable and is able to demonstrate the actual status of solvency of the companies (Srinivasan & Tiripura, 2011)

2.5: Textual Disclosures and Bankruptcy Predicting Models

The going concern principle is meant to offer information including textual disclosures periodically about continuing operations. A firm will be liquidated when the going concern is at risk, regardless of whether the assets are sold piece by piece or as a whole. A firm in the process of liquidation will no longer serve the purpose it was set up for because as it is in the process of exiting the market (Boritz and Sun, 2004). During this period, Collier (2003) observes the sole reason of the activity of such a company is to realize its assets and pay its creditors so as to split the remaining equity between the owners. Barako (2007) reports that the legal personality of the company is valid only for those activities that it is aimed as its purpose to achieve and the normal economic activities that it used to conduct. However, the ability of a firm to execute its plan and achieve its objectives makes the company a going concern and thus IFRS requires textual disclosures on the same (AASB, 2009).

Assessing the going concern accurately assist the management in minimizing the danger of bankruptcy (Rahnama et al, 2009). Similarly The bankruptcy prediction models help auditors judge companies' abilities to continue as a going concerns by alerting auditors to certain problems that may be difficult to detect using traditional auditing procedures (Altman and McGough, 1974, as cited in Grice, 2010)**.** Additionally, Unegbu and Adefila (2013) report that on entering bankruptcy, the main purpose for the companies include profit maximization and share value maximization by enhancing the firm's financial performance and if this is no longer applicable then bankruptcy must be declared. In this connection, Boritz and Sun (2004) observe that going concern principle or textual disclosures by management are connected with bankruptcy, in that bankrupt companies no longer have future expectations from its operations and the consequences are that the company will not continue for the foreseeable future.

Collier (2003) concurs by adding that where the management disclose in the financial statements that the going concern assumption is no longer valid, then the firm may be required to declare itself as bankrupt. IAS 1 reports that when faced with going concern risk, the management has no other alternative but to cease trading and liquidate the entity (AASB, 2009). Where the management issue textual disclosures which are contrary to the going

concern assumption means that there is a pulsing relationship between bankruptcy and the going concern assumption. The importance of this to the financial analyst is that both the going concern principle and the state of being bankrupt send signals to managers in terms of planning, predicting, and foreseeing the future for their company (Grice, 2010).

2.6: Going Concern Risk

A firm that is a going concern is expected to be in operation for the next 12 months after the current statement of position's date, otherwise it will be under a going concern risk (IFAC, 2010). Hence, IAASB (2011) posit that the declaration of going concern means that the entity has neither the intention nor the need to liquidate or curtail materially the scale of its operations otherwise the contrary would indicate that the business is not a going concern. The opposite of the going concern concept, is to say that the company will fold within one year from the Balance Sheet date. Kemboi .(2013) explains that, for the Altman's Revised Four Z-score Model, a z- scores of less than 1.10 indicated firms facing a going concern risk while the z-scores of more than 2.60 indicated going concern firms otherwise it is a going concern firm. Similarly, Arasu et al., (2013) explains that a firm will be under a going concern risk if it has an S-score of below 0.862 otherwise it is a going concern firm. Additionally, an H-score of below 0 indicates a firm under a going concern risk; otherwise it is a going concern firm. Based on firms' litigation risk argument, going concern risk information is important to financial analysts, auditors and managers' going-concern uncertainties as it is provided on a timely basis (IAASB, 2011).

2.6.1: Textual disclosures and Going Concern Risk

Consequences of national economic and the increasing number of business seizing operations have necessitates looking for ways of evaluating more accurate company's situation and the possibility of going concern. According to AASB (2009), a going concern is a business that functions without the threat of liquidation for the foreseeable future, usually regarded as at least within 12 months. It implies that the business has a declaration of intention to keep running its activities at least for the next financial year, which is a basic assumption to prepare financial statements considering the conceptual framework of the IFRS. Venuti, (2009) explains that a company ceases to be a going concern for a fundamental reason that management might not issue a correct going concern assumption, because of a fundamental misunderstanding of the assumption itself. Boritz and Sun (2004) observe that textual disclosures by management are connected with going concern risk, in that bankrupt

companies no longer have future expectations from its operations and the consequences are that the company will not continue for the foreseeable future thus a going concern risk.

2.6.2: Bankruptcy Prediction Models and Going Concern Risk

Lili, (2014) argue that given the challenging nature of going concern prediction task, even auditors, who have a good knowledge of firms' situations, often fail to make an accurate judgment on firms' going-concern conditions. Lili, (2014) adds that it is valuable to explore the relative performance of statistical models and textual disclosures in predicting going concern. Boritz & Sun, (2004) explain that bankruptcy prediction models rely on financial statement data to detect a heightened going concern risk or risk of business failure.

Similarlly, Boritz & Sun, (2004) suggest that a well-developed statistical model could serve as a decision aid for managers to better make going-concern judgments. Further analyses reveal some evidence that firm's failure rate does not have a significant impact upon managements' going concern judgments as it should be; managers could improve their going concern judgments by considering MDMs. The strongest contribution of bankruptcy prediction models and going concern risk is that it enables the financial analysts derive significant information by the explanatory power of models in predicting impending firm failure (Lili, 2014).

2.7: Empirical Studies

Arasu, Balaji, Praveen and Thamizhselvi, (2013) did an empirical analysis on the applicability of Fulmer and Springate models for predicting financial distress of firms in the finance sector. The study was carried out during the financial period 2008 to 2012. This was a descriptive research study which involved the analysis of secondary data and interpretation without any subjective action. The models used financial data from published annual reports for computation of scores. Correlation between H and S scores indicated that H and S scores were highly positively correlated. This indicated that using these models for predicting solvency would help conclude results much better. A simple regression with residuals calculation was further carried out using all the independent variables of Springate model. Findings from this study showed that these two models can definitely help the investors and shareholders to find out strength of the companies and their solvency status using recent period financial information. Further, the two models were very much useful for predicting solvency of financial firms despite the fact that these models had been developed keeping

manufacturing firms in mind. These studies however, did not consider the effects of textual disclosures on the model performance.

Boritz and Sun (2004) studied predicting going concern risks in Canada and addressed going concern disclosures of Canadian companies during the period 1987-2002 where consideration was given to the companies' key textual disclosures. This study used company disclosures which either existed or did not exist in the footnotes to show the presence or absence of a going concern. The textual disclosures presented a warning potential to the users that the company was in danger of failure. Emphasis was on the company's last available financial reports prior to failure which was examined to determine if there was a warning of the going concern. They applied Springate, Altman and Ohlson models to determine the degree of early warning of bankruptcy. The predictive accuracy was done by comparing the textual disclosures to the predictive accuracy of three Canadian bankruptcy prediction models. This was done by using the financial statement data in the same financial statements that were used for the analysis of textual disclosures. The results of this procedure showed that all the three bankruptcy prediction models appeared to significantly "outperform" the textual disclosures at identifying failed firms. This study on model performance was done in a developed economy and the results may not be adequately replicated in a developing country like Kenya.

Grice (2000) studied bankruptcy prediction models and going concern audit opinions before and after statements of Auditing Standards No. 59 in the United States. The objective of the study was to assess the usefulness of Zmijewski's (X), Ohlson's (Y), and Altman's (Z) bankruptcy prediction models in identifying companies with financial conditions that warrant going concern opinions after statements of auditing standards No. 59. The study used a 1985 to 1987 sample and a 1988 to 1991 sample, with each sample including distressed firms. The final 1985-1987 (1988-1991) sample included 153 (161) distressed companies. This study evaluated the correlation between the X, Y, and Z-score models' predictions and auditors' opinions before and after the issuance of SAS No. 59. The correlation between the models' predictions and auditors' opinions was evaluated and the findings suggested that the models' predictions and auditors' opinions using bankrupt firms were not consistent after the issuance of SAS No. 59. This study only studied periods less than five years in a developed economy and did not consider the extent of prediction for the selected models.

Arasu, Balaji, Praveen and Thamizhselvi, (2013) did an empirical analysis where they tested the applicability of Fulmer and Springate models for predicting financial distress of firms in the finance sector during the financial period 2008 to 2012. This was a descriptive research study which involved the analysis of secondary data and interpretation without any subjective action. The models used financial data from published annual reports for computation of scores. Correlation between S and H Scores indicated that S and H scores were highly positively correlated. A simple regression with residuals calculation was further carried out and results showed that these two models were very much useful for predicting solvency of financial firms despite the fact that these models had been developed keeping manufacturing firms in mind. The current study considered Altman revised four variable model, Fulmer, Springate bankruptcy prediction models including textual disclosures on going concern.

Vasantha, Dhanraj and Thiayalnayaki (2013) did a study on; Prediction of business bankruptcy for selected Indian airline Companies using Altman's original five variable model. The objective was to determine the operational and financial efficiency of selective airlines. The research design is based on both empirical and analytical study. The study is fully based on secondary data which is basically collected from company websites, research papers and various articles related to bankruptcy. Since the study is mainly focused on analysis of financial performance and examining the insolvency of selective Airlines from 2008-2012, The researcher had given immense importance to collect secondary data from company websites, audited financial statements, reports published by the stock exchange and databases. The various tools and techniques used to analyze the financial performance of the company was ratio analysis. The results showed that Altman could predict financial efficiency /Bankruptcy up to 2-3 years in advance and added that ratio analysis is one of the important tool and technique used to measure the financial performance of companies. This study considered only one sector and used only Altman model while the current study considered four sectors and more models such as the Altman revised four variables model, Fulmer, Springate bankruptcy prediction models including textual disclosures on going concern.

Stephen, (2009) undertook a case study of Fan Milk Limited to evaluate the financial position of listed manufacturing companies in Ghana where data was collected from the financial periods 2004 to 2008. Altman and Fulmer models were used for bankruptcy prediction. Three companies were selected alongside Fan Milk Limited (FML) for comparative analysis with

some selected performance indicators. The quantitative research design was used and computations were done using both calculators and Microsoft Excel. Secondary data from the annual reports which included the income statements, statement of financial position, cash flow statements and statement of changes in equity were used. The results showed that there was no significance difference between the two models in predicting bankruptcy for the five years under analysis and added that, neither Altman and Fulmer models can be considered better to predict bankruptcy at a higher rate than the other. This study considered only one company, used Altman and Fulmer models while the current study considered four sectors, twenty companies and more models such as the Altman revised four variable model, Fulmer and Springate bankruptcy prediction models including textual disclosures on going concern.

Unegbu and Adefila (2013) studied on the efficacy of assessment of Z-Score and operating cash flow in insolvency predictive models. The research covered sixty two financial statements of thirty one companies in Nigeria. These published financial statements were selected between years 1990 to 2009 from Corporate Affairs Commission and the Nigerian Stock Exchange. Each of the financial statement was analyzed to extract the relevant Z-Score and operating cash flow prediction data. The effectiveness of Z-Score model and Operating Cash Flow were confirmed by the use of Analysis of Variance, at 5% significant level. A comparative analysis of test outcomes employed the use of Percentages or cross tabulations. Computations of these test statistics were carried out and decision criteria based on SPSS data analysis. The study found that the Operating Cash Flow model had a higher capacity to predicting more accurately going concern future status. This study considered thirty one companies, used Altman and operating cash flow models while the current study considered four sectors, twenty companies and the Altman revised four variable model, Fulmer and Springate bankruptcy prediction models including textual disclosures on going concern.

Obande (2008) used Altman multivariate approach in studying business failure investigation on Uchumi Supermarket Ltd using both primary and secondary data during the financial period's 2000 to 2005. The problem of this study was to establish Uchumi Supermarket's Ltd sudden business failure. Based on questionnaire the study established that weak internal controls and lack of audit committees contributed to the sudden business failure of Uchumi supermarket Ltd. This was after examining the internal operations of the firm and sales/total assets and working capital/total assets ratios from the secondary data. The ratios were computed from the income statements and statements of financial position. The study

extended the Altman's original five Z-Scores of bankruptcy predictions to a correlation and regression analysis of the identified ratios. The findings were that if the company had used the Altman's original five Z-Score model, the prediction of financial failure could have been identified by Uchumi supermarket Ltd management two years before failure. Further the study appreciated the importance of audit committees in firms as their existence could have identified the responsible factors of business failure in the identified ratios. This study considered only one company, used Altman original five variable model and primary data while the current study used only secondary data, considered four sectors, twenty companies and the Altman revised four variable model, Fulmer and Springate bankruptcy prediction models including textual disclosures on going concern.

Kemboi (2013) conducted a study on the validity of Altman's failure prediction model in predicting corporate financial distress in Uchumi supermarket in Kenya. For analysis of Altman's revised four z-score model, secondary data for the years 2001 to 2006 was used. The study applied multivariate descriminant analysis model in predicting financial distress in organizations. The research design adopted in this research was a descriptive study. The population consisted of five leading supermarkets in Kenya from 2001 to 2006. A case study was used and Judgmental sampling technique applied. The study was limited to Uchumi supermarkets due to lack of readily available data for other Supermarkets that have experienced financial distress and not listed at NSE. The study used secondary data which was obtained from financial reports, library and organization's records such as in-house magazines, journals, publications as well as website. Data analysis involved processing using SPSS package version 20. The conclusions were that the Altman model was appropriate to explain Uchumi supermarket financial distress as it recorded declining Z-score values. This study considered only one company, used Altman revised four variable model while the current study considered four sectors, twenty companies and the Altman revised four variable model, Fulmer and Springate bankruptcy prediction models including textual disclosures on going concern.

Odipo and Sitati (2010) studied an evaluation of applicability of Altman's revised five variable model in Prediction of financial distress of companies quoted in the Nairobi stock exchange. They studied all the companies listed in the NSE from 1989 to 2008. The study was done on twenty firms: ten firms that were listed and ten firms that were delisted during the same period. Data analysis was based on financial ratios of the Altman revised five z-score model and decisions were based on the z-score derived. Their research study revealed that

Altman's model was found to be applicable in only eight out of the ten failed firms that were analyzed, which indicated an 80% successful prediction of the model. On the other hand out of the ten non-failed firms analyzed, nine of them proved that Altman's financial distress prediction model was successful, indicating a 90% validity of the model. This study concluded that the Altman revised five z-score model was a useful tool for investors in the Kenyan market. This study used Altman revised five variable model while the current study considered the Altman revised four variable model, Fulmer and Springate bankruptcy prediction models including textual disclosures on going concern

Haseley, (2012) carried out a study on analysis of the efficacy of the Altman and Springate Bankruptcy Models in Companies Listed on Thailand Stock Exchange. A sample of thirty bankrupt and thirty solvent firms was taken in which Financial ratios were calculated from the financial statements of the sampled companies between the periods of 2006 through 2012 were used in this study. The models were programmed into an excel sheet and their ratios calculated to obtain the Z-score for Altman and S-score for Springate respectively. A Comparison of the overall accuracy of the models showed that Altman model outperforms the Springate model three years prior to the firm's bankruptcy. The Z statistic of both models was calculated at the 95% confidence level to ascertain if there was a statistically significant difference between the models. Results indicated that the two models exhibited the same level of predictive accuracy over the time period in question and that, neither model can be statistically considered to predict bankruptcy at a higher rate than the other. This study used Altman and Springate model while the current study considered the Altman revised four variable model, Fulmer and Springate bankruptcy prediction models including textual disclosures on going concern.

Mohamed (2013) did a study on bankruptcy prediction of firms listed at the Nairobi Securities Exchange. The targeted Population was all companies listed in NSE during the financial periods 2008 to 2012. Also considered in the study were firms delisted from NSE from the period of 1996 to 2012. A descriptive research design was used in the study. Secondary data was obtained from financial reports of the listed companies at the NSE and the CMA. Discriminant analysis was used which was formulated from the ratios. The weighted coefficients of the Altman four Z-score model were estimated by identifying a set of firms which had been declared bankrupt. These samples of firms which had survived were matched by industry and asset size. The Statistical Package for Social Sciences software (SPSS Version

21) was used in the analysis to support the evidences from the Z-score model. The results of failed firms indicated that the model was intended for non-manufacturing firms. Like the current study Mohamed used Altman revised four variables model but did not match going and non-going concern firms according to sectors. Unlike Mohammed's study, the current study considered the Fulmer and Springate bankruptcy prediction models including textual disclosures on going concern

2.8: Conceptual Frame work

Independent Variable   Intervening Variable   Dependent Variable

Textual disclosure practices

Management report

Auditors' report

Multivariate Disciminant Models

Altman's four Z-score

Springate S-score

Fulmer H-score

Regulations

CMA

NSE

Accountants Act

ICPAK

Going Concern Risk

Going Concern

Non going Concern
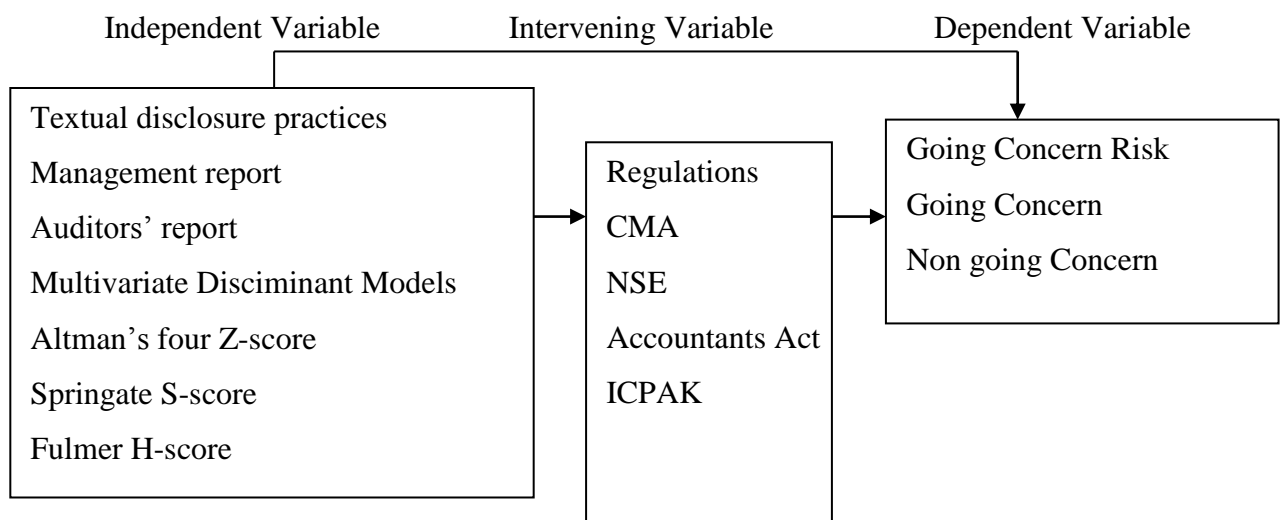
Figure 1: Conceptual frame work

Source: Author (2016)

In this study, the independent variables are the multivariate discriminant models which were measured by the Z- score, S- score and H-score and the textual disclosures practices. The dependent variable, on the other hand is the going concern risk. Altman's Revised Four Z-score Model, Z- scores of less than 1.10 indicated firms facing a going concern risk, an S-score of below 0.862 is a going concern risk and an H-score of below 0 indicates a firm under a going concern risk. Use of financial ratios namely; profitability, liquidity, leverage ratios and assets quality obtained from firms' financial statements presented in the Multivariate discriminant models were used to determine the dependent variable, the going concern.

The relationship between the independent and dependent is intervened by Government regulations through the NSE, CMA and Accountants Act. The NSE is empowered to formulate rules for the conditions under which the listing of a particular security may be affected, the conditions under which applications for delisting may be made in the interests of the investing public. The Accountants Act was used to determine the nature of textual disclosures obtained from firms' financial reports. The earnings management practices were not considered in the analysis through the textual disclosures which presented the going concern or non-going concern position of firms.

The dependent variable, if made by public firms will contribute to either suspension or delisting because it is an indication that the assets used in the operation of the listed company have significantly decreased or will do so as a result of sale, disposition, letting, separation, operation suspension, abandonment, destruction, deterioration, seizure, expropriation or any other cause having the same effect. In such circumstances, since the NSE is empowered to undertake real time market surveillance and publish stock prices, the affected firm can be delisted among other reasons in public interest.

IFRS ensures that the financial statements are presented by firms to include full disclosure or partial disclosures purposely for improvement in the quality of financial statements, in particular in the areas related to financial instruments and risks arising from financial instruments, impairment of non-financial assets, and going concern. The understanding is that the financial statements are prepared on a going concern basis in compliance with IFRS which emphasizes the aspect of financial disclosures and failure to which the firm will be delisted.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1: Introduction

This chapter describes the research design used in the study, population of study, sample selection, data collection and data analysis and data presentation. This chapter describes how this study provided information about the objectives or policies. Data collection and analysis methods were chosen to match the particular evaluation in terms of its key hypotheses and the resources available. Well-chosen and well implemented methods for data collection and analysis are essential for all types of evaluations (Creswell, 2014)

3.2: Research Design

Kumar, (2005) defines a research design as a practical plan that is used by the researcher to answer questions validly, objectively, accurately and economically. A research design helps an investigator to conceptualize and Operationalize an arrangement to take on a variety of events and tasks required to complete the study. These activities ensure that the procedures are adequate to obtain valid, objective and accurate answers to the research questions or hypotheses.

This study used a regression analysis which is a statistical process for estimating the relationships among variables. Creswell, (2012) explains that regression analysis includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables.

3.3: Population of the Study.

A population refers to an entire group of individuals, events or objects having common observable characteristics (Creswell, 2012). In the same context, a target population is defined as a computed set of individuals or cases with some familiar recognizable characteristics of a particular nature distinct from other population.

For the purpose of this study, the population was made up of all listed companies that formed the target population. For this study therefore the target population comprised of listed firms from 2000 to 2015. According to CMA bulletin, (2015), there were 63 public limited companies by December 2015 (see appendix 2).

3.4: Sample Selection

A sample is a small group obtained from accessible population and sampling is the procedure a researcher uses to gather people, places or things to study (Creswell, 2014). This study adopted a proportionate sampling which is a sampling strategy (a method for gathering participants for a study) used when the population is composed of several subgroups that are vastly different in number. The number of participants from each subgroup is determined by their number relative to the entire population (Shukla, 2010).

A sample of seven firms that were either delisted or placed under statutory management, (see appendix 3) were analyzed alongside thirteen going concern firms listed at the NSE (see appendix 3) within the same sectors. These samples of non-going concern firms which had been delisted were matched by sectors, with going concern firms. The criterion for selecting the firms for the study was that the annual financial reports for the entire period of the study were available for the four sectors.

Table 3.1: Sample Selection

S/N	Sector	Non Going Concern Firms Sample	Going Concern Firms Sample	Listed firms in the sector
1	Agriculture	2	5	6
2	Commercial and services	2	3	5
3	Manufacturing and allied	1	4	9
4	Telecommunication	1	1	1
	TOTAL	6	13	21

Source: CMA (2016)

3.5: Data Collection

Secondary data used in this study comprised of the annual financial reports such as income statements (Revenues/Sales, earnings before interest and tax, finance cost and retained earnings), statement of financial position (Current Assets, non-current / tangible assets, Current Liabilities, non-current Liabilities), cash flows statements (operational cash flows) and the statements of changes in equity (owners' equity, Book Value of Equity) and statements of the directors (textual disclosures).

These Secondary data was collected from the CMA resource centre using data collection sheet (see Appendix 1). The various ratios for the respective models were computed from the collected data (see Appendix 4 and 5). The study covered non going concern and going concern firms from 2000 to 2015, subject to availability of data including the auditor's or management's reports. The financial reports of companies that were under going concern risks were analyzed five years prior to such risk.

3.6: Data Analysis

To analyze the collected data, descriptive statistics was adopted. In accomplishing the first objective, a dichotomous variable was assigned to textual disclosures practices. A dichotomous variable is a variable with only two values, a one and a zero (Cooper and Schindler, 2003). A one indicating the presence and a zero for absence of textual disclosures practices, respectively the mean, minimum, maximum and standard deviation of textual disclosures were then computed. In the second objective, the means for Z-score, S-score and H-score for Altman's revised four Z-score model; Fulmer's model and Springate model respectively were computed.

Altman's Revised Four Z-score Model

$$Z = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

Where:

$\beta_1 = 6.56$, $\beta_2 = 3.26$, $\beta_3 = 6.72$, $\beta_4 = 1.05$

Z = Weighted average of selected ratios

X_1 = (Current Assets-Current Liabilities) to Total Assets

X_2 = Retained Earnings to Total Assets

X_3 = Earnings before Interest and Taxes to Total Assets

X_4 = Book Value of Equity to Total Liabilities.

Source: Kemboi, (2013)

Fulmer's Model

$$H = \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 - \alpha_5 X_5 + \alpha_6 X_6 + \alpha_7 X_7 + \alpha_8 X_8 + \alpha_9 X_9 - \varepsilon$$

Where;

$\alpha_1 = 5.52$, $\alpha_2 = 0.212$, $\alpha_3 = 0.073$, $\alpha_4 = 1.27$, $\alpha_5 = -0.12$, $\alpha_6 = 2.335$, $\alpha_7 = 0.575$, $\alpha_8 = 1.082$, $\alpha_9 = 0.894$, $\varepsilon = 6.075$

H: total index

X_1: Average retained earnings to average total assets

X_2: Revenues to average total assets

X_3: profit before taxation to owners' equity

X_4: operational cash flows to total liabilities

X_5: liabilities to total assets

X_6: current liability to total assets

X_7: logarithm of tangible assets

X_8: Average working capital to average total debt

X_9: logarithm earnings before interest and tax to interest cost

Source: Srinivasan and Tiripura, (2011)

Springate Model

$$S=K_1A+ K_2B+K_3C+K_4D$$

Where:

$K_1=1.3, K_2=3.07, K_3=0.66, K_4=0.4$

A = Working capital to total assets

B= Net Profit before interest and taxes to total assets

C = Net profit before taxes to current liabilities

D= Sales to total assets

Source: Arasu, (2013)

To achieve the third objective, regression analysis and One-way ANOVA was used to establish if there are significant differences in the mean scores on the Altman revised-four z-score model, Fulmer model, Springate model and Textual disclosure where the Statistical Package for Social Sciences (SPSS) was used. To assess the going concern risk, a Z- Scores of less than 1.10 indicated a non-going concern firm while the Z -scores of more than 1.10 indicated a going concern firm (Mohamed, 2013). Further, if H is less than 0, the company was categorized as a facing going concern risk (Srinivasan and Tiripura, 2011) and where S is less than 0.862; then the firm was classified as facing going concern risk (Haseley, 2012). The hypothesis was tested based on the null hypothesis. If the P – value from the regression analysis was less than 5% which is the level of significance, then we failed to accept the null hypothesis or otherwise we failed to reject the null hypothesis (Creswell, 2014).

3.7 Data Presentation

Data presentation involves methods by which information is summarized, organized and communicated using a variety of tools, such as diagrams, distribution charts, histograms and graphs. The methods used to present research data vary widely but common presentation modes including coding data, data analysis, drawing diagrams, box-plots, tables, pie charts and histograms (Creswell, 2014).

The analyzed data was presented in form of tables and statements. Cooper and Schindler (2003) notes that tables and graphs simplify the researchers' understanding of the meaning of the data collected. In addition, Shukla (2010) observe that other than tables and graphs assisting the users of the research findings to understand how the researcher arrived at a conclusion, it is also easier to interpret the research findings.

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1: Introduction

This chapter presents the analysis, results and discussion of findings based on the objectives of the study. The study established the position of textual disclosure practices on going concern risk and determined the extent of prediction of going concern risk by using the selected bankruptcy predicting models of listed firms in Kenya. Lastly, results as to whether a significant difference between the textual disclosures and selected bankruptcy predicting models in assessing the going concern risk of firms in Kenya existed were also provided.

Findings were discussed in relation to existing empirical studies and demonstrate how the present study contributes to expanding the knowledge base. The study findings were based on data analysis and this lays ground for conclusions and suggestions.

4.1 Textual Disclosure practices on Going Concern Risk by listed firms in Kenya.

Table 4.1: Descriptive Statistics for Textual Disclosures for Going Concern Firms

	N	Minimum	Maximum	Mean	Std. Deviation
Agriculture	25	1.00	1.00	1.0000	.00000
Commercial	15	1.00	1.00	1.0000	.00000
Manufacturing	35	1.00	1.00	1.0000	.00000
Telecommunication	5	1.00	1.00	1.0000	.00000
Valid N (listwise)	5				

Source: Research data (2016)

Table 4.1 above shows the statistics of the Sixty five observations (see appendix 3) made from thirteen firms in four going concern sectors from the year 2000 to 2015. Textual disclosure variable was assigned value of one if textual disclosures on going concern were reported, otherwise it is zero. From the statistics, all the firms had textual disclosures indicating the statistical average of 1.00 with a standard deviation of 0.000. The standard deviation of zero means that there were no variations in textual disclosures.

Table 4.2: Descriptive Statistics for Textual Disclosures for non Going Concern Firms

	N	Minimum	Maximum	Mean	Std. Deviation
Agriculture	10	1.00	1.00	1.0000	.00000
commercial	10	1.00	1.00	1.0000	.00000
Manufacturing	5	1.00	1.00	1.0000	.00000
Telecommunication	5	1.00	1.00	1.0000	.00000
Valid N (list wise)	5				

Source: Research data (2016)

Table 4.2 shows the statistics of the thirty observations (see appendix 3) made from six firms in a non-going concern sample from the year 2000 to 2015. Textual disclosure variable was assigned value of one if textual disclosures were reported, otherwise it was zero. From the statistics not all the firms from the four sectors had textual disclosures indicating a varied statistical means of 1.00 for firms' in the agriculture, commercial, telecommunication and manufacturing sectors respectively. The standard deviation of zero means that there were no variations in textual disclosures reporting in the entire four sectors. However, we thus failed to accept the null hypothesis that there are no textual disclosure practices on going concern risk by listed firms in Kenya.

4.3 The extent of prediction by using the selected Bankruptcy Predicting Models on Going Concern Firms.

The table 4.3 provides calculated score of Altman revised four variables model (Z-scores), Springate model (S-scores) and Fulmer model (H-scores), from Sixty five observation (see appendix 3), for going concern firms.

Table 4.3: Scores for Going Concern firms

S/N	Company	Year	Z-Score	S-Score	H-Score
1	**Nation Media Group**	2001	**4.959**	**1.823**	**1.093**
		2002	**4.590**	**1.600**	**0.686**
		2003	**5.151**	**1.972**	**2.738**
		2004	**4.867**	**1.877**	**1.232**

		2005	**5.459**	**2.101**	**3.215**
2	**Express Kenya ltd**	2001	**1.888**	**2.274**	**2.252**
		2002	**1.744**	**1.517**	**1.329**
		2003	**1.534**	**1.239**	**1.427**
		2004	**2.969**	**0.993**	**0.295**
		2005	**2.790**	**1.536**	**0.696**
3	**TPS Eastern Africa**	2001	**1.546**	*0.690*	**1.170**
		2002	**1.480**	*0.715*	**0.965**
		2003	**1.128**	*0.387*	*-0.056*
		2004	**1.811**	**0.883**	**1.210**
		2005	**3.205**	**1.453**	**1.418**
4	**Carbacid**	2004	**4.850**	**2.698**	**8.121**
		2005	**3.897**	**3.017**	**6.547**
		2006	**5.058**	**3.755**	**8.660**
		2007	**5.865**	**4.896**	**5.972**
		2008	**6.309**	**5.016**	**7.029**
5	**Mumias sugar company**	2004	**1.848**	*0.579*	*-2.451*
		2005	**3.471**	**1.528**	**0.978**
		2006	**4.293**	**2.115**	*-1.556*
		2007	**3.641**	**1.916**	**2.332**
		2008	**3.427**	**1.770**	**3.140**
6	**EA Breweries**	2004	**5.951**	**1.781**	**3.768**
		2005	**4.104**	**3.256**	**1.331**
		2006	**4.191**	**2.612**	**3.490**
		2007	**6.093**	**3.142**	**5.489**
		2008	**5.239**	**2.553**	**3.637**
7	**B A T Kenya limited**	2004	**3.994**	**2.320**	*-2.558*
		2005	**7.171**	**1.760**	**1.136**
		2006	**4.389**	**2.011**	**3.683**
		2007	**3.152**	**1.877**	**2.654**
		2008	**2.901**	**1.715**	**2.516**
8	**Limuru Tea Company**	2010	**6.034**	**2.991**	**1.153**
		2011	**4.015**	**-0.083**	**1.330**

		2012	**5.198**	**2.084**	**1.369**
		2013	**5.705**	**1.742**	**1.897**
		2014	**5.817**	**2.952**	**1.501**
9	**Kapchorua Tea**	2010	**4.147**	**1.051**	**2.663**
		2011	**2.890**	*0.724*	**2.597**
		2012	**1.817**	*0.172*	*-0.433*
		2013	**1.772**	*0.390*	**0.426**
		2014	**2.426**	*0.717*	**0.378**
10	**Kakuzi**	2010	**1.376**	*0.537*	**0.749**
		2011	*0.226*	*-0.188*	**0.498**
		2012	**1.607**	*0.681*	**1.059**
		2013	**2.019**	**0.905**	**1.667**
		2014	**2.696**	**1.278**	**1.660**
11	**Sasini Tea and Coffee**	2010	**3.076**	**1.472**	**4.348**
		2011	*0.173*	*-1.299*	*-1.768*
		2012	**1.991**	**1.732**	*-0.354*
		2013	*1.037*	*0.000*	*-1.945*
		2014	**2.247**	**3.117**	*-1.10*
12	**Williamson Tea**	2010	**3.577**	**0.334**	**1.180**
		2011	**5.857**	**1.340**	**3.152**
		2012	**3.955**	**1.604**	**1.581**
		2013	**3.990**	**1.813**	**1.528**
		2014	**2.881**	**2.268**	**1.593**
13	**Safaricom**	2008	**2.546**	**1.182**	**2.257**
		2009	**1.984**	**0.975**	**2.146**
		2010	**2.424**	**1.407**	**1.427**
		2011	**2.126**	**1.092**	**2.465**
		2012	**1.926**	**1.082**	**2.084**

Source: Research data **(2016)**

Table 4.3 is further summarized in table 4.4 to show the percentage accuracy in going concern prediction based on the cut off points for each prediction model.

Table 4.4: Summary of classification for going concern firms

Classification	Z-Score		S-Score		H-Score	
Cut off score	**1.10**		**0.862**		**0.00**	
	Freq	%	Freq.	%	Freq.	%
Going concern	63	97	51	78.5	56	86
Non going concern	02	03	14	21.5	09	14
Total	65	100	65	100	65	100

Source: Research data (2016)

Table 4.4 shows the percentage values of Z-Score, S-Score and H-Score for the Sixty five observations (see appendix 3). The results above show that the Z-Score model indicated that 62 out of 65 observation (95%) of the observed firms were indeed going concern firms while the remainder 5% was categorized as firms' facing a going concern risk. The S-Score indicated that 50 out of 65 observations (78.5%) of the observed firms were going concern firms while the remainder 21.5% was categorized as facing a going concern risk. Similarly, H-Score showed that 56 out of 65 observations (86%) of the observed firms were going concern firms while 9 out 65 observations (14%) showed firms' facing a going concern risk.

The study found that Altman's revised four variable models had 97% going concern percentage prediction followed by Fulmer at 86% and Springate at 78.5% respectively. These findings show that, generally, the Altman revised four variables model is a better predictor for going concern compared to Fulmer and Springate model. This finding is consistent with that of Mohamed (2013) who found the Altman revised four variable model as 95% accurate in bankruptcy prediction. The Springate model had 78.5% accuracy in predicting going concern which is almost consistent with the findings of Arasu et al, (2013) who found the model prediction rate of 92.5%. Similarly, the results of Fulmer model provided 86% accuracy in predicting going concern which was closer to the 81% accuracy rate of Srinivasan and Tiripura (2011).

4.3.1 Extent of prediction using selected Bankruptcy Predicting Models on Non-Going Concern Firms.

The table 4.5 provides calculated score of Altman revised four variable model (Z-scores), Springate model (S-scores) and Fulmer model (H-scores) for non-going concern firms.

Table 4.5: Scores for Non Going Concern Firms

S/N	Company	Year	Z-Score	S-Score	H- Score
1	**Access kenya**	2008	**3.687**	**1.676**	**5.839**
		2009	*1.099*	*0.640*	*-0.024*
		2010	*-1.426*	*-0.121*	*-0.304*
		2011	*0.203*	*0.443*	*-0.789*
		2012	*0.761*	*0.926*	*-1.846*
2	**A.Bauman**	2004	**2.186**	*0.374*	*-1.548*
		2005	*0.377*	*0.204*	**1.082**
		2006	*-1.303*	*-8.613*	*-1.339*
		2007	*-0.669*	*-1.059*	**4.941**
		2008	**1.239**	*-0.644*	**0.164**
3	**Rea vipingo**	2010	**1.477**	**0.723**	**2.579**
		2011	**1.438**	**1.194**	**2.105**
		2012	**1.136**	**1.232**	**0.183**
		2013	**0.986**	**0.683**	**0.825**
		2014	**0.630**	**0.312**	**0.491**
4	**Uchumi supermarket**	2001	1.287	1.756	-0.077
		2002	1.260	1.730	0.155
		2003	-2.266	0.388	-0.103
		2004	-4.349	-0.303	-0.485
		2005	-12.598	-4.42	0.438
5	**Unilever**	2004	**1.760**	*0.732*	**2.614**
		2005	**2.137**	**1.256**	**2.259**
		2006	**1.204**	*0.705*	**1.277**
		2007	*1.028*	**1.236**	**0.979**
		2008	*0.657*	*0.337*	**0.743**

6	**Hutchings Beimer Ltd**	2001	**1.649**	*0.675*	-0.152
		2002	*0.421*	*0.618*	-1.145
		2003	**1.464**	**1.129**	0.646
		2004	**2.303**	**1.309**	2.539
		2005	**2.549**	*0.675*	1.379

Source: Research data (2016)

Table 4.5 is further summarized in table 4.6 to show the percentage accuracy in non-going concern prediction based on the cut off points for each prediction model.

Table 4.6: Going Concern and Non-Going Concern models' cut off points

Model	Z-Score			S-Score			H-Score		
	Bench Mark	No. of Firms	%	Bench Mark	No. of Firms	%	Bench Mark	No. of Firms	%
Going Concern	1.10 and Above	15	50	0.862 and Above	10	33	0 and Above	19	63
Non Going Concern	Below 1.10	15	50	Below 0.862	20	77	Below 0	11	37
TOTAL		30	100		30	100		30	100

Source: Research data (2016)

Table 4.6 shows that from the non-going sample (see appendix 3), Altman revised four variable model reported 15 observations, Springate 10 observations and Fulmer 19 observations of going concern in a non-going concern sample of six firms. Likewise, Altman model correctly reported 15 observations (50%), Springate 20 observations (77%) and Fulmer 11 (37%) of non-going concern observations as indeed non going concern firms. It is therefore observed that the Springate model provided more firms as non-going concerns in the non-going sample compared to Altman and Fulmer models respectively. Based on these results, the study found the Springate model to be more accurate in assessing the going concern risk in a non-going sample.

Table 4.7 shows the means and standard deviations derived from the financial ratios using profitability, liquidity and activity ratios of the selected bankruptcy prediction model scores for Sixty five observations of the thirteen going concern firms.

Table 4.7: Descriptive statistics for Altman's revised, Springate and Fulmer models

	N	Minimum	Maximum	Mean	Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic
Z	65	.17	7.17	3.4231	1.66079
S	65	-1.30	5.02	1.6223	1.11338
H	65	-2.56	8.66	1.8569	2.21009
Valid N	65				

Source: Research data (2016)

The mean Z-Score for going concern firms between the years 2000 to 2015 was 3.42 with a standard deviation of 1.661 varying from a minimum of 0.17 to a maximum of 7.17 with a range of 6.992. The Altman's revised Z-score model score of more than 1.10 indicating going concern firms while the scores of less than 1.10 indicate non going concern firms. Therefore a mean Z-score was 3.42 which were above 1.10 implying that many of the listed firms were going concerns. The above findings concur with that of Vasantha et al, (2013) who found that ratio analysis is one of the important tools and techniques used in measuring the financial performance of companies.

Using the Springate model, companies are considered to be going concerns if S- score is lmore than 0.862. The statistics in table 4.7 provide a mean S- score of 1.62 with a standard deviation of 1.113 varying from a minimum of -1.30 to a maximum of 5.02 which is a range of 6.315. The Fulmer model provided a mean score of 1.86 with a standard deviation of 2.210 varying from a minimum of -2.56 to a maximum of 8.66 which is a range of 13.889. This implies that many listed firms were going concerns between the years 2000 to 2015 and the Springate model provided the lowest standard deviation compared to the Altman and Fulmer models.

The statistics show that on average the Altman model provided more going concern firms than either the Fulmer or Springate model. The spread of scores as shown by the standard deviation

is higher for H and Z than it is for S respectively, suggesting that H and Z scores are more variable in their going concerns indications than for S scores.

The above finding is consistent with the study by Kemboi (2013) which found that the Altman's revised four variable prediction model accurately predicted corporate financial distress of Uchumi supermarket Ltd in Kenya.

Table 4.8: Summary for sector analysis in a going concern sample

sector		Altman revised Z-scores above 1.10			Springate S-scores above 0.862			Fulmer H- scores above 0		
	N	mean	Freq	%	mean	Freq	%	mean	Freq	%
Agriculture	25	3.413	23	88	1. 882	15	56	1.514	20	80
Manufacturing	20	4.492	20	100	2.618	19	95	4.146	17	85
Commercial	15	3.008	15	100	1.657	12	80	1.409	14	93
Telecommunication	5	2.201	5	100	1.148	5	100	2.076	5	100
TOTAL	65		63			51			56	

Source: Research data (2016)

In a going concern sample, the Altman revised four variables model provided 88% prediction accuracy, Springate provided 56% accuracy and Fulmer bankruptcy prediction provided 80% accuracy of going concern firms in the agriculture sector. In the commercial sector, Altman revised four variables model provided 100% accuracy, Springate provided 80% and Fulmer model provided 93% accuracy of going concern predictions. In the manufacturing sector, the Altman revised four variables model provided 100% accuracy, Springate provide 95%, and Fulmer model provided 85% accuracy in predicting going concern firms. Finally, in the telecommunication sector, the Altman revised four variables model provided 100% accuracy, Springate model provided 100% and Fulmer model too provided 100% accuracy on going concern prediction.

From the above results, Springate model provided the lowest prediction in the agriculture sector otherwise the three selected bankruptcy prediction models have very high percentage rates in predicting the going concern position of the firms. The analysis therefore found that

as much as Altman revised four variables model provided higher prediction rates than the Springate and Fulmer models; the three selected bankruptcy prediction models can well predict going concern risk at very high rates in the manufacturing, commercial and telecommunication

Table 4.9 Descriptive statistics for Altman's revised, Springate and Fulmer models

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Z-scores	30	16.285	-12.598	3.687	.34423	2.893848
S-scores	30	10.369	-8.613	1.756	.19310	2.012786
H-scores	30	7.685	-1.846	5.839	.78087	1.736096
Valid N (listwise)	30					

Source: Research data (2016)

The statistics in table 4.9 indicate that scores for Altman's revised Z-score model had a mean score of 0. 34. However, a score of less than 1.10 using Altman's revised four variables model indicated non going concern firms. The statistical inference shows therefore that many of the seven delisted firms were non going concern although with a high standard deviation of 2.89.

Using the Springate model scores, the statistics in table 4.9 provide a mean S- score of 0.19 with a standard deviation of 2.01 varying from a minimum of -8.61 to a maximum of 1.76 providing a range of 10.37. The Springate model indicates that companies are considered to be non-going concerns if they have an S- score of less than 0.862. From table 4.9 it can be inferred that many of the six delisted firms were non going concern firms. Additionally, using the Fulmer model, companies are considered to be non-going concerns if H- score is less than 0. The model provided a mean score of 0.78 with a standard deviation of 1.74 varying from a minimum of -1.85 to a maximum of 5.84 which is a range of 7.69. From the analysis, it can be inferred that, using the Fulmer model that many of the 30 delisted firms were non going concern with the lowest standard deviation of 1.74.

The above result from Altman's revised Z-score model, Springate model and Fulmer model imply that on average the Altman's revised Z-score model and Springate model assessed the going concern risk at a higher rate than the Fulmer bankruptcy prediction model. The average H- score imply that most of the delisted firms were actually not under a going concerns risk between the years 2000 to 2015 since the average H-score is far above 0. However, we thus

failed to accept the null hypotheses that there was no significant extent to which the selected bankruptcy predicting models can assess the going concern risk of listed firms in Kenya. This means that there was a significant extent to which the selected bankruptcy predicting models can assess the going concern risk of listed firms in Kenya.

Table 4.10: Summary for sector analysis in a Non Going Concern sample

Sector	N	Altman revised Z-scores below 1.10			Springate S-scores below 0.862			Fulmer H- scores below 0		
		mean	Freq	%	mean	Freq	%	mean	Freq	%
Agriculture	10	0.684	4	40	0.573	6	60	0.00	0	0
Manufacturing	5	0.027	3	60	-0.893	5	100	-1.240	2	40
Commercial	10	-4.698	4	40	-0.395	6	60	-0.471	5	50
Telecommunication	5	0.159	4	80	0.321	3	60	-0.741	4	80
TOTAL			15			20			11	

Source: Research data (2016)

In a non-going concern sample (see appendix 3), the Altman revised four variables model provided 40% prediction accuracy, Springate provided 60% accuracy and Fulmer bankruptcy prediction provided 0% accuracy of non-going concern firms in the agriculture sector. In the commercial sector, Altman revised four variables model provided 40% accuracy, Springate provided 60% and Fulmer model provided 50% accuracy of non-going concern predictions. In the manufacturing sector, the Altman revised four variables model provided 60% accuracy, Springate provide 100%, and Fulmer model provided 40% accuracy in predicting non going concern firms. Finally, in the telecommunication sector, the Altman revised four variables model provided 80% accuracy, Springate model provided 60% and Fulmer model too provided 80% accuracy on going concern prediction.

From the results, it was found that the three selected bankruptcy prediction models have low percentages which vary from sector to sector. However, the Springate and Altman models have maintained a high prediction of up to 100% and 60% in the manufacturing sector whereas the Fulmer and Altman models have maintained high predictions in the

telecommunication sector. Otherwise, the Fulmer and the Altman models can significantly assess to a large extent the going concern risk in the telecommunication sector while the Springate and the Altman model can significantly assess to a large extent the going concern risk in the manufacturing sector.

The above results are inconsistent with those of Stephen, (2009) who showed that neither Altman nor Fulmer models can be considered better in predicting bankruptcy at a higher rate than the other. Also Arasu, et al, (2013) results showed that there was no significance difference between Fulmer and Springate models in predicting bankruptcy despite the fact that these models had been developed keeping manufacturing firms in mind.

4.4: A comparison between Selected Models, Textual disclosures and Going Concern Risk

From the analysis of six non going concern firms, a regression analysis was carried out individually for Altman's revised four variable, Springate and the Fulmer models to assess the going concern risk of listed firms in Kenya. Similarly, a regression analysis was carried out for textual disclosures to assess the going concern risk of listed firms in Kenya.

Table 4.11: Model Summary for Selected Models and Textual Disclosures

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Z	.431[a]	.186	.161	.464401
S	.352[a]	.124	.098	.435393
H	.647[a]	.419	.402	.372534
TX	.042[a]	.002	-.028	.238833

a. Predictors: (Constant): Z-score, S-score, H-score and Textual disclosures

b. Dependent Variable: Going concern risk

Source: Research data (2016)

The model summery provides the correlation and coefficient of determination (R^2) for the regression model. A coefficient of 0.431 suggests there is positive relationship between Altman's four Z-score and going concern risk, while the R^2 statistic of 0.186 suggests that 18.6% of the variance in going concern risk can be explained by Altman's revised four Z-score. In other words, the going concern risk of a firm can be predicted by Altman's four Z-score. Similarly a coefficient of 0.352 suggests there is positive relationship between

Springate S-score and going concern risk, while the R^2 statistic of 0.124 suggests that 12.4% of the variance in going concern risk can be explained by Springate S-score. In other words, the going concern risk of a firm can be predicted by Springate S-score.

Additionally a coefficient of .647 suggests there is positive relationship between Fulmer H-score and going concern risk, while the R^2 statistic of 0.419 suggests that 41.9 % of the variance in going concern risk can be explained by Fulmer H-score. In other words, the going concern risk of a firm can be predicted by Fulmer H-score. Finally, A coefficient of .042 suggests there is positive relationship between textual disclosures and going concern risk, while the R^2 statistic of 0.002 suggests that 0.2% of the variance in going concern risk can be explained by textual disclosures. In other words, the going concern risk of a firm can be predicted by textual disclosures.

The positive relationship between the independent variables and the dependent variable indicate that the firms were indeed experiencing difficulties in continuing operations as a going concern. It was also clear that the textual disclosures on going concern have a higher prediction of going concern risk compared to the selected bankruptcy models. However, the variation is insignificant for all the independent variables.

Table 4.12: Regression Coefficients for Selected Models and Textual Disclosures

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.450	.080		5.656	.000
Z	.081	.030	.431	2.746	.010
(Constant)	.265	.074		3.571	.001
S	.087	.040	.352	2.163	.038
(Constant)	.519	.069		7.524	.000
H	.191	.039	.647	4.881	.000
(Constant)	-1.44	.239		.000	1.000
TX	.059	.242	.042	.243	.810

a. Dependent Variable: going concern risk

Source: Research data (2016)

The coefficient Table 4.12 provides the intercept (where Z-score=0) in column B for the row is .450 while the gradient in the regression line (the coefficient) is in column B of the z-score

model: .081. This means that for standard deviation that the Z-score increases, the predicted going concern risk increases by .081 standard units. The results for the T-test, the p-value for Z-score model = 0. 010 which is below 0.05 alpha level, thus we *f*ailed to accept the null hypothesis. Therefore, Altman four variables Z-score model is statistically significant in assessing the going concern risk

Similarly, the intercept (where S-score=0) in column B for the row is .265 while the gradient in the regression line (the coefficient) is in column B of the S-score model: .087. This means that for standard deviation that the S-score increases, the predicted going concern risk increases by .087 standard units. T-test, the p-value for S-score model = 0.038 which is below 0.05 alpha level, so we *f*ailed to accept the null hypothesis. Therefore, Springate S-score model is statistically significant in assessing the going concern risk

Further, the intercept (where H-score=0) in column B for the row is 0.519 while the gradient in the regression line (the coefficient) is in column B of the H-score model: .191. This means that for standard deviation that the H-score increases, the predicted going concern risk increases by .191 standard units. T-test, the p-value for H-score model = 0.000 which is below 0.05 alpha level, so we *f*ailed to accept the null hypothesis. Therefore, Springate S-score model is statistically significant in assessing the going concern risk

The coefficient in Table 4.12 provides the intercept (where TX-score=0) in column B for the row is -1.44 while the gradient in the regression line (the coefficient) in column B of the TX is .059. This means that for standard deviation that the textual disclosures increases, the predicted going concern risk increases by .06 standard units. T-test, the p-value for TX model = 0.810 which is above 0.05 alpha level, so we *f*ailed to reject the null hypothesis. Therefore, textual disclosures are not statistically significant in assessing the going concern risk.

Table 4.13 ANOVA for Z- score, S- score, H- score and textual disclosures

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Z-Score	Regression	.238	1	.165	.032	.010
	Residual	247.190	28	2.981		
	Total	247.428	29			
S-Score	Regression	.109	1	.869	.030	.038

	Residual	118.304	28	4.098		
	Total	118.413	29			
	Regression	3.126	1	2.313	1.180	.000
H-Score	Residual	87.442	28	8.529		
	Total	90.568	29			
	Regression	.003	1	.003	.059	.810
TX	Residual	1.882	28	.057		
	Total	1.886	29			

a. Predictors: (Constant): Z-score, S-score, H-score and Textual disclosures

b. Dependent Variable: Going concern risk

Source: Research data (2016)

Table 4.13 ANOVA for non-going concern firm's showed that the Z score values were statistically significant in assessing the going concern risk. ANOVA ($F(1, 28) = .032$, p =.010) implied we failed to accept the null hypothesis that Z scores is not statistically significant in assessing the going concern risks of listed firms in Kenya as the p value is below 0.05. Similarly, S scores are significant in assessing the going concern risk. ANOVA F $(1, 28) = .030$, p =. 038) implied that we failed to accept the null hypothesis since the p value is below 0.05. Further, ANOVA (F $(1, 28) = 1.180$, p =.000) for H score values, are statistically significant in assessing the going concern risk since the p value is below 0.05, we failed to accept the null hypothesis that H score is not statistical significant in assessing the going concern risk of listed firms in Kenya. Further, TX values are significant in assessing the going concern risk. ANOVA (F $(1, 28) = .059$, p = .810) and since the p value is above 0.05, we failed to reject the null hypothesis that textual disclosures is not statistically significant in assessing the going concern risk of firms in Kenya. This means that textual disclosures are not statistically significant in assessing the going concern risk of listed firms in Kenya.

The results from the non-going concern sample of seven firms, analysis of the Altman's revised four variables, Springate and Fulmar models indicated that three selected models indicated that the most of the firms were going concern while indeed they were not. On the other hand, textual disclosures indicate that as much as the management may indicate that a firm is a going concern, this may not be the case and thus, they are also not statistically significant in assessing the going concern risk of listed firms in Kenya. The results from the non-going concern sample are consistent with the findings of Boritz and Sun (2004). The results of their procedure showed that all the three bankruptcy prediction models appeared to significantly "outperform" the textual disclosures at identifying non going concern firms.

4.4.1: A comparison between Selected Models, Textual disclosures and Going Concern Risk

From the analysis of thirteen going concern firms, a regression analysis was carried out individually for Altman's revised four variable, Springate and the Fulmer models to assess the going concern risk of listed firms in Kenya. Similarly, a regression analysis was carried out for textual disclosures to assess the going concern risk of listed firms in Kenya.

Table 4.14: Model Summary for Selected Models and Textual Disclosures

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Z	.305[a]	. 930	.978	.167071
S	.589[a]	.347	.337	.307778
H	.430[a]	.185	.172	.244334
TX	.016[a]	.100	-.016	.125000

a. Predictors: (Constant): Z-score, S-score, and H-score and Textual disclosures

 b. Dependent Variable: Going concern risk

Source: Research data (2016)

The model summary provides the correlation and coefficient of determination (R^2) for the regression model. A coefficient of .305 suggests there is positive relationship between Altman's four Z-score and going concern risk, while the R² statistic of 0.93suggests that 93 % of the variance in going concern risk can be explained by Altman's four Z-score. In other words, the going concern risk of a firm can be assessed by Altman's four Z-score model. Similarly, a coefficient of .589 suggests there is positive relationship between Springate S-score and going concern risk, while the R² statistic of 0.347suggests that 34.7% of the variance in going concern risk can be explained by Springate S-score. In other words, 34.7% of going concern risk of a firm can be assessed by Springate model.

Additionally, A coefficient of .430 suggests there is positive relationship between Fulmer H-score and going concern risk, while (R^2) = .185suggests that 18.5% of the variance in going concern risk can be explained by Fulmer H-score. In other words, the going concern risk of a firm can be assessed by Fulmer H-score. Finally, a coefficient of .016 suggests there is low positive relationship between textual disclosures and going concern risk, while the R²

statistic of 0.100 suggests that 10% of the variance in going concern risk can be explained by textual disclosures. In other words, the going concern risk of a firm can be assessed by textual disclosures by 10% only.

The positive relationship between the independent variables and the dependent variable indicate that the firms were indeed experiencing difficulties in continuing operations as a going concern

It was also clear that the textual disclosures on going concern have a lower assessment of going concern risk compared to the selected bankruptcy models. However, the variation is least for Fulmer H-score and textual disclosures

Table 4.15: **Regression Coefficients for Selected Models, Textual disclosures and Going Concern Risk**

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.860	.048		18.001	.000
	Z	.032	.013	.305	2.539	.014
1	(Constant)	.506	.068		7.467	.000
	S	.200	.035	.589	5.785	.000
1	(Constant)	.826	.040		20.801	.000
	H	.052	.014	.430	3.783	.000
1	(Constant)	1.000	.125		8.000	.000
	TX	-.016	.126	-.016	-.124	.902

a. Dependent Variable: Going concern risk

Source: Research data (2016)

The coefficient Table 4.15 provides the intercept (where Z-score=0) in column B for the row is .032 while the gradient in the regression line (the coefficient) is in column B of the z-score model is .013. This means that for standard deviation, as the Z-score increases, the predicted going concern risk increases by .013 standard units. The row (t=2.539, p=.014) indicated that z-score is statistically significant in assessing going concern risk.

Similarly, the intercept (where S-score=0) in column B for the row is .200 while the gradient in the regression line (the coefficient) is in column B of the S-score model: .035. This means that for standard deviation that the S-score increases the predicted going concern risk

increases by .035standard units. The row (t=5.785, p=.000) indicated that S-score is statistically significant in assessing going concern risk.

Further, the intercept (where H-score=0) in column B for the row is .052 while the gradient in the regression line (the coefficient) is in column B of the H-score model: .014. This means that for standard deviation that the H-score increases the predicted going concern risk increases by .014 standard units. The row (t=3.783, p=.000) indicated that H-score is statistically significant in assessing going concern risk.

The coefficient in Table 4.15 provides the intercept (where TX-score=0) in column B for the row is -.016 while the gradient in the regression line (the coefficient) in column B of the TX is .126. This means that for standard deviation that the textual disclosures increases the predicted going concern risk increases by .126 standard units. The row (t=-.124, p=.902) indicated that textual disclosures is not statistically significant in assessing going concern risk.

Table 4.16: **ANOVA for Z- score, S- score, H- score and textual disclosures**

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
S-scores	Regression	3.171	1	3.171	33.472	.000[b]
	Residual	5.968	63	.095		
	Total	9.138	64			
H-scores	Regression	.854	1	.854	14.311	.000[b]
	Residual	3.761	63	.060		
	Total	4.615	64			
Z-scores	Regression	.180	1	.180	6.447	.014[b]
	Residual	1.759	63	.028		
	Total	1.938	64			
TX	Regression	.000	1	.000	.015	.902[b]
	Residual	.984	63	.016		
	Total	.985	64			

Table 4.16 ANOVA for going concern firm's showed that the Z score values were statistically significant in assessing the going concern risk. ANOVA ($F(1, 63) = 6.447$, p =.014) implied we failed to accept the null hypothesis that Z scores is statistically significant in assessing the going concern risks of listed firms in Kenya as the p value is below 0.05. Similarly, S scores is statistically significant in assessing the going concern risk. ANOVA *F*

61

(1, 63) = 33.472, p =.000) implied that we failed to accept the null hypothesis since the p value is below 0.05. Further, ANOVA (F (1, 63) = 14.311, p =.000) for H score values are statistically significant in assessing the going concern risk since the p value is below 0.05, we failed to accept the null hypothesis that there is no statistical significant in H score assessing the going concern risk of firms in Kenya. Further, Further, TX values are statistically significant in assessing the going concern risk. ANOVA (F (1, 63) = .015, p = .902) and since the p value is above 0.05, we failed to accept the null hypothesis that textual disclosures is not significant in assessing the going concern risk of firms in Kenya. This means that textual disclosures are not statistically significant in assessing the going concern risk of firms in Kenya.

The results from the analysis of non-going concern and going concern sample of seven and thirteen firms, respectively, indicate that the Altman's revised four variables Z-score, Springate S-score and fulmar H-score models are important decision aid that can assist management in assessing the going concern risk of listed firms in Kenya. On the other hand, results from textual disclosures analysis show that as much as the directors reported that the firms were a going concern, most of them were under a struggle to continue in operation or a going concern. These findings indicate that textual disclosures are not accurate in assessing the going concern risk of firms in Kenya. These results shows that the stakeholders should not rely so much on the management assessment of going concern by just issuing textual disclosures on going concern.

The above findings were consistent with the findings of Boritz and Sun (2004). The results of their procedure showed that MDM appeared to significantly outperform the textual disclosures at identifying failed firms. On the other hand, these results contradict the findings of Grice (2000) that the models' predictions and auditors' opinions using bankrupt firms were not consistent with the auditors' opinion after the issuance of SAS No. 59.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATION

5.1. Introduction

A summary of the study findings as well as conclusions are described in this chapter from which recommendations have been drawn with suggestions for further studies highlighted as a away advancing knowledge in this area of study. Conclusions of the study have been aligned clearly against the specific objectives and their respective hypotheses tested.

5.2 Summary

The first objective was to establish whether there were textual disclosure practices on going concern risk by listed firms in Kenya. The results from descriptive statistics found that all the thirteen going concern firms and the seven non going concern firms had a mean of 1.00 and standard deviation of 0.00, from each sample, from four sectors. All the firms under analysis complied with the IFRSs disclosure requirements and operated within the Accountants Act (2008). In that case, we failed to accept the null hypothesis that there were no textual disclosure practices by listed firms in Kenya.

The second objective was to determine the extent of prediction of going concern risk by using the selected bankruptcy predicting models. From the sample of going concern firms', the Altman's revised Z score model provided 95% prediction accuracy of going concern, Springate model accurately predicted going concern at 78.5% and the Fulmer model accurately predicted going concern at 86% accuracy. However, from a sample of non going concern firms, the Altman's revised Z score model correctly classified non going concern firms at 50%, Springate at 77% and Fulmer model accurately classified non going concern firms at 40%.

Based on the sector analysis, in a going concern sample, the Altman revised four variables model provided 88% prediction accuracy, Springate provided 60% accuracy and Fulmer bankruptcy prediction provided 80% accuracy of going concern firms in the agriculture sector. In the commercial sector, Altman model provided 100% accuracy, Springate provided 80% and Fulmer bankruptcy model provided 93% accuracy of going concern predictions. In the manufacturing sector, the Altman revised four variables model provided 100% accuracy, Springate provide 97%, and Fulmer model provided 85% accuracy in predicting going

concern firms. Finally, in the telecommunication sector the Altman revised four variables model provided 100% accuracy, Springate model provided 100% and Fulmer model too provided 100% accuracy on going concern prediction.

In a non-going concern sample, the Altman revised four variables model provided 40% prediction accuracy, Springate provided 60% accuracy and Fulmer bankruptcy prediction provided 0% accuracy of going concern firms in the agriculture sector. In the commercial sector, Altman revised four variables model provided 40% accuracy, Springate provided 60% and Fulmer model provided 50% accuracy of going concern predictions. In the manufacturing sector, the Altman revised four variables model provided 60% accuracy, Springate provide 100%, and Fulmer model provided 40% accuracy in predicting going concern firms. Finally, in the telecommunication sector, the Altman revised four variables model provided 80% accuracy, Springate model provided 60% and Fulmer model too provided 80% accuracy on going concern prediction. These findings showed that the three selected bankruptcy prediction models can to a significant extent assess going concern risk in the manufacturing, commercial and telecommunication sectors.

In the third objective, the study sought to establish whether textual disclosures and selected bankruptcy prediction models were significant in assessing the going concern risk. From the regression matrix for a non-going concern and going concern sample of 30 observations and 65 observations respectively, results suggested there was positive relationship between Altman's four Z-score and going concern risk, Similarly, there was positive relationship between Springate S-score and going concern risk. Additionally, there was positive relationship between Fulmer H-score and going concern risk; however, there was a low positive relationship between textual disclosures and going concern risk, for a non-going concern sample of 30 observations and a low negative relationship between textual disclosures and going concern risk, for a going concern sample of 65 observations

In a going concern sample of 65 observations, the coefficient matrix, a (t=2.539, p=.014) indicated that z-score is statistically significant in assessing going concern risk. Similarly, (t=5.785, p=.000) indicated that S-score is statistically significant in assessing going concern risk while (t=3.783, p=.000) indicate that H-score is statistically significant in assessing going concern risk. In a going concern sample of 35 observations, the coefficient matrix, (t=2.746, p=.010) indicate that Z-score is statistically significant in assessing a going concern risk, while (t=2.163, p=.038) indicated that S-score is statistically significant in assessing a going

concern risk, Further, (t=4.881, p=.000) indicated that H-score is statistically significant in assessing a going concern risk. Since the P value in the three scenarios is below 0.05, the study failed to accept the null hypotheses. On the other hand, In a non-going concern sample (t=.243, p=.810) indicated that textual disclosures are not statistically significant in assessing a going concern risk, since the P value is above 0.05 while in a going concern sample (t=-.124, p=.902) showed that textual disclosures are not statistically significant in assessing going concern risk.

5.3 Conclusions

The aim of this study was to establish the applicability of selected bankruptcy prediction models and textual disclosures in assessing the going concern risk of listed firms in Kenya. The study was guided by three objectives. Based on results from data analysis and findings in relation to the study objectives, the following conclusions were made.

First; the study found that all the firms in the going concern and in the non-going concern samples issued textual disclosures throughout the period under considerations. This Shows that the going concern textual disclosures is extremely important and a key reason why it was adopted to the generally accepted accounting principles (GAAPs). Additionally, it indicates the Importance of going concern textual disclosures that without it companies wouldn't have the ability to prepay or accrue expenses.

Second; although the Altman revised four variables model had the highest rates in predicting going concern risks of the listed firms in both going concern and non-going samples, Springate model and Fulmer model had equally high predicting rates. Therefore, organizations that use Altman revised four variables models, Springate model and Fulmer model are expected to experience significant enhanced going concern assessment which can assist the financial analysts to establish critical issues in prudent financial management of firms.

Third; in an attempt to establish if selected bankruptcy predicting models and textual disclosures were significant in assessing going concern risk, the selected bankruptcy predicting models were statistically significant in assessing going concern risk of listed firms in Kenya, in the going concern and non-going concern sample. However, textual disclosures were statistically not significant in assessing the going concern risk in both samples.

This study had considerable policy implications to firms, that financial analysts and management should adopt the use of bankruptcy prediction models in assessing the going concern risk of listed firms' which can enhance firm sustainability and improve performance. In addition, the financial analysts' use of a combination of bankruptcy prediction models and textual disclosures can be useful in compiling, analyzing, and understanding financial statements. Bankruptcy prediction model and textual disclosures provides to both financial analysts and firms' one of the most important tools for reducing the considerable going concern risks in business operations.

5.4 Recommendations of the Study

The findings of this study revealed that adoption of bankruptcy prediction models and textual disclosures by listed firms leads to improved financial analysis of firms' performance. The study therefore recommends the following:

Listed firms and financial analysts should consider adopting use of Altman revised four variable model, Springate and Fulmer bankruptcy prediction models alongside textual disclosures in business risks management. The resulting information from use of Altman revised four variable model, Springate and Fulmer bankruptcy prediction models be disclosed to the users of the annual financial reports. In that regard, firms should adhere to the requirements of the government regulations and accountants' act on reporting on a true and fair view of the financial position of firms' for a more prudent financial management of firms operations. Lastly, the NSE and CMA should continue enforcing the policies of all listed firms adhering to the textual disclosures on going concern, which is also a requirement by IFRS and GAAPs.

5.5 Suggestion for Further Studies

A further study can be done by using either one or a combination of the Multivariate Discriminant Models such as Ohlson, Zmijewski, Zavgren, Koh, Shirata, Yves, Collongues and Conan and Holder models. A similar study could be done on the firms which were not covered in this study. Secondly, a study can be done for similar number of observations to establish if the results would be any different from the current study which used unequal observations in the analysis. Finally, an effort could be made to analyze a larger sample than what is in this study by using the most current data.

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APPENDIX 1: DATA COLLECTION SHEET

Name of the Company_____ Model _____

Year	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	Z-score	S-score	H-score
2000												
2001												
2002												
2003												
2004												
2005												
2006												
2007												
2008												
2009												
2010												
2011												
2012												
2013												
2014												
2015												
Max												
Min												
Mean												
standard deviation												

Name of the Company_____ Textual disclosures _____
_____

Year	Textual disclosures	
	Yes=1	No=0
2000		
2001		
2002		
2003		
2004		
2005		
2006		
2007		
2008		
2009		
2010		
2011		
2012		
2013		
2014		
2015		
Maximum		
Minimum		
Mean		
standard deviation		

APPENDIX 2: COMPANIES LISTED AT NSE UP TO DECEMBER 31, 2015

AGRICULTURAL

1. Eaagads Ltd
2. Kakuzi Ltd
3. Kapchorua Tea Co. Ltd
4. Limuru Tea Co. Ltd
5. Sasini Ltd
6. Williamson Tea Kenya Ltd

AUTOMOBILES & ACCESSORIES

7. Car & General (K) Ltd
8. Marshalls (E.A.) Ltd
9. Sameer Africa Ltd

BANKING

10. Barclays Bank of Kenya Ltd
11. CFC Stanbic of Kenya Holdings Ltd
12. Diamond Trust Bank Kenya Ltd
13. Equity Bank Ltd
14. Housing Finance Co.Kenya Ltd
15. I&M Holdings Ltd
16. Kenya Commercial Bank Ltd
17. National Bank of Kenya Ltd
18. NIC Bank Ltd
19. Standard Chartered Bank Kenya Ltd
20. The Co-operative Bank of Kenya Ltd

COMMERCIAL AND SERVICES

21. Express Kenya Ltd
22. Hutchings Biemer Ltd (Suspended)
23. Kenya Airways Ltd
24. Longhorn Kenya Ltd

25. Nation Media Group Ltd

26. Scangroup Ltd

27. Standard Group Ltd

28. TPS Eastern Africa Ltd

29. Uchumi Supermarket Ltd

CONSTRUCTION & ALLIED

30. ARM Cement Ltd

31. Bamburi Cement Ltd

32. Crown Paints Kenya Ltd

33. E.A.Cables Ltd

34. E.A.Portland Cement Co. Ltd

ENERGY & PETROLEUM

35. KenGen Co. Ltd

36. KenolKobil Ltd

37. Kenya Power & Lighting Co Ltd

38. Total Kenya Ltd

39. Umeme Ltd

INSURANCE

40. British-American Investments Co.(Kenya) Ltd

41. CIC Insurance Group Ltd

42. Jubilee Holdings Ltd Ord 5.00

43. Kenya Re Insurance Corporation Ltd

44. Liberty Kenya Holdings Ltd

45. Pan Africa Insurance Holdings Ltd

INVESTMENT

46. Centum Investment Co Ltd

47. Olympia Capital Holdings Ltd

48. Trans-Century Ltd

INVESTMENT SERVICES

     49. Nairobi Securities Exchange Ltd

MANUFACTURING & ALLIED

     50. A. Baumann & Co Ltd (Suspended)

     51. B.O.C Kenya Ltd

     52. British American Tobacco Kenya Ltd

     53. Carbacid Investments Ltd

     54. East African Breweries Ltd

     55. Eveready East Africa Ltd

     56. Kenya Orchards Ltd

     57. Mumias Sugar Co. Ltd

     58. Unga Group Ltd

TELECOMMUNICATION & TECHNOLOGY

     59. Safaricom Ltd

GROWTH ENTERPRISE MARKET SEGMENT (GEMS)

     60. Home Afrika Ltd

     61. Atlas development Company Limited

     62. Flame Tree Group

     63. Kurwitu Ventures Ltd

Source: CMA Annual Reports, (2015).

APPENDIX 3: SAMPLE DATA

Going Concern Firms

Sector	S/N	Year	Company
Commercial And Services	1	2001	Nation Media Group
	2	2002	Nation Media Group
	3	2003	Nation Media Group
	4	2004	Nation Media Group
	5	2005	Nation Media Group
	6	2001	Express Kenya ltd
	7	2002	Express Kenya ltd
	8	2003	Express Kenya ltd
	9	2004	Express Kenya ltd
	10	2005	Express Kenya ltd
	11	2001	TPS Eastern Africa
	12	2002	TPS Eastern Africa
	13	2003	TPS Eastern Africa
	14	2004	TPS Eastern Africa
	15	2005	TPS Eastern Africa
Manufacturing & Allied	16	2004	Carbacid
	17	2005	Carbacid
	18	2006	Carbacid
	19	2007	Carbacid
	20	2008	Carbacid
	21	2004	Mumias sugar company
	22	2005	Mumias sugar company
	23	2006	Mumias sugar company
	24	2007	Mumias sugar company
	25	2008	Mumias sugar company
	26	2004	EA Breweries
	27	2005	EA Breweries
	28	2006	EA Breweries
	29	2007	EA Breweries

	30	2008	EA Breweries
	31	2004	B A T Kenya limited
	32	2005	B A T Kenya limited
	33	2006	B A T Kenya limited
	34	2007	B A T Kenya limited
	35	2008	B A T Kenya limited
Agricultural	36	2010	Limuru Tea Company
	37	2011	Limuru Tea Company
	38	2012	Limuru Tea Company
	39	2013	Limuru Tea Company
	40	2014	Limuru Tea Company
	41	2010	Kapchorua Tea
	42	2011	Kapchorua Tea
	43	2012	Kapchorua Tea
	44	2013	Kapchorua Tea
	45	2014	Kapchorua Tea
	46	2010	Kakuzi
	47	2011	Kakuzi
	48	2012	Kakuzi
	49	2013	Kakuzi
	50	2014	Kakuzi
	51	2010	Sasini Tea and Coffee
	52	2011	Sasini Tea and Coffee
	53	2012	Sasini Tea and Coffee
	54	2013	Sasini Tea and Coffee
	55	2014	Sasini Tea and Coffee
	56	2010	Williamson Tea
	57	2011	Williamson Tea
	58	2012	Williamson Tea
	59	2013	Williamson Tea
	60	2014	Williamson Tea
Telecommunication	61	2003	Safaricom

	62	2004	Safaricom
	63	2005	Safaricom
	64	2006	Safaricom
	65	2007	Safaricom

Delisted Firms

Sector	S/N	Year	Company
Commercial And Services	1	2001	Uchumi supermarket
	2	2002	Uchumi supermarket
	3	2003	Uchumi supermarket
	4	2004	Uchumi supermarket
	5	2005	Uchumi supermarket
	6	2001	Hutchings Beimer Ltd
	7	2002	Hutchings Beimer Ltd
	8	2003	Hutchings Beimer Ltd
	9	2004	Hutchings Beimer Ltd
	10	2005	Hutchings Beimer Ltd
Agricultural	11	2010	Rea vipingo
	12	2011	Rea vipingo
	13	2012	Rea vipingo
	14	2013	Rea vipingo
	15	2014	Unilever
	16	2003	Unilever
	17	2004	Unilever
	18	2005	Unilever
	19	2006	Unilever
	20	2007	Unilever
Manufacturing & Allied	21	2004	Bauman

	22	2005	Bauman
	23	2006	Bauman
	24	2007	Bauman
	25	2008	Bauman
Telecommunication	26	2003	Access Kenya
	27	2004	Access Kenya
	28	2005	Access Kenya
	29	2006	Access Kenya
	30	2007	Access Kenya

Source: CMA Annual Reports, (2015).

APPENDIX 4: SELECTED RATIOS FOR GOING CONCERN FIRMS

Nation media group

Altman Revised Four Z-Score

Year	$\beta_1 X_1$	$\beta_2 X_2$	$\beta_3 X_3$	$\beta_4 X_4$
2001	1.592	1.813	1.204	0.35
2002	1.588	1.715	1.068	0.219
2003	1.883	1.637	1.391	0.24
2004	1.364	1.897	1.371	0.235
2005	1.804	1.904	1.438	0.313

Fulmer Model

Year	$\alpha_1 X_1$	$\alpha_2 X_2$	$\alpha_3 X_3$	$\alpha_4 X_4$	$\alpha_5 X_5$	$\alpha_6 X_6$	$\alpha_7 X_7$	$\alpha_8 X_8$	$\alpha_9 X_9$
2001	0.91	0.612	0.15	1.245	-0.026	0.785	1.707	0.651	1.134
2002	0.904	0.481	0.02	1.077	-0.043	0.789	1.773	0.739	1.021
2003	2.77	0.484	0.023	0.921	-0.036	0.677	1.804	1.041	1.129
2004	3.213	0.51	0.023	0.063	-0.035	0.682	0.849	0.763	1.239
2005	3.224	0.536	0.023	0.795	-0.032	0.612	1.846	1.1	1.186

Springate Model

Year	$K_1 A$	$K_2 B$	$K_3 C$	K_{4D}
2001	0.421	0.504	0.411	0.487
2002	0.315	0.488	0.343	0.454
2003	0.373	0.635	0.508	0.456
2004	0.27	0.626	0.5	0.481
2005	0.358	0.657	0.58	0.506

Express Kenya

Altman Revised Four Z-Score

Year	β_1X_1	β_2X_2	β_3X_3	β_4X_4
2001	1.568	0.14	0.024	0.156
2002	1.588	0.13	-0.007	0.033
2003	1.699	0.401	-0.598	0.032
2004	1.825	0.336	0.396	0.412
2005	1.378	0.026	0.921	0.465

Fulmer Model

Year	α_1X_1	α_2X_2	α_3X_3	α_4X_4	α_5X_5	α_6X_6	α_7X_7	α_8X_8	α_9X_9
2001	0.248	1.982	0.366	0.108	0.074	1.848	3.182	-0.193	0.712
2002	0.221	1.993	-0.044	0.074	-0.109	1.939	3.178	-0.289	0.441
2003	0.679	2.073	-0.693	0.027	-0.118	1.993	3.179	-0.283	0.645
2004	0.569	1.225	0.004	0.105	-0.081	1.499	3.207	-0.446	0.288
2005	0.44	0.726	0.022	0.542	0.071	1.219	3.213	-0.385	0.923

Springate Model

Year	K_1A	K_2B	K_3C	K_4D
2001	0.145	0.02	0.122	1.987
2002	-0.315	-0.003	-0.045	1.88
2003	-0.337	-0.273	-0.107	1.956
2004	-0.361	0.181	0.017	1.156
2005	0.273	0.421	0.157	0.685

TPS East Africa

Altman Revised Four Z-Score

Year	β_1X_1	β_2X_2	β_3X_3	β_4X_4
2001	0.188	0.631	0.526	0.201
2002	0.184	0.567	0.544	0.185
2003	0.23	0.58	0.114	0.204
2004	0.21	0.711	0.679	0.211
2005	1.384	0.812	0.833	0.176

Fulmer Model

Year	α_1X_1	α_2X_2	α_3X_3	α_4X_4	α_5X_5	α_6X_6	α_7X_7	α_8X_8	α_9X_9
2001	0.897	0.29	0.008	0.165	-0.1	0.912	3.611	0.104	1.358
2002	0.96	0.289	0.012	0.157	-0.062	0.782	3.518	0.06	1.324
2003	0.982	0.258	0.003	0.008	-0.06	0.712	3.512	0.075	0.529
2004	1.203	0.325	0.013	0.419	-0.056	0.722	3.52	0.072	1.067
2005	1.374	0.35	0.017	0.31	-0.058	0.39	3.543	0.476	1.091

Springate Model

Year	K_1A	K_2B	K_3C	K_4D
2001	0.04	0.191	0.147	0.312
2002	0.036	0.249	0.157	0.273
2003	0.046	0.052	0.046	0.243
2004	0.042	0.31	0.205	0.326
2005	0.274	0.381	0.468	0.33

B A T Kenya limited

Altman Revised Four Z-Score

Year	β_1X_1	β_2X_2	β_3X_3	β_4X_4
2004	0.649	1.033	1.801	0.511
2005	0.905	0.835	4.986	0.445
2006	0.899	0.88	2.164	0.446
2007	0.63	0.717	1.512	0.293
2008	0.533	0.692	1.422	0.254

Fulmer Model

Year	α_1X_1	α_2X_2	α_3X_3	α_4X_4	α_5X_5	α_6X_6	α_7X_7	α_8X_8	α_9X_9
2004	1.733	0.36	0.029	1.199	-0.039	0.542	3.908	0.655	-4.87
2005	1.419	0.379	0.034	0.465	-0.046	0.668	3.903	0.388	0.001
2006	1.49	0.446	0.038	1.017	-0.045	0.633	3.908	0.394	1.877
2007	1.214	0.416	0.03	0.625	-0.055	0.848	3.954	0.225	1.472
2008	1.202	0.422	0.026	0.701	-0.042	0.874	3.894	0.246	1.268

Springate Model

Year	K_1A	K_2B	K_3C	K_4D
2004	0.129	0.823	0.764	0.604
2005	0.179	0.278	0.659	0.644
2006	0.178	0.989	0.123	0.721
2007	0.125	0.691	0.409	0.652
2008	0.132	0.545	0.428	0.61

Limuru Tea Company Limited

Altman Revised Four Z-Score

Year	$\beta_1 X_1$	$\beta_2 X_2$	$\beta_3 X_3$	$\beta_4 X_4$
2010	3.228	0.936	1.317	0.553
2011	2.998	1.001	-0.719	0.735
2012	3.018	0.916	0.605	0.659
2013	3.418	1.092	0.464	0.731
2014	3.437	1.024	0.774	0.582

Fulmer Model

Year	$\alpha_1 X_1$	$\alpha_2 X_2$	$\alpha_3 X_3$	$\alpha_4 X_4$	$\alpha_5 X_5$	$\alpha_6 X_6$	$\alpha_7 X_7$	$\alpha_8 X_8$	$\alpha_9 X_9$
2010	1.584	0.347	0.022	0.498	-0.4	0.219	2.561	1.608	0.789
2011	1.695	0.275	-0.008	0.189	-0.036	0.198	2.541	1.652	0.899
2012	1.551	0.354	0.012	0.287	-0.037	0.201	2.555	1.597	0.924
2013	1.849	0.476	0.008	0.691	-0.043	0.264	2.443	1.585	0.699
2014	1.733	0.51	0.031	0.258	-0.045	0.416	2.436	1.513	0.724

Springate Model

Year	$K_1 A$	$K_2 B$	$K_3 C$	$K_4 D$
2010	0.639	0.602	1.422	0.328
2011	0.594	-0.328	-0.609	0.26
2012	0.598	0.276	0.876	0.334
2013	0.677	0.212	0.404	0.449
2014	0.681	0.81	0.98	0.481

Sasini Tea and Coffee Limited

Altman Revised Four Z-Score

Year	β_1X_1	β_2X_2	β_3X_3	β_4X_4
2010	0.571	0.411	1.848	0.246
2011	0.433	0.456	-1.021	0.305
2012	0.663	0.46	0.618	0.25
2013	0.459	0.411	-0.108	0.275
2014	0.59	0.231	1.31	0.116

Fulmer Model

Year	α_1X_1	α_2X_2	α_3X_3	α_4X_4	α_5X_5	α_6X_6	α_7X_7	α_8X_8	α_9X_9
2010	0.696	0.12	0.003	0.257	-0.024	0.128	3.356	0.464	2.547
2011	0.773	0.115	-0.014	-0.002	0.023	0.156	3.351	0.374	0
2012	0.778	0.141	0.008	0.137	-0.025	0.119	3.739	0.524	0.3
2013	0.696	0.147	-0.002	-0.16	-0.027	0.159	3.743	0.331	-0.757
2014	0.392	0.091	0.02	0.052	-0.037	0.124	3.888	0.318	0.127

Springate Model

Year	K_1A	K_2B	K_3C	K_4D
2010	0.113	0.844	3.287	0.104
2011	0.086	-0.467	-1.495	0.108
2012	0.131	0.282	1.187	0.132
2013	0.091	-0.049	-0.18	0.138
2014	0.117	0.6	2.314	0.086

Williamson Tea

Altman Revised Four Z-Score

Year	$\beta_1 X_1$	$\beta_2 X_2$	$\beta_3 X_3$	$\beta_4 X_4$
2010	0.93	0.611	1.345	0.691
2011	0.981	0.196	2.624	2.056
2012	0.924	1.102	1.188	0.741
2013	0.944	1.156	1.145	0.745
2014	0.956	0.084	1.132	0.709

Fulmer Model

Year	$\alpha_1 X_1$	$\alpha_2 X_2$	$\alpha_3 X_3$	$\alpha_4 X_4$	$\alpha_5 X_5$	$\alpha_6 X_6$	$\alpha_7 X_7$	$\alpha_8 X_8$	$\alpha_9 X_9$	ε
2010	0.91	0.324	0.028	1.245	-0.455	0.062	3.221	0.35	0.724	-6.075
2011	0.345	0.806	0.032	1.541	-0.031	0.322	2.91	0.724	0.766	-6.075
2012	1.852	0.463	0.023	0.317	0.047	0.52	3.361	0.352	0.744	-6.075
2013	2.015	0.511	0.014	0.232	0.047	0.589	3.321	0.417	0.742	-6.075
2014	2.225	0.436	0.032	0.228	0.048	0.586	3.536	0.438	0.814	-6.075

Springate Model

Year	$K_1 A$	$K_2 B$	$K_3 C$	$K_4 D$
2010	0.184	0.612	0.342	0.042
2011	0.194	1.154	1.036	0.768
2012	0.166	0.533	0.428	0.454
2013	0.198	0.529	0.377	0.424
2014	0.182	0.492	0.358	0.561

Kapchorua Tea

Altman Revised Four Z-Score

Year	$\beta_1 X_1$	$\beta_2 X_2$	$\beta_3 X_3$	$\beta_4 X_4$
2010	0.912	2.82	0.356	0.059
2011	0.768	1.809	0.249	0.064
2012	0.61	1.101	0.04	0.066
2013	0.768	0.919	0.034	0.051
2014	0.61	0.926	0.833	0.057

Fulmer Model

Year	$\alpha_1 X_1$	$\alpha_2 X_2$	$\alpha_3 X_3$	$\alpha_4 X_4$	$\alpha_5 X_5$	$\alpha_6 X_6$	$\alpha_7 X_7$	$\alpha_8 X_8$	$\alpha_9 X_9$
2010	3.191	0.093	0.006	0.257	-0.042	0.166	3.382	0.426	1.259
2011	3.124	0.117	0.004	0.127	-0.037	0.234	3.39	0.408	1.305
2012	1.722	0.102	0.001	0.229	-0.039	0.173	3.388	0.312	-0.246
2013	1.557	0.117	0.001	0.144	-0.043	0.271	3.403	0.417	0.634
2014	1.568	0.248	-0.012	0.042	-0.044	0.278	3.379	0.273	0.721

Springate Model

Year	$K_1 A$	$K_2 B$	$K_3 C$	$K_4 D$
2010	0.182	0.163	0.53	0.176
2011	0.152	0.114	0.237	0.221
2012	0.121	-0.018	-0.123	0.192
2013	0.152	0.015	0.003	0.22
2014	0.121	0.381	-0.019	0.234

Kakuzi

Altman Revised Four Z-Score

Year	β_1X_1	β_2X_2	β_3X_3	β_4X_4
2010	-0.407	1.275	0.41	0.098
2011	-0.945	1.284	-0.202	0.089
2012	-0.564	1.343	0.746	0.082
2013	-0.256	1.558	0.625	0.092
2014	0.072	1.676	0.853	0.095

Fulmer Model

Year	α_1X_1	α_2X_2	α_3X_3	α_4X_4	α_5X_5	α_6X_6	α_7X_7	α_8X_8	α_9X_9
2010	2.158	0.282	0.006	0.086	-0.059	0.404	3.606	-0.136	0.477
2011	2.175	0.228	-0.008	-0.006	-0.067	0.693	3.586	-0.279	0.251
2012	2.274	0.258	0.013	0.079	-0.066	0.602	3.608	-0.171	0.537
2013	2.639	0.27	0.016	0.342	-0.056	0.423	3.625	-0.091	0.574
2014	2.837	0.258	0.018	0.262	-0.049	0.36	3.647	0.03	0.372

Springate Model

Year	K_1A	K_2B	K_3C	K_4D
2010	-0.081	0.187	0.165	0.266
2011	-0.187	-0.095	-0.121	0.215
2012	-0.112	0.338	0.211	0.244
2013	-0.051	0.286	0.415	0.255
2014	0.014	0.39	0.63	0.244

Carbacid

Altman Revised Four Z-Score

Year	β_1X_1	β_2X_2	β_3X_3	β_4X_4
2004	1.758	1.552	0.995	0.545
2005	1.568	1.399	0.612	0.318
2006	2.27	1.558	0.9	0.33
2007	2.742	1.77	0.995	0.358
2008	2.867	1.865	1.223	0.354

Fulmer Model

Year	α_1X_1	α_2X_2	α_3X_3	α_4X_4	α_5X_5	α_6X_6	α_7X_7	α_8X_8	α_9X_9
2004	2.628	0.155	0.019	1.608	-0.022	0.184	3.082	1.593	4.949
2005	2.368	0.096	0.012	0.56	-0.024	0.086	3.287	1.303	4.934
2006	2.639	0.116	0.014	0.329	-0.022	0.089	3.275	3.17	5.125
2007	2.997	0.132	0.015	0.917	-0.019	0.072	3.262	2.794	1.877
2008	3.157	0.143	0.018	1.397	-0.018	0.084	3.248	3.082	1.993

Springate Model

Year	K_1A	K_2B	K_3C	K_4D
2004	0.348	0.454	1.75	0.146
2005	0.311	0.279	2.336	0.091
2006	0.45	0.411	2.785	0.109
2007	0.543	0.454	3.775	0.124
2008	0.568	0.559	3.754	0.135

Mumias Sugar Company Limited

Altman Revised Four Z-Score

Year	β_1X_1	β_2X_2	β_3X_3	β_4X_4
2004	0.636	0.854	0.101	0.257
2005	1.273	0.958	0.954	0.286
2006	1.404	1.138	1.438	0.313
2007	1.135	1.125	1.082	0.299
2008	1.108	1.097	0.989	0.233

Fulmer Model

Year	α_1X_1	α_2X_2	α_3X_3	α_4X_4	α_5X_5	α_6X_6	α_7X_7	α_8X_8	α_9X_9
2004	1.446	0.358	0.004	0.112	-0.055	0.605	0.888	0.226	0.04
2005	1.623	0.454	0.015	0.428	-0.049	0.465	0.875	0.513	2.729
2006	1.926	0.449	0.002	0.587	-0.043	0.939	0.437	0.645	1.503
2007	1.916	0.442	0.018	0.477	-0.044	0.845	2.221	0.711	1.821
2008	1.926	0.371	0.017	0.311	-0.036	0.315	3.584	0.623	2.104

Springate Model

Year	K_1A	K_2B	K_3C	K_4D
2004	0.126	0.046	0.069	0.338
2005	0.252	0.436	0.412	0.428
2006	0.278	0.657	0.756	0.424
2007	0.251	0.553	0.798	0.314
2008	0.225	0.494	0.781	0.27

EA breweries

Altman Revised Four Z-Score

Year	β_1X_1	β_2X_2	β_3X_3	β_4X_4
2004	1.895	1.144	1.445	1.467
2005	2.237	0.699	0.285	0.883
2006	1.512	0.104	2.513	0.062
2007	2.539	1.18	2.15	0.224
2008	2.086	0.975	2.043	0.135

Fulmer Model

Year	α_1X_1	α_2X_2	α_3X_3	α_4X_4	α_5X_5	α_6X_6	α_7X_7	α_8X_8	α_9X_9
2004	1.419	0.709	0.031	1.074	-0.021	0.397	2.93	1.826	1.478
2005	1.612	0.614	0.052	4.82	-0.009	0.166	3.069	4.898	2.184
2006	0.171	0.36	0.052	1.529	-0.046	0.89	3.976	0.344	2.289
2007	1.998	0.358	0.034	1.044	-0.03	0.404	4.003	1.674	2.079
2008	1.65	0.372	0.037	1.059	-0.04	0.616	4.033	1-044	1.985

Springate Model

Year	K_1A	K_2B	K_3C	K_{4D}
2004	0.356	0.66	0.698	0.067
2005	0.443	1.044	1.19	0.579
2006	0.498	1.148	0.627	0.339
2007	0.503	0.982	1.319	0.338
2008	0.413	0.933	0.855	0.352

Safaricom

Altman Revised Four Z-Score

Year	$\beta_1 X_1$	$\beta_2 X_2$	$\beta_3 X_3$	$\beta_4 X_4$
2008	-0.709	1.359	1.845	0.051
2009	-0.805	1.543	1.196	0.05
2010	-0.708	1.574	1.513	0.045
2011	-0.715	1.603	1.196	0.042
2012	-0.884	1.603	1.159	0.048

Fulmer Model

Year	$\alpha_1 X_1$	$\alpha_2 X_2$	$\alpha_3 X_3$	$\alpha_4 X_4$	$\alpha_5 X_5$	$\alpha_6 X_6$	$\alpha_7 X_7$	$\alpha_8 X_8$	$\alpha_9 X_9$
2008	3.017	0.143	0.022	0.695	-0.048	0.802	3.92	-0.473	0.254
2009	4.233	0.118	0.025	0.725	-0.054	0.861	2.261	-0.293	0.345
2010	6.243	1.577	0.025	0.73	-1.222	3.499	4.522	0.146	0.982
2011	1.358	0.135	0.2	0.869	-0.049	0.7	4.554	-0.144	0.917
2012	1.36	0.186	0.018	0.847	-0.049	0.72	4.578	-0.178	0.677

Springate Model

Year	$K_1 A$	$K_2 B$	$K_3 C$	$K_4 D$
2008	-0.014	0.581	0.297	0.318
2009	-0.16	0.546	0.282	0.307
2010	-0.014	0.69	0.409	0.322
2011	-0.142	0.546	0.355	0.333
2012	-0.104	0.53	0.305	0.351

APPENDIX 5: SELECTED RATIOS FOR NON GOING CONCERN

AccessKenya

Altman Revised Four Z-Score

Year	β_1X_1	β_2X_2	β_3X_3	β_4X_4
2008	1.581	0.442	1.204	0.46
2009	0.146	0.212	0.554	0.187
2010	-1.299	-0.009	-0.235	0.117
2011	-0.048	0.014	0.072	0.165
2012	-0.74	0.218	1.058	0.225

Fulmer Model

Year	α_1X_1	α_2X_2	α_3X_3	α_4X_4	α_5X_5	α_6X_6	α_7X_7	α_8X_8	α_9X_9
2008	0. 299	0.221	0.019	1.871	-0.037	0.682	5.067	2.474	0.001
2009	0.359	0.1	0.012	0.29	-0.06	0.164	3.263	0.727	0.010
2010	-0.016	0.131	0.001	0.202	-0.079	1.036	3.60	0.919	0.10
2011	0.232	0.153	0.009	0.308	-0.066	1.182	3.582	1.344	0.040
2012	0.369	0.178	0.012	0.812	0.054	0.649	3.594	-1.83	0.002

Springate Model

Year	K_1A	K_2B	K_3C	K_4D
2008	0.313	0.55	0.396	0.417
2009	0.029	0.2	0.054	0.357
2010	-0.257	-0.107	-0.003	0.246
2011	-0.009	0.033	0.131	0.288
2012	-0.147	0.483	0.254	0.336

A. Bauman

Altman Revised Four Z-Score

Year	β_1X_1	β_2X_2	β_3X_3	β_4X_4
2004	1.324	-0.015	-0.016	0.893
2005	0.503	-0.089	-0.203	0.166
2006	1.911	-1.259	-2.433	0.478
2007	1.643	-0.881	-1.828	0.397
2008	0.571	-0.742	-0.875	0.253

Fulmer Model

Year	α_1X_1	α_2X2	α_3X3	α_4X4	α_5X5	α_6X6	α_7X7	α_8X8
2004	-0.025	0.062	0.002	-0.042	-0.032	0.149	1.598	2.3
2005	-0.15	0.059	-0.003	0.167	-0.038	0.678	2.576	2.686
2006	-2.132	0.114	-0.034	-1.816	-0.027	0.127	1.45	3.996
2007	3.681	0.143	-0.03	-0.531	-0.04	0.196	1.336	3.83
2008	1.968	0.109	-0.053	-0.38	0.06	0.265	1.124	1.087

Springate Model

Year	K_1A	K_2B	K_3C	K_4D
2004	0.262	-0.071	0.065	0.118
2005	0.1	-0.093	0.086	0.111
2006	0.379	-7.471	-1.736	0.215
2007	0.326	-0.835	-0.819	0.269
2008	0.361	-0.781	-0.455	0.231

Rea vipingo

Altman Revised Four Z-Score

Year	β_1X_1	β_2X_2	β_3X_3	β_4X_4
2010	0.923	0.045	0.204	0.305
2011	0.918	0.052	0.212	0.256
2012	0.712	0.056	0.145	0.223
2013	0.568	0.025	0.098	0.218
2014	0.522	-0.135	-0.102	0.174

Fulmer Model

Year	α_1X_1	α_2X_2	α_3X_3	α_4X_4	α_5X_5	α_6X_6	α_7X_7	α_8X_8	A_9X_9
2010	0.739	0.166	0.006	0.23	-0.044	0.294	3.742	2.078	1.443
2011	0.075	0.192	0.058	0.297	-0.05	0.448	3.68	0.388	3.092
2012	0.958	0.212	0.025	0.092	-0.051	0.412	3.602	0.263	0.745
2013	2.072	0.159	0.011	0.028	-0.053	0.433	3.598	0.268	0.384
2014	1.875	0.184	-0.25	-0.09	-0.057	0.534	3.69	0.211	0.469

Springate Model

Year	K_1A	K_2B	K_3C	K_{4D}
2010	0.252	0.058	0.101	0.312
2011	0.188	0.285	0.375	0.346
2012	0.135	0.096	0.074	0.378
2013	0.124	0.702	0.092	0.314
2014	0.109	-0.054	-0.081	0.338

Unilever

Altman Revised Four Z-Score

Year	β_1X_1	β_2X_2	β_3X_3	β_4X_4
2003	1.296	0.042	0.119	0.303
2004	0.981	0.227	0.678	0.251
2005	0.708	0.045	0.216	0.235
2006	0.621	0.033	0.155	0.219
2007	0.571	-0.142	-0.105	0.333

Fulmer Model

Year	α_1X_1	α_2X_2	α_3X_3	α_4X_4	α_5X_5	α_6X_6	α_7X_7	α_8X_8	A_9X_9
2003	0.741	0.175	0.002	0.237	-0.042	0.296	3.739	2.087	1.454
2004	0.088	0.189	0.13	0.291	-0.049	0.444	3.75	0.392	3.099
2005	0.966	0.201	0.002	0.088	-0.051	0.409	3.756	0.275	1.706
2006	2.071	0.167	0.001	0.022	-0.05	0.43	3.75	0.275	0.388
2007	1.889	0.173	-0.004	-0.14	-0.055	0.542	3.74	0.201	0.472

Springate Model

Year	K_1A	K_2B	K_3C	K_4D
2003	0.257	0.055	0.09	0.33
2004	0.194	0.31	0.393	0.359
2005	0.14	0.099	0.085	0.381
2006	0.123	0.706	0.094	0.313
2007	0.113	-0.048	-0.077	0.349

Hutchings Beimer Ltd

Altman Revised Four Z-Score

Year	β_1X_1	β_2X_2	β_3X_3	β_4X_4
2001	0.033	0.398	0.995	0.223
2002	0.007	0.28	-0.013	0.147
2003	0.453	0.391	0.43	0.19
2004	1.161	0.482	0.423	0.237
2005	1.345	0.557	0.41	0.237

Fulmer Model

Year	α_1X_1	α_2X_2	α_3X_3	α_4X_4	α_5X_5	α_6X_6	α_7X_7	α_8X_8	α_9X_9
2001	0.673	0.669	-0.001	0.265	0.049	0.838	3.614	0.012	-0.196
2002	0.475	0.629	-0.005	-0.083	0.064	1.163	3.594	0.002	-0.909
2003	0.662	0.827	0.008	0.055	0.054	0.997	3.572	0.167	0.379
2004	0.817	0.863	0.007	0.207	0.047	2.335	3.549	0.4	0.389
2005	0.944	0.876	0.007	0.156	0.045	0.848	3.528	0.59	0.46

Springate Model

Year	K_1A	K_2B	K_3C	K_4D
2001	0.007	0.046	-0.009	0.631
2002	0.001	-0.006	0.03	0.593
2003	0.09	0.196	0.062	0.781
2004	0.23	0.193	0.072	0.814
2005	0.19	-0.017	0.052	0.843

Uchumi Supermarkets

Altman Revised Four Z-Score

Year	β_1X_1	β_2X_2	β_3X_3	β_4X_4
2001	0.364	0.049	0.081	0.793
2002	0.358	0.049	0.068	0.785
2003	-2.2147	0.1614	-0.3279	0.1152
2004	-2.6673	-0.4854	-1.2963	0.0999
2005	-5.8036	-2.993	-3.9077	0.1062

Fulmer Model

Year	α_1X_1	α_2X_2	α_3X_3	α_4X_4	α_5X_5	α_6X_6	α_7X_7	α_8X_8	α_9X_9
2001	0.0604	1.0994	-0.0596	0.3964	-0.189	1.9461	3.332	-0.588	0.00
2002	0.2171	1.096	0.0485	0.0523	-0.054	1.8261	3.5003	-0.456	0.00
2003	0.0485	1.0981	-0.0256	0.0191	-0.0955	1.8582	3.5287	-0.459	0.00
2004	0.0042	1.0341	-0.4344	0.0501	-0.116	1.9586	3.5482	-0.4552	0.00
2005	0.0523	1.1816	0.0804	-0.2239	-0.1921	2.7607	3.4517	-0.598	0.00

Springate Model

Year	K_1A	K_2B	K_3C	K_4D
2001	0.3639	0.531	0.079	0.782
2002	0.3687	0.221	0.0806	1.06
2003	-0.4389	-0.1498	-0.0594	1.036
2004	-0.5286	-0.5922	-0.1577	0.9755
2005	-1.15	-1.785	-0.37	-1.115

Source: Research data (2016)