

**AN EMPIRICAL STUDY OF THE ALTMAN'S FAILURE
PREDICTION MODEL IN ANTICIPATING CORPORATE
FINANCIAL DISTRESS OF LISTED FIRMS AT THE NAIROBI
SECURITIES EXCHANGE.**

BY

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DECLARATION

I hereby declare that this is my original work and has not been submitted to any other Institution of higher learning or University for academic credit.

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May God's favor and blessings be upon you all.

DEDICATION

To

The Love of my life

Esther Muthoni Njenga

(Your Encouragement was Indispensable)

My Dear Children

Ian Kuria Njenga

Ryan Ng'ang'a Njenga

(To Inspire You For Excellence Beyond)

TABLE OF CONTENT

DECLARATION	ii
ACKNOWLEDGEMENT	iii
DEDICATION	iv
LIST OF TABLES	viii
LIST OF FIGURE	ix
ABBREVIATION	ix
ABSTRACT	xi
CHAPTER ONE: INTRODUCTION	1
1.1 Background of the Study.....	1
1.1.1 Financial Distress	2
1.1.2 Altman’s Failure Prediction Model	4
1.1.3 Predicting Financial Distress Using Altman’s Model	5
1.1.4 Listed Companies at Nairobi Securities Exchange	7
1.2 Research Problem.....	8
1.3 Objectives of the Study	11
1.4 Value of the Study.....	12
CHAPTER TWO: LITERATURE REVIEW	13
2.1 Introduction	13
2.2 Theoretical Review	13
2.2.1 Entropy Theory	13
2.2.2 Credit Risk Theory.....	15
2.2.3 Cash Management Theory	16
2.3 Determinant of Financial Distress.....	16
2.3.1 Liquidity.....	17
2.3.2 Leverage.....	17
2.3.3 Profitability	17
2.3.4 Firms growth.....	18
2.4 Empirical Review	18
2.4.1 International Studies on Financial Distress.....	18

2.4.2 Local Studies on Financial Distress	21
2.5 Causes of Financial Distress	23
2.6 Conceptual Framework	25
2.6.1 Conceptual Framework Discussion	25
2.6.2 Conceptual Model	26
2.7 Summary of the Literature Review	26
CHAPTER THREE : RESEARCH METHODOLOGY	28
3.1 Introduction	28
3.2 Research Design	28
3.3 Population and Sample of the Study.	29
3.4 Data Collection.....	29
3.5 Data Analysis	30
3.5.1 Analytical Model.....	30
3.5.2 Parameterization and Measurement	31
3.5.3 Diagnostic Tests	31
CHAPTER FOUR : DATA ANALYSIS AND RESULTS.....	33
4.1 Introduction	33
4.2 Data analysis	34
4.2.1 Analysis of financially distressed companies	35
4.2.2 Analysis of non-financial distressed companies	36
4.3 Comparison of financially distressed and non-financially distressed companies	39
4.3.1 Predictive results one year prior to financial distress	39
4.3.2 Predictive result for two years before financial distress	40
4.3.3 Z-score range predictive results	41
4.4 Interpretation of Findings.....	42
CHAPTER FIVE : SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	44
5.1 Introduction	44
5.2 Summary	44
5.3 Conclusions	45
5.4 Recommendations	46
5.5 Limitations of the study.....	47

5.6 Suggestions for further research.....	48
REFERENCES	49
APPENDICES	54
APPENDIX 1: Safaricom Limited.....	54
APPENDIX 2: Mumias Sugar Company Limited	55
APPENDIX 3: BOC Kenya Limited	56
APPENDIX 4: Tran-Century Limited	57
APPENDIX 5: Total Kenya.....	58
APPENDIX 6: East Africa Portland Cement	59
APPENDIX 7: East Africa Cables.....	60
APPENDIX 8: Bamburi Cement Limited	61
APPENDIX 9: Uchumi Supermarket PLC	62
APPENDIX 10: TPS Eastern Africa Limited.....	63
APPENDIX 11: Nation Media Group Limited.....	64
APPENDIX 12: LongHorn Publishers	65
APPENDIX 13: Kenya Airways Limited	66
APPENDIX 14: Kakuzi Limited	67
APPENDIX 15: Eaagads Limited.....	68

LIST OF TABLES

Table 4.1: Financially distressed companies.....	35
Table 4.2: Classified results of the financially distressed companies over the years.	36
Table 4.3: Non- financially distressed companies prediction results.....	37
Table 4.4: Z-score results for non-financially distressed companies.....	38
Table 4.5: Predictive results one year prior to financial distress	40
Table 4.6: Predictive results for two years before financial distress	41
Table 4.7: Z-Score long range predictive results	42

LIST OF FIGURE

Figure 1: Conceptual Model	26
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ABBREVIATION

CMA	Capital Market Authority
EAPCC	East Africa Portland Cement
EBIT/TA	Earnings before Interest and Taxes divide by Total Assets
KQ	Kenya Airways
MDA	Multi Discriminant Analysis
MVE/TL	Market Value of Equity divide by Total Liabilities
NSE	Nairobi Securities Exchange
RE/TA	Retained Earning/Total Assets
SPSS	Statistical Package for Social Sciences
TPSEAL	Tourism Promotion Serena East Africa Limited
WC/TA	Working Capital divide by Total Assets

ABSTRACT

Anticipation of financial distress must be a technique that senior management should be versed with since distress borders bankruptcy that later degenerates to failure. The impact of bankruptcy is quite expensive to a firm financially and the extent of damage to reputation of a firm to its lenders, suppliers among other stakeholders. Prediction of financial distress is challenging and has attracted many scholars to undertake academic studies.

This study sought to establish the effectiveness of Altman's Z- model among all listed firms in the republic of Kenya. All the listed firms at NSE between 2012 and 2016 were used as the population of this study. The audited financial reports published on the NSE investors' handbook formed the source where secondary data was mined.

Results of the study indicated that the model predicted 6 out of 7 firms as financially distressed. This represent 86 per cent correct prediction and 14 per cent incorrect prediction of firms currently considered financially distressed. Further, results for 8 firms currently considered to be financially healthy showed that the Z-model was able to predict 7 firms correctly representing 87 percent success. The results obtained in this study proves that Altman's Z model is still reliable and effective and therefore all listed firms in Kenya should use it for anticipating financial distress.

The study established that financial distress originates from internal operations of firms, which is an obligation of CMA and NSE to keep watch of. The study recommends that CMA and NSE should exercise its power and if possible, introduce financially stability strategy as a requirement for listing at NSE. The study indicate gaps for areas that require further studies among them prediction of financial distress for SMEs and effect of the age of listing of a firm to financial health of a company.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Financial distress is a term describing a situation in a firm where it is incapable of paying its financial obligations when and as they fall due from its declining cash flows and as a result the market value of the firm falls drastically (Whitaker, 1996). Financial distresses manifest itself through cash shortages but must be accompanied by reduction in market value of a firm. Events indicating that a firm is in financial distress included: dividend reductions, firms winding up their operations, losses and businesses laying off workers. Financial distress is a major challenge affecting many firms in developing and transitional economies due to inadequacy of liquid assets in the balance sheet to cover its financial obligations. The recent global financial crisis and a number of external factors has resulted to increased cases of business failure and Kenya airways has not been spared either. Researchers and business stakeholders have shown a lot of interest in financial distress because of how it has crippled many companies.

Financial distress not only ruins a company's financial system but also weakens its internal structure and its relationship to stakeholders. Furthermore, it interferes with the attitudes of the workers towards their duties which might lead to many workers leaving the service. A company might be forced to dissolve if by any chance it loses quite a large amount of its human and financial (Natalia, 2007). Financial distress must be identified and eliminated completely using any means possible because it leads to wastage of funds both directly and indirectly. An incorporated business goes through financial distress

when it fails to honour its financial obligations. Despite of a levered business having tax shield benefits, it is always in danger of distress because of expenses that come financial obligations. The worth of a business in financial difficulties declines drastically owing to cost of the debt as shown in this equation:

Value of the firm= Value of equity finance+ PV of tax shield – PV of cost of financial distress.

Theories have been developed to support the study of financial distress. Entropy theory developed by Aziz and Dar (2006) stated that changes occurring in the balance sheets of a firm over a specified period can assist in forecasting financial distress. Secondly, cash management theory put emphasis on prudent management of cash inflows and cash outflows. Cash management function of a business fails when there is no equilibrium between cash getting into the business and cash going out of the business. Financial distress sets in when such an imbalance persist for quite some time which later leads to business failure (Aziz and Dar, 2006). According to credit risk theory financial distress sets in when debtors fail to honor their promise of paying debts on time and as a result the firm is exposed to credit risk because it has inadequate

1.1.1 Financial Distress

Opler and Titman (1994) expounds financial distress in details as an expensive state that impacts on the relationship to lenders and non-monetary external parties. As a result, a firm finds it difficult to obtain more finances and carry the financial burden of maintaining the crippled relationship. “Financial distress” is applied in undesirable manner with an aim of describing the financial position of a firm faced with a short term

illiquidity and with the problems that follow in meeting financial obligations when they fall due and to the full extent (Gordon, 1971). Gordon emphasized that financial strain is only a part of the process that precedes failure and reorganization, and would be prudent to describe it in terms of the sources of finance and valuation of its securities. The firm finds itself in this position the moment it's incapable to generate returns and leverage exceeds the worth of the firm's total assets.

According to Whitaker (1999), financial distress is an important occasion that divides the period of the company's financial prosperity from the duration of financial troubles and a lot of corrective initiatives must be carried out to overcome this unhealthy position. Research done by Andrade and Kaplan (1998) establish two kinds of financial strain: default on financial obligation is first, and efforts in reorganize the debt with an intention of avoiding defaulting the financial obligation. Financial distress happens whenever a firm is incapable of paying its liabilities to the loaners (Andrade and Kaplan, 1998). Distress is normally preceded by a volatile cash flow that changes negatively from positive to negative. The reduction in dividend that follows is a clear sign that the firm has moved to the next level leading to nonpayment of debts. Defaulting debts is followed by debt restructuring which usually aims at decreasing potential risks associated with bankruptcy.

Scholars have come up with a list of factors that they believe causes financial distress among them poor management, unplanned expansion, too much competition, excess leverage, many legal suits, and unfavorable contracts (Natalia, 2007). Jahur and Quadir

(2012), describe inadequacy of startup capital as a major cause of financial distress. In a research done by Ooghe and Prijcker (2008), corporate failures or bankruptcy is normally caused by the unsuitable management qualities and skills, lack of corporate policy and poor strategies. According to Chao, Lipson and Loutskina (2012), a firm has high chances of plunging into financial distress especially where the competitor establishes quite innovative and attractive product which lowers the demand of the firm's products (Jahur and Quadir, 2012).

1.1.2 Altman's Failure Prediction Model

Altman came up with some discriminant functions; Altman's Z-score was first and was established in 1968 with the help of public organization classified by sector and magnitude. The model has very high forecasting capabilities two years before bankruptcy. In 1968 Altman reviewed the model to form a second model known as the Altman Z'-score (1993) that differs with the previous on the discrimination zones. The second model was then revised to form the third model called the Altman Z''-score (2006) which deviates from the other two MDA models because using only four financial ratios and its discrimination zones is lower. In sampling and studying a large number of bankruptcies Altman found out that some financial ratios have more forecasting capabilities than others in foretelling financial strain and insolvency.

A financial ratio is a relationship between two numerical numbers picked from a firm's financial statements (Pandey, 2010). In his description of financial analysis, Edmister in 1972 says that ratios are employed as a standard for assessing the financial position and

achievements of an enterprise. Financial ratios users vary and include existing managers current and would be shareholders and by lenders of a firm. The comparison of firms in terms of strengths and weaknesses can be done easily by financial analysts using financial ratios. The most important component of multivariate discriminant analysis is derived from financial ratios of a firm. This attests that the financial wellbeing of a firm can be tracked by two major tools namely ratio analysis and financial analysis.

Financial ratios have many things in common hence they are examined in connection to each other. Potential problems or signs in specific departments of a firm can be identified by comparing changes in ratios and cash flow graphs with businesses in the same industry (Altman, 2006). For instance, a current ratio in an upward trend implies deficiency in utilizing net current assets which is likely to be manifested by a fast cash conversion cycles (CCC), low debtors' turnover and below average return on investment. Benjamic and Terry (1997) in their studies discovered that solvent firms normally have volatile cash flow trend three years prior to bankruptcy. These findings were arrived at after the two scholars used trends compared three net cash flows of several financial stable firms.

1.1.3 Predicting Financial Distress Using Altman's Model

Research indicates that majority of successful empirical models that differentiated between solvent firms from insolvent ones were established in mid 1960s. Beaver and Altman's research work on classification of business failures in 1966 and 1968 respectively pioneered models for predicting financial distress. Altman (1968) model

employed multivariate discriminant analysis on a collection of 33 unsuccessful and successful organisations and from the outcome he concluded that five financial ratios had the ability to differentiate between solvent and insolvent firms. These five ratios forming the backbone of the z-score are derived from the financial statements and includes: working capital to total assets, retained earnings to total assets, return on total assets, market value of equity to total liabilities, and sales to total assets. The above ratios are put in the formula in the same mentioned arrangement according to their level of importance.

$$Z\text{-score} = 1.2 (d1) + 1.4 (d2) + 3.3 (d3) + 0.6(d4) + 0.999(d5).$$

The level of financial strain is decided depending on the score of the firm. A score above 2.99 implies that a firm healthy financially while a score ranging from 1.81 to 2.99 indicate that a firm is experiencing financial challenges that might lead financial distress. A firm whose solvency is endangered has a score of 1.81. Researchers argue that this model does not have the ability to forecast the financial wellbeing of affirm in isolation, but it is capable of providing an overview of the performance according to changes in the score.

The second model which was developed by Altman (1993) utilised five ratios in forecasting insolvency. The model was similar to the 1968 one but it differed on discrimination zones. The second Z' score model unique form was:

$$Z' = 0.717d1 + 0.847d2 + 3.107d3 + 0.420d4 + 0.998d5$$

Where:

d1 = (Current Assets less Current Liabilities) divide by Total Assets

d2 = Retained profits divide by Total Assets

$d3 = \text{Profits before Interest and Taxes} \div \text{Total Assets}$

$d4 = \text{Book Value of Equity} \div \text{Total Liabilities}$

$d5 = \text{Sales} \div \text{Total Assets}$

The following zones were set to determine the financial state of firms:

$Z' > 2.9$ - "Safe" area

$1.23 < Z' < 2.9$ - "Grey" area

$Z' < 1.23$ - "Distress" area

In 2006 Altman discovered the third model which utilised four financial ratios compared to previous models that used five. These ratios fall under the fields of management effectiveness, profitability, liquidity and leverage.

The model has this form:

$$Z' = 6.5d1 + 3.26d2 + 6.72d3 + 1.05d4.$$

This research study is therefore expected to forecast financial distress of corporates by employing a number of financial ratios.

1.1.4 Listed Companies at Nairobi Securities Exchange

Nairobi Securities Exchange (NSE) was formed in 1954 as a podium of buying and selling securities. Nairobi Securities Exchange supports the trading of shares, debentures, derivatives and other financial instruments. NSE 20-Share Index together with NSE All Share Index (NASI) are the two indices used to measure performance. Since its inception, NSE 20-Share Index has been used to measure performance of 20 blue-chip quoted companies while the NASI was introduced in 2008 and is an overall indicator of market capitalization incorporating all traded shares. The current developments at NSE include

demutualization, self-listing and acquisition of its own premises in Wetlands, the Exchange House, where its offices and trading floor are located (www.nse.co.ke).

NSE is regulated by Capital Market Authority to facilitate buying and selling of securities of quoted firms. In addition it is mandated by CMA to ensure corporate governance among listed companies with an aim of protecting the wealth of investors in these companies. NSE memorandum of understanding with other East African bourses has made cross listing of shares possible. The quoted firms at NSE are classified into 11 segments using the type of business they are engaged in as follows: Agricultural segment, Automobiles and Accessories division, Banking segment, Commercial division, Construction segment, Energy and Petroleum segment, Insurance division, Investment segment, Manufacturing division, Telecommunication segment, Growth Enterprise Market Segment (www.nse.co.ke). A total of sixty-three firms quoted at the NSE by December 31, 2016 were used as the population for this study.

1.2 Research Problem

The Entropy Theory developed by Aziz and Dar (2006) state that for managers to identify firms suffering from distress then they should study the changes occurring in their balance sheets using financial statement analysis. The analysis involves use of financial ratios or market indicators to assess financial distress risk. Comparison of ratios of each company is done one at a time and classification of these companies as either distressed or not is done using ratio with a cut-off.

Corporate financial distress is a common phenomenon in both the developing and developed economies. Corporate failures are linked to enormous financial and nonfinancial losses (Ijaz, Hunjra, Hameed, Maqbool, and Azam, 2013). Therefore, the ability to timely predict the financial healthiness of a firm is very crucial for the concerned stakeholders, including the management, customers, lenders, creditors, shareholders, and employees among others.

Kenya has experienced its fair share of companies struggling with financial difficulties and almost on the verge of collapsing. The rate of delisting of firms from the NSE since 1960 indicates the levels of business failures in Kenya. Taking an example of Kenya Airways one of the largest airline company in the country. Despite the company's success in the past and it being classified as a blue chip listed company at NSE for some decades. The company is currently struggling to pay its creditors and lenders. In addition, the company is registering a lot of losses, laying off its workers and the value of the firm has reduced drastically. The question arises on to whether these crises could have been predicted before the actual events.

Studies have been done by different scholars worldwide on the issue of predicting corporate failure. Kiege (1991) carried out a study entailing predicting business failure by applying discriminant analysis model. His findings indicated that these model was prone to defects due to assumptions applied amongst variables such as linearity, normality and independence. Kiragu (1993) used price adjusted data to research on the prediction of corporate failure. Kogi's (2003) based his research on consistency of financial ratios to

analyse prediction model of corporate failure. Odipo and Sitati (2000) carried out a study on applicability of the revised Altman prediction model of financial distress. They target population for this research was all firms quoted at the NSE. Among the findings obtained from the study was that the Z-model could not guarantee similar results in different country.

Grice and Dugan (2001) carried out a research study with an aim of analysing Zmijewski (1984) corporate failure prediction models. They found that these models were 'time periods' sensitive to the extent of models' accuracy declining when used in different financial periods. Majority of these studies, try to test the reliability of already existing models in different set up instead of localizing the model to specific environment.

Williams and Ellis (1993) concluded in their study that financial statement analysis normally creates an opportunity for analysts to examine the trend performance of a company vertically and horizontally. A research study done by Chey et al. (1989), found out that financial ratios usually highlight company's' strengths and weaknesses especially on liquidity. However, financial statements do not contain all resources owned by a firm because of valuation challenges. Fridson (1995) in his study emphasized, the importance of having a summary all resources owned by a business, however the valuation is quite elusive in nature. Secondly, despite of different kinds of things being perceived to have value, not all of them can be valued and entered on a statement of financial position. In addition, accountants recognize intangible assets in financial statements although it is difficult for them to determine permitted and the prohibited items in financial statements.

Business stakeholders use directly or indirectly the prediction models obtained from financial ratios, in anticipating financial challenges of a listed firm at NSE.

This assist firms to strategize and establish their short term and long term course of action by carrying out SWOT analysis of competitors and act accordingly.

However, some challenges have been experienced when using Altman distress predication model in predicting failure on firms providing services. First, the Altman failure prediction model was established during industrial revolution when manufacturing firms were dominant, and therefore the model could pose a challenge when applying to service providers in the current market. Second, service providers sometimes adopt different set of financial procedures compared to manufacturing firms. The third challenge arise from effects arising from ever changing nature of service providers that make prediction of distress more complicated.

In this regard, thorough investigation on reliability of Altman's Z- model in anticipating financial distress is important to financial institutions, banks, and other stakeholders because they have to predict accurately distress of service providers especially quoted firms at NSE.

1.3 Objectives of the Study

Sought to establish effectiveness of Altman's prediction model in forecasting corporate financial distress of listed companies at Nairobi Securities Exchange.

1.4 Value of the Study

It is important to managers because it will encourage them to incorporate Altman failure prediction model while making decision and analyzing the financial state of their company. The study would help potential investors since they will use this model as an evaluation tool of determining solvency levels of firms they are planning to invest in. The Z-score results of different firms would largely determine the firms that are financially healthier and stable and this could dictate where prospective investors invest their money in them.

This study would also help senior management team identify the causes and determinants of financial distress. Identification of these factors would help them monitor these causes continuously and take appropriate control measures whenever necessary. In addition, the study will assist management to apply the Altman failure prediction model in calculating distress levels and matching with financial distress zones pecked on this model.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The importance of this section is to review a quite number of evidences supporting the effect of Altman's forecasting model on financial distress. This chapter consists of three sections as follows: review of financial distress theories is first, review on empirical evidence of financial distress is second and third is a conclusion on literature review of financial distress.

2.2 Theoretical Review

This section examines theoretic arguments that aid in deriving and describing models used in forecasting financial distress. Theories explained here have the ability to forecast financial distress in a firm by identifying prevailing distress conditions in a firm. The theories in this study include; credit risk theory, entropy theory and cash management theory.

2.2.1 Entropy Theory

It was developed and applied by Aziz and Dar (2006) and stated that to identify a firms' financial distress study the changes occurring in their balance sheets. Entropy theory use both the Univariate Discriminant Analysis (UDA) and MDA in analyzing changes occurring in balance sheets. According to Natalia (2006), UDA involve applying individual financial ratios to assess financial distress risks. Comparison of ratios of each

company is done one at a time and classification of these companies as either distressed or not is done using a single ratio with a cut-off.

Multivariate analysis is usually used when a number of variables are analyzed concurrently, this is according to Slotemaker (2008). Multivariate Discriminant Analysis was deemed superior since it assisted researchers to remove the weakness of univariate analysis. For example, time variation of financial ratios is not considered in univariate analysis. This implies that financial ratios can only be used one at a time to give their results and therefore it is difficult to analyze trends of individual ratios over time. Secondly, results obtained when individual ratios are applied are likely to be inconsistent in case classification of various ratios are used for the same firm. Third, it is inaccurate to apply a single ratio isolation while analyzing distress levels of firms and yet most accounting variables are normally correlated. It is difficult for a single ratio to locate multidimensional interrelationships in a firm.

It is worth noting that probability of insolvency for a sample cannot be equated to that of the population, the sample's cutoff points cannot be applicable to population under study (Natalia, 2007). Hence, when a company's financial reports show major changes in portfolio of assets, liabilities and capital then it can be concluded that the firm is unable to maintain the equilibrium state. According to Aziz and Dar (2006), it is possible to forecast financial distress in these enterprises if the changes in the balance sheet seem to be uncontrollable in future.

2.2.2 Credit Risk Theory

Natalia (2007) explains credit as provision of products to individuals or entities where payments are remitted later inclusive of applicable interest and on agreed terms and conditions. Occasionally, debtors do not honor the agreement of paying their debts when they fall due and as a result the firm that has extended credit to its clients is exposed to credit risk. The credit risk experienced is likely to make a firm default on its creditors and gradually lead to financial distress. Natalia (2007) concludes that credit risk comprises of investor's financial or non-financial risk of loss originating from failure by borrowers to pay their debts as agreed in the sale contract.

Credit risk theory works in a similar way to Basel I and Basel II accords; that is widely used by financial firms. The widely recommended Basel II framework is divided into three pillars: first a capital base of 8 per cent is set as a minimum, secondly is supervisory evaluation of a firm's internal assessment procedures and capital adequacy, and finally is efficient use of public revelation to reinforce market compliance in order to complement supervisory efforts. The modern Basel II Accord use capital ratio concept which is determined by dividing the capital amount of a bank by measure of risk the bank is facing or what is basically known as risk-weighted assets. Westgaard and Wijst (2001) explain that credit risk occurs when an individual borrowing funds defaults to pay and as consequence fails to honor contractual terms. Credit risk does not exclude counterparties of borrowers and extends to reasons leading to their inability to honor financial obligations.

2.2.3 Cash Management Theory

The theory put a lot of emphasis on prudent management of cash inflows and cash outflow of an enterprise; liquid cash circulating in form of business payments or receipts and cash balances readily available in the business to pay any short term financial obligation that might arise. Short-term monitoring and control of a firm's cash balances is an area that requires a lot of attention in every business. This is necessitated by the fact that prediction of cash flows accurately is quite hard, especially the inflows, and it is difficult for cash outflows to accurately match cash inflows (Aziz and Dar, 2006).

A firm is likely to experience excess cash outflows compared to inflows during the year when expenses for dividends, taxes or seasonal inventory remain unpaid. In other occasions, cash inflows would be greater in comparison to cash outflows and trade debtors could pay their dues in lump sum on time; this is according to Pandey (2005). Cash management function of a business fails when there is no equilibrium between cash getting into the business and cash going out of the business. Financial distress sets in when such an imbalance persist for quite some time which later leads to business failure (Aziz and Dar, 2006).

2.3 Determinant of Financial Distress

Research studies have been conducted all over the world to identify the determinants of corporate financial distress of a wide range of firms. The main determinants identified by scholars include liquidity, leverage, profitability and growth.

2.3.1 Liquidity

Liquidity ratios have been used by many scholars in describing and deriving the level of financial distress or bankruptcy in a firm. Nyamboga and Omwario (2014) used debt service coverage ratio to derive financial distress in thirty-eight public companies quoted at the NSE. The data used was obtained from audited financial statements of the targeted firms between 2007 to 2010. Altman's model of anticipating failure was applied to derive financial distress levels of firms. Nyamboga and Omwario found out liquidity levels of listed companies do not have major effect upon corporate financial distress.

2.3.2 Leverage

In their study Titman and Opler (1994) discovered the positive relationship existing between financial distress level and leverage of listed companies. Another study undertaken by Keige (1991) concluded that leverage strongly influences the level of financial distress. Theodossiou et al. study in 1996 confirms the strong impact existing between leverage and financial distress level of firms. In this regards, these two studies recommends that listed companies with capital structure comprising high levels of debts are more likely to suffer from financial difficulties during recession.

2.3.3 Profitability

Salehi and Abedini (2009) research study aimed at investigating the relationship existing between financial distress and profitability of quoted firms at Tehran Securities Exchange. The model used was multiple regressions using the data obtained from two groups. Group one consisted of thirty firms that were financially healthy while group two

included thirty quoted companies having a lot of financial challenges. This study concluded that profitability does not have any impact to financial distress of a firm. On the other hand Altman (1968) and Kimura (1980) research studies found that profitability and financial distress have a positive relationship and therefore profitability is a vital ratio in forecasting failure.

2.3.4 Firms growth

An asset to revenue ratio has been used in most studies to measure revenue growth. For instance, Study done by John (1993) indicates that an asset to revenue ratio has a positive impact towards financial distress. On the other hand, in 1994 Opler research used business revenue growth as a factor of measuring distress. Opler found that firms suffering from financial difficulties had declining revenues over time. The two indicators are usually vital when there is a recession since it indicates effective firm's structure, investors' sentiments, level of competition and general condition of the industry.

2.4 Empirical Review

This section of the paper presents some of the studies that have been carried out to evaluate the applicability of Altman's Z-Score in predicting the corporate failures.

2.4.1 International Studies on Financial Distress

Al-Rawi, Kiani, and Vedd (2008) case studied Jordan Establishment, an industrial firm, to predict its bankruptcy using use of the Altman equation during 2002-2004. The research methodology used by Al-Rawi included interviewing the marketing and

financial managers. Analysis was done to audited financial reports for three years before conducting research (2002, 2003, and 2004). The research used the average stock price reported officially in the newspaper for the period under study (2002, 2003, and 2004). The research used Altman equation for insolvency prediction. Their findings were that the firm was financially weak with a Z score of less than 1.81. The authors noted that these results depicted the real status of this company as it was increasing its debt and would face bankruptcy in the near future.

Alkhatib and Al Bzour (2011) study conducted on Jordanian listed companies to predict the corporate bankruptcy using Altman and Kida models. The sample companies used in this study comprised of only quoted firms at the Jordanian bourse that had been declared bankrupt between 1990 and 2006. Manufacturers and service providers were the only companies' eligible firms for this research with exception of banking and insurance sectors. A sample of thirty-two firms were chosen for the research, sixteen that were bankrupt and sixteen were successful. Their results indicated that the average accuracy of Altman's model in company's bankruptcy prediction over five years before the actual liquidation was 93.8 per cent, higher than Kida's model that was 69 per cent.

Diakomihalis (2012) conducted a major study to evaluate accuracy level and power of the three revised Altman's models in forecasting the bankruptcy of Greece hotel sector. Diakomihalis used multivariable discriminant analysis applied by Altman in 1968. The same variables were applied to alternative model developed later by Altman. The author tested the hotels grouped in distressed zone and established that the accuracy of the 1st

model, 2nd model and the 3rd model in predicting the failure one year prior to the bankruptcy was 88.2 per cent for version one, 83.33 per cent for version two and 80 per cent for version three.

Karamzadeh (2013) conducted a study to forecast the bankruptcy of companies quoted on the Tehran Security Exchange by applying Altman and Ohlson models during 2007 and 2010. Karamzadeh did research by obtaining data from audited financial reports of quoted firms at Tehran bourse, the financial ratios were computed and applied in the Altman Z- model. The value of Altman model for firms under the study was determined. Population of the study included ninety firms in Tehran Securities Exchange. The period of study was four years from 2007 to 2010. Their findings were that the Altman's standard model's accuracy was 74.4 per cent in the first year before the bankruptcy and 64.4 per cent in the second year and 50 per cent in the third year respectively.

A study by Lifschutz and Jacobi (2010) to investigate the accuracy of the first two Altman's models in predicting financial failures of Israel listed companies between 2000 and 2007. The findings of the study were analyzed using the Altman's 1968 model and Ingbar Model. The sample used included forty firms that were listed at Tel-Aviv bourse from 2000 to 2007. Among the sample were twenty firms either suspended, liquidated or under receivership while the twenty comprised of companies that were successful. They established that the models were able to forecast the companies' failure with a 95 per cent accuracy rate one year before bankruptcy and 85 per cent accuracy rate two years prior to the bankruptcy.

Ilahi, Jamil, kazmi, Ilahi, and Lodhi (2015) conducted a study on the Pakistan banking sector focusing on the application of Altman model of predicting corporate bankruptcy. Population used for this study was strictly commercial banks while sample for the study included six commercial banks. Secondary data was obtained from Karachi Securities Exchange investors' handbook published annually by the bourse. Ratios were computed from data obtained from audited annual reports of sample companies listed at Karachi bourse for a period ranging 2009 to 2013. Altman's model of predicting failure and statistical analysis were used to examine Z-score levels of this commercial banks. From their analysis, the Z scores showed that all commercial banks listed on the Karachi Stock Exchange had monetary troubles whereas the fact is that they were operating successfully.

2.4.2 Local Studies on Financial Distress

Keige (1991) undertook a research on prediction of business failure by applying discriminant analysis. His findings were that financial ratio analysis might be used by firms to forecast distress and subsequent failure. In addition, the types of ratios that might best differentiate between firms that are likely to succeed and those that are deemed to fail tend to vary from one geographical location to another. In Kenya working capital ratio, return on earnings to total assets, charge coverage and return on net worth might be used in predicting financial distress correctly two years prior it occurs. Keige emphasizes that business stakeholders must scrutinize keenly the leverage, liquidity and activity ratios before making decision. This prediction model has shown more than 80 per cent accuracy in forecasting distress. Therefore, they can be used by managers as a guide to

determine corrective measures early enough that will help them avert possible business failures.

A research on forecasting bankruptcy using accounting data was done by Kiragu, in 1993. Kiragu used a sample which was made of ten successful businesses and ten failed businesses. The financial analysis ratios used were derived from price adjusted accounting data. Discriminant analysis model established indicated that the following nine financial ratios had high probability of forecasting corporate failure. These ratios were fixed charge coverage, times interest coverage, acid test ratio, working capital ratio, total equity to total assets working capital to total liabilities, change in monetary liabilities, return on investments divide by total assets, liabilities divide by total assets.

Kiragu found that servicing borrowed funds together with liquidity ratios were ideal ratios for predicting failure. These results were in agreement with finance theory regarding business risk. A business is supposed to maintain a balanced liquidity in order to prevent insolvency challenges. Furthermore, a business must generate adequate profits that would be used to service loans together with accumulated interest. However, the significance of liquidity was in contrast compared to earlier studies done earlier by Altman (1968), Kimura (1980) who declared that in prediction of distress and bankruptcy, liquidity ratios are not of any significance. Altman (1968) and Kimura (1980) found that efficiency and profitability are vital ratios when forecasting distress and business failure.

In another study by Odipo, and Sitati (2010) used a sample of companies quoted in the NSE. 20 firms were sampled for the study, ten of which are still quoted and ten others that were no longer listed during the period 1989 to 2008. The study had the following results; eight out of ten failed firms were predicted correctly representing a forecasting accuracy of 80 per cent. On the other hand the Altman's Z-score predicted nine financially healthy companies correctly representing 90 per cent accuracy rate.

In my own view qualitative factors play a major role in financial management of a company and therefore this contributes to the success or failure of firms. Although there are predictive models that determine business failures, management should first correct the inefficiencies in the firm before trying to address the poor financial ratios. Internal inefficiencies include: Shortsightedness of management; Lack of appropriately skilled staff; Poor investment decisions; Poor pricing; Sub-standard products leading to shrinking of the market. Addressing the above issues is done by putting in place internal control measure that will detect, prevent and control the inefficiencies.

2.5 Causes of Financial Distress

Financial distress emanates from decline of a firm's financial accomplishments and is likely to originate from a wide range of phenomenon. These factors are: mismanagement, unplanned expansion, too much competition, excess leverage, many legal suits, and unfavorable contracts (Natalia, 2007). Jahur (2012), describes causes of corporate financial difficulties as a mixture of problems and signs. The major cause of financial distress in establishing firms is insufficient capital where the business struggle from the beginning because they failed to begin with adequate equity. In any firm capital act as a

way by which business losses may be assimilated. Capital forms an alternative means for withstanding abnormal losses not matched by the current profits (Adeyemi, 2012).

In a research done by Ooghe&Prijcker (2008), corporate failures or bankruptcy is normally caused by the unsuitable management qualities and skills, lack of corporate policy and poor strategies. Scherrer (2003) pointed out that management normally hold to account external factors for any business failure and dismiss any internal sign of failure. Irreversible investment decisions involving huge amount of funds may plunge a firm into financial distress if managers lack the requisite skills to plan and implement such projects.

Chao, Lipson and Loutskina (2012) found that many scholars have extensively documented the significance of innovation to an enterprise' future, but few have offered to do research on risks accompanied by innovation. A firm has high chances of plunging into distress especially where the competitor establishes quite innovative and attractive product which lowers the demand of the firm's products (Jahur & Quadir, 2012). Hence, innovation has a doubled edge sword effect in terms of giving an added advantage to a firm over its competitors or will lead to its demise someday. According to Zwaig and Pickett (2012) financial performance is the key measure of financial wellness relied upon by most firms although other factors such as operational and managerial indicators are great importance.

Rapid expansion or emergence of a strong competitor has forced some firms such as Kenya Airways to trouble (Zwaig & Pickett, 2012). In each case, each business was

successful but thereafter an operational occurrence led to financial difficulties which escalated to failure of companies in some cases. In some countries, businesses that had the ability to identify signs financial distress survived by changing and reengineering their business model; such firms include Zellers, Canadians Tire and The Bay (Zwaig& Pickett, 2012).

2.6 Conceptual Framework

2.6.1 Conceptual Framework Discussion

According to study done by Miles and Huberman in 1994, conceptual framework refers to a visual product, one that ‘elaborates using graphical figures or a narration, the main issue being researched, concepts, the salient variables and the presumed relationships among them.’

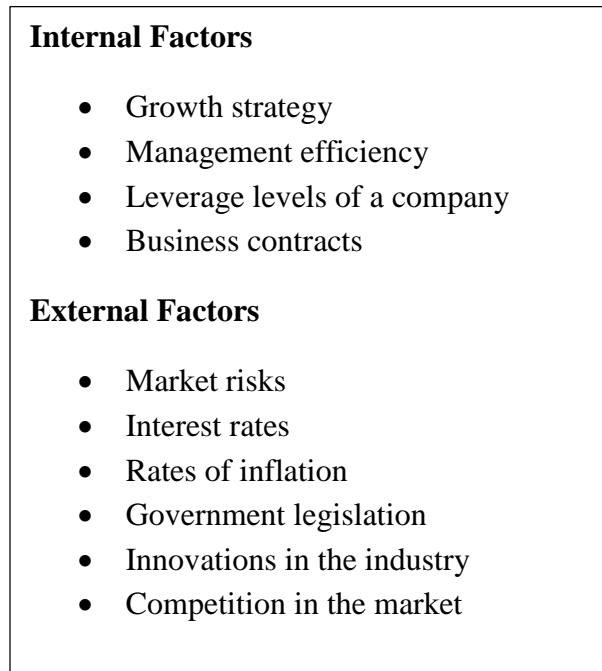
Pandey (2010), argues that determinants of financial distress with or without insolvency usually arise from within the firm (internal) and others emanate from outside the business (external). The internal factors are problems within the business and include unplanned expansion, mismanagement of resources, excess leverage and unfavourable business contracts. However, external factors usually affect all the firms in the market. These factors arise due to changes in variables influencing the entire economy (Karels & Plakash, 1987).

Figure 1 illustrates conceptual model of how different variables contribute to the topic of this research. Independent variables are determinants of financial distress while dependent variable is indicators and models of finding financial distress.

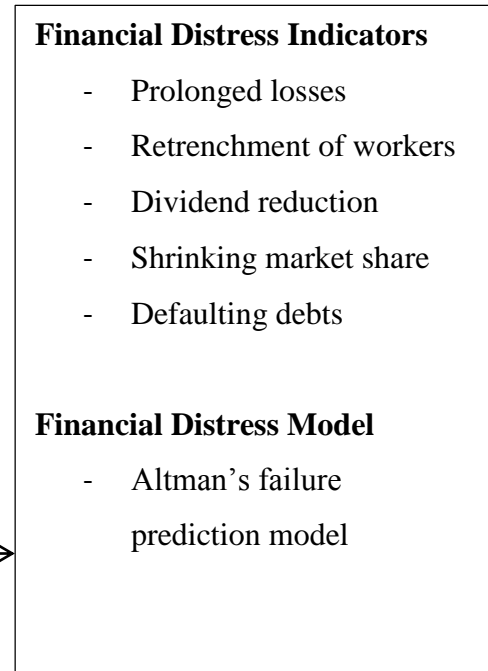
2.6.2 Conceptual Model

Figure 1: Conceptual Model

Independent variables



Dependent variables



2.7 Summary of the Literature Review

Empirical studies carried out worldwide are yet to conclude on the model that is reliable and most accurate in forecasting corporate financial distress. The studies by various scholars and authors above have largely covered the importance of financial distress models. However, more has to be done to improve these models in order for them to achieve 100 per cent accuracy in their prediction. Most of the studies have largely been done on the MDA bankruptcy models. Citing the Kenyan studies all the studies have been done on MDA models, this shows that additional research has to be done in order to come up with other bankruptcy prediction models other than MDA models.

The studies carried out also have some shortcomings. For instance, the bankruptcy model developed in Kenya has not yet been applied by any firm in order to prove their viability. All these bankruptcy models developed in Kenya are also unpublished hence not recognized both locally and internationally.

The models developed above have not also attained 100 per cent accuracy in their prediction hence causes some uncertainty in their applications. This study finds that for survival of business there is need to use bankruptcy models. There has been an increasing trend of bankrupt of firms in Kenya lately and therefore as other studies above have indicated, bankruptcy can only be managed effectively through the use of bankruptcy models.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section highlights the process the researcher employed to accomplish the study objectives and by that try to obtain answers for research objectives highlighted in Chapter One. The chapter further discusses the following aspects of research that the study utilized: design of research, study population, sampling procedure, source of data collected, process of analyzing data, data validity and reliability.

3.2 Research Design

A descriptive study was employed as the research design for this research. Cooper and Schindler in 2001, describes this study as a formal research since it is structured with clearly stated objectives for investigation.

This study applied multivariate discriminant analysis model in predicting financial distress in an organization. This design was applied by Metho (2007) and Kogi (2003) in their studies on prediction of financial distress amongst different firms. Denvir and Millet (2003), emphasize that research design make the research project cohesive.

Research structure is restrictive in nature because it shows how all important sections of the projects work harmoniously and aim at controlling research question. This is necessary since the study seeks to forecast financial distress by using Altman's failure prediction model. The research design used was determined by a combination factors, among them research questions, kind of data required, source and the availability of the data.

3.3 Population and Sample of the Study.

Population is described by Mugenda and Mugenda in a study undertaken in 1999 as a group or collection of people, elements, services, events, households and group of items that are under investigation. Population for this research consisted of all sixty three quoted companies in Kenya and the sample comprised of 15 listed firms at NSE bourse ranging from 2012 to 2016. The time frame is adequate enough to give enough variables for establishing a trend in predicting corporate financial distress.

Judgmental sampling technique was used. This study utilized data at year end for a period 5 years ranging from 2012 to 2015. The data was specifically obtained from companies that had financial statements duly audited and available in the Nairobi Securities Exchange investors handbook for the year 2016/2017.

3.4 Data Collection

Nature of data employed in this study was quantitative. Data for the study was obtained from secondary sources. Nairobi Securities Exchange annual publications formed the base for the source data. These include financial statements of all the 15 listed companies, journals, publications, Companies' magazines, library information and Companies' website. Reliable and preferred source of data was obtained from annual publications of NSE 2016/2017 investors handbook.

The relevant data was obtained for a time frame of five years ranging from 2012 to 2016. The statements of incomes and financial positions prepared at the closure of each of the five accounting period was the source of data for this study. Emphasis was on financial ratios of the respective financial periods. These ratios included: retained profits/total

assets, working capital/total assets, book value of the equity/total liabilities and profits before interest and taxes /total assets. The data being secondary required the researcher to organize, tabulate, summarize and carry out the necessary analysis.

3.5 Data Analysis

Marshall and Rossman (1999) describe analysis as a set of procedures applied to data collected to make it have order, structure and easier to manipulate and interpret. Data was organized well with an aim of facilitating proper analysis. Analysis of data comprised of data preparation, data coding, data editing and data cleaning. SPSS (version 20) was then applied to process the cleaned data. The ability of SPSS to cover common graphical and statistical data analysis made it ideal and therefore was chosen for this study.

The Multivariate Discriminant Analysis (MDA) technique like the one employed by Altman (2003) was applied as the analytical model for this study. Altman (2003) proposed that profitability and liquidity ratios were the most ideal to use when deriving Z-scores for firms. Altman developed the analytical prediction model by combining a number of ratios with coefficients.

3.5.1 Analytical Model

Z'-score model, revised by Altman (2003) was applied. Z'-score is a linear combination of four common business financial ratios, weighted by coefficients. Analysis of the four measures was objectively weighted and summed up to arrive at an overall score that become the basis for classifying firms as either distressed or no distressed.

The model which was be employed had this form hon below;

$$Z'' = W1d1 + W2d2 + W3d3 + W4d4$$

Where Z'' = Discriminant score (Dependent variable)

$W1W2W3W4$ = Discriminant coefficients

3.5.2 Parameterization and Measurement

The parameters of the model used are as follows:

$$Z'' = 6.56d1 + 3.26d2 + 6.72d3 + 1.05d4$$

d = Independent Variables which are:

$d1$ = (Current Assets – Current Liabilities) divide by Total assets

$d2$ = Retained earnings divide by Total assets

$d3$ = Earnings before Interest Taxes divide by Total assets

$d4$ = Book values of Equity divide by Total liabilities

Discrimination zones

$Z'' > 2.6$ “Safe” zone

$1.1 < Z'' < 2.6$ “Grey” zone

$Z'' < 1.1$ “Distress” zone

3.5.3 Diagnostic Tests

The characteristic in term of strength and direction of the connection between the parameters was measured using different diagnostic tests for instance test of multi collinearity among the parameters and the examination of normality. Correlation coefficient of more than 0.9 for the different parameters was considered as a pointer of multi collinearity and the necessary modification was done.

The Analysis of Variance was utilized in this research to examine the hypothesis concerning the connection between financial distress and the Altman failure prediction indicators and zones. The test which was a two-tailed test was done at 95 per cent confidence level and, which translated to a 5 per cent significance level. The regression coefficient was applied in this research to examine the magnitude of cause and effect of the correlation between the independent parameter (Financial distress) and dependent parameters (Altman prediction zones and indicators).

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

4.1 Introduction

Section four of this research is solely meant to apply and test the reliability of the Altman's (2003) model. The research was motivated by the fact that many firms both listed and non-listed have suffered and others are still suffering from the effects of financial distress and eventually failure. The objective of this project was to establish the effectiveness of Altman's prediction model in forecasting corporate financial distress of quoted firms at Nairobi bourse.

15 companies were identified and picked as samples of this study and were then used to test the effectiveness of the Altman's (2003) Z-model. The sample comprised of two groups, namely; seven financially distressed listed firms and eight financially healthy listed companies. Financially distressed companies were labelled as group A while non-financially distressed firms were in group B. This approach of classifying samples into two groups was applied due to its simplicity and easy to manage by the researcher.

The data for the 15 listed companies used as samples of the study was extracted from the financial statements published in the Nairobi Securities Exchange Hand Book (2016/2017) and (2015/2016). The data covered five accounting period ranging from 2012 to 2016.

The four ratios used in the Altman's model were then calculated for each of the 15 firms. The ratios were later used to determine the z-scores for each listed firm under the study and results for the five years were presented in a tabular format.

The Altman's (2003) Z- score model used for this research study takes a linear format as follows:

$$Z'' = 6.56d_1 + 3.26d_2 + 6.72d_3 + 1.05d_4$$

Where:

$$d_1 = \frac{\textit{Retained earnings}}{\textit{Total assets}}$$

$$d_2 = \frac{\textit{Retained earnings}}{\textit{Total assets}}$$

$$d_3 = \frac{\textit{Earning before interest}}{\textit{Total assets}}$$

$$d_4 = \frac{\textit{Book values equity}}{\textit{Total liabilities}}$$

Discrimination zones

$Z'' > 2.6$ “safe” zone

$1.1 < Z'' < 2.6$ “grey zone”

$Z'' < 1.1$ “distress” zone

4.2 Data analysis

The Z-score prediction results for the seven firms considered to be suffering from financial distress and another eight firms perceived to be financially healthy were derived using the following criteria. Results were assessed and presented into two groups consisting of financially distressed firms in group A and non-financially distressed firms

in group B. N was used to specifically represent the number of companies used as the sample. The financially distressed to non-financially distressed proportion was 0.42 to 0.53 respectively. Z_1 was used to represent Z-score results one year before financial distress while Z_2 represented Z-score two years before financial distress.

4.2.1 Analysis of financially distressed companies

The Altman's (2003) Z-score effectiveness in forecasting companies experiencing financial distress highly accurate as indicated in table 4.1. The Z-score accuracy rate derived from this results for one year prior financial distress set in was to be 86 per cent while that of two years prior financial distress stood at 71 per cent. The average prediction results over the two years was 79 per cent. This average accuracy prediction result is highly applicable and acceptable even though it is lower than the results proposed by Altman.

Table 4.1: Financially distressed companies

		Z-score	N.	Observed firms
Z_1	Class A	$Z \leq 2.6$	6	0.86
	Class B	$Z > 2.6$	1	0.14
	Total		7	1.0
Z_2	Class A	$Z \leq 2.6$	5	0.71
	Class B	$Z > 2.6$	2	0.29
	Total		7	1.0

Table 4.2: Classified results of the financially distressed companies over the years.

Sample	2015	2016	Classified
Kenya Airways	-2.13	-4.293	Correctly
East Africa Cables	0.6018	0.5121	Correctly
Trancentury	-2.398	-2.005	Correctly
Uchumi	-7.025	-2.974	Correctly
Mumias	-5.068	-3.553	Correctly
Eagadds	-5.068	12.13	Incorrectly
EastAfrican Portland Cement	7.021	2.235	Correctly

Kenya Airways (KQ) was established in 1977. In the fiscal year 1993 to 1994, the airline made profit for the first time till 2013 where the company made a loss of Ksh 7,864,000,000. The company had attracted many investors because it was considered as a blue chip company. The Altman's (2013) model predicted the extreme distress levels of KQ in the year 2015 and 2016.

4.2.2 Analysis of non-financial distressed companies

The Altman's (2003) Z-score prediction findings for non-distressed companies are outlined in table 4.3 while Z-score figures over the years are shown in table 4.4. The percentage for predicting a non-distressed firm was 88 per cent for one-year accounting period, 75 per cent for two years, 88 per cent for three years, 88 per cent for four years and 63 per cent for five years.

Table 4.3: Non- financially distressed companies prediction results

	Z-score	N.	Observed firms
Z ₁ Class 1	< 2.6	1	0.22
Class 2	> 2.6	7	0.88
Total		8	1.0
Z ₂ Class 1	< 2.6	2	0.25
Class 2	> 2.6	6	0.75
Total		8	1.0
Z ₃ Class 1	< 2.6	1	0.22
Class 2	> 2.6	7	0.88
Total		8	1.0
Z ₄ Class 1	< 2.6	1	0.22
Class 2	> 2.6	7	0.88
Total		8	1.0
Z ₅ Class 1	< 2.6	3	0.37
Class 2	> 2.6	5	0.63
Total		8	1.0

Table 4.3 indicates prediction results for financially healthy firms. The findings shows that the prediction for first year was accurate with a margin of 88 per cent. Correct prediction in the subsequent years was 75 per cent, 88 per cent, 88 per cent and 63 per cent respectively. The average accuracy rate of prediction for the five years was 80 per cent.

Table 4.4: Z-score results for non-financially distressed companies

Sample companies	2011	2012	2013	2014	2015	2016
Long Horn	9.852	2.374	8.470	9.363	4.846	7.148
Nation M.G.	8.102	8.674	9.120	9.122	7.855	8.150
TPS Serena	3.060	2.374	2.6810	2.380	2.085	2.490
Bamburi	7.787	6.651	6.670	6.301	6.935	8.027
Total Kenya	12.09	-11.01	2.361	3.331	2.601	4.408
Safaricom	3.500	3.196	4.109	6.092	6.419	7.439
Kakuzi	7.750	9.292	8.375	8.229	8.371	8.371
BOC	4.238	5.900	7.290	6.210	5.701	5.508

The above Z-score results for non-financially distressed companies indicate that six listed companies from the sample were correctly predicted two years before they started experiencing financial distress while two companies were incorrectly predicted two years before they started experiencing financial distress. Firms that were correctly predicted include: LongHorn Publishers Limited, Nation Media Group, Bamburi, Safaricom, Kakuzi and BOC Kenya. Companies that were incorrectly predicted include TPS Serena and Total Kenya.

Total Kenya limited financial statement indicates that the company is financially healthy over time. However, the Z-score results indicate a different scenario. The company had a Z-score of -11.01, 2.361, 2.601 in 2012, 2013 and 2015 respectively. This means over the years the company has been incorrectly regarded as a financially healthy based on profitability and solvency. The one year (2016) prior financial distress Z-score show a result of 4.408 which is way above 2.6 mark which indicate Total Company is healthy financially and has no signs of bankruptcy.

These fluctuating Z-score results should get management and stakeholders worried. The management must work round the clock to establish the factors behind this fluctuations, this would help avert onset of financial distress.

4.3 Comparison of financially distressed and non-financially distressed companies

Edwards Altman's Z-score model prediction results for firms that are distressed financially and those that are healthy financially shows that accuracy rate of these results were slightly lower than Edwards Altman's 95 per cent accuracy rate of classification as per the original sample used by Altman in 1968.

The above results shows forecasting effectiveness of Altman's (2003) Z-score model in identifying and classifying companies that are healthy financially and those that are financially distressed. This forecasting ability of the model validates the general applicability in all firms quoted at the Nairobi based bourse.

4.3.1 Predictive results one year prior to financial distress

Findings indicated in table 4.5 point out the prediction results using data compiled one year before companies are declared financially distressed and one year financial reports for non-financially distressed companies. The Z-score classification accuracy was 87 per cent out of sample of 15 firms. The ability of Z-score (2003) model in classifying firm's accurately is determined by summing up the correctly classified firms (6+7) and then divided by total sample firms (15).

Table 4.5 Predictive results one year prior to financial distress

Actual	Predicted		Total
	Financially distressed	Non-financially distressed	
Financial distressed	6	1	7
Non-financially distressed	1	7	8

Type I error was 7 percent and comprised of firms predicted as distressed financially but results indicated they were financially healthy. The type II error which occurs when firms that are considered to be healthy financially are forecasted as financially distressed. The type II error was found to be 7 per cent. These findings imply that firms might be incorrectly forecasted with financial difficulties while they are actually healthy financially.

4.3.2 Predictive result for two years before financial distress

Findings of the study shown in table 4.6 indicate the prediction results using data compiled two years before companies are declared financially distressed. The Z-score classification accuracy rate was 73 per cent two-year prior financial distress. Type I error combined with type II error was found to be 26 per cent.

Table 4.6: Predictive results for two years before financial distress

Actual	Predicted		Total
	Financially distressed	Non-financially distressed	
Financial distressed	5	2	7
Non-financially distressed	2	6	8

4.3.3 Z-score range predictive results

Analysis of the Z-score results for five years ranging from 2012 to 2016 is shown in table 4.7. The prediction accuracy rate obtained concurs with the Altman's Z-score model predictive results. Apart from the results for year one and two analyzed earlier, the prediction results obtained were 86 per cent for year three, 80 per cent for year four and 53 per cent for year five. These results are much better than the Altman's original result which stand at 48 per cent for year three, 29 per cent for year four and 36 per cent for year five (Altman, 1993). To conclude, although the Altman's (2003) Z-score model might be employed to forecast financial difficulties in the long range (three to five years), the model is effective and reliable for the first two years before onset financial distress, thus validating the predictive ability of the model.

Table 4.7: Z-Score long range predictive results

Year	N.	Hits			Misses			Percentage Correctly
		Financially distressed	Non-financially distressed	Total	Financially Distressed	Non distressed	Total	
1	15	6	7	13	1	1	2	86 per cent
2	15	5	6	11	2	2	4	73 per cent
3	15	6	7	13	1	1	2	86 per cent
4	15	5	7	12	2	1	3	80 per cent
5	15	3	5	8	4	3	7	53 per cent

4.4 Interpretation of Findings

This study shows financial ratios of listed companies at NSE applied in Altman's Z-score and proportion of these companies listed at NSE becoming financially distressed stood at 86 per cent (one year in advance). On the other hand, it was also established that proportion of quoted firms that could be predicted with financial distress had an accuracy of 71 per cent, two years prior the firms suffered from distress. This means that management of companies that are experiencing financial distress in 2018 could have predicted this occurrence correctly by applying financial ratios of accounting period ended in 2015 and 2016. These results concur with Altman's (2003) benchmark results that were able to predict 94 per cent occurrence of financial distress correctly one-year prior financial distress occurred and 72 per cent two-years before firms under the study suffered financial difficulties.

On the other hand, it was also possible to predict firms that would not be in financial distress. This could be achieved with an accuracy of 88 percent and 75 percent one and

two years in advance. This means that the management, investors among other stakeholders of companies such as Safaricom Limited Company, Nation Media Group Kakuzi Limited among others that are financially healthy in 2018 would have predicted this status correctly by applying financial ratios of accounting period ended in 2015 and 2016.

However, results also indicate that type I and type II error would be committed if classification of firms under the two groups is done without using Altman's Z-Model. These findings imply that firms might be incorrectly forecasted to be experiencing financial difficulties while actually they are healthy financially. The two errors increased from 7 percent to 13 percent one and two years before. A percentage of 13 per cent is risky because chances of declaring a firm non-financially distressed are high and maybe the firm is financially unhealthy. For example, the prediction results for one year prior to financial distress indicate that only TPS Serena was incorrectly predicted out of the sample of eight listed companies. TPSEAL financial statements indicate that the firm is still profitable and still has positive net current assets. In addition, the company has not shown signs of financial distress in the recent past. However in-depth analysis of the liquidity of the company employing the Altman's (2003) Z-score indicate that TPS Serena falls in grey zone $1.1 < Z < 2.6$ since 2012. These scores indicate that TPSEAL has very high chances of becoming bankrupt within the next two years. Board of Directors of TPSEAL should be worried by these figures and take control measures to avert this trend in time before the situation gets out of hand.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The aim of this section is to make a concrete summary of findings of the research study, conclusion remarks and main challenges of the study and also highlights some of the recommendations in areas where further research is paramount.

5.2 Summary

This research study aimed at establishing the effectiveness of Altman's (2003) Z-score in anticipating corporate financial distress of quoted firms at Nairobi bourse using a combination of ratios. Z-score results from this study indicate that out of the seven listed companies considered to be in financial distress, six were actually confirmed one year before they became financially unhealthy. This result represents an accuracy of 86 per cent. The Altman's model of financial distress classification accuracy ranges from 73 per cent, 86 per cent, 80 per cent and 53 per cent for second, third, fourth and fifth year respectively. The type I and II errors were 7 per cent for the one year before companies become financially distressed. However, the two errors increased to 13 per cent for the two years before companies were declared financially unhealthy.

As percentage of 7 per cent and 13 per cent of type I error in one year before distress and two years before distress is quite high and dangerous because most damage might be caused when listed firms become financially distressed. A lot of care must be taken to

ensure arithmetical accuracy of the ratios and Z-score results because mistakes committed could lead to a company being classified in the wrong group.

The Z-score results show that out of eight firms identified to be financially healthy in the first and second year prior distress, one and two companies were predicted to be financially distressed by Altman's (2003) Z-score.

5.3 Conclusions

The Altman's (2003) Z-score model as far as this study is concerned has a prediction accuracy of 86 per cent one year before financial distress occurs for all listed companies at NSE. This percentage decline to 73 per cent in the second year. This accuracy of prediction had 8 per cent and 13 per cent as type I error in the first and second year before companies become bankrupt. This prediction results shows that Altman's Z-score model (2003) is highly recommended for classifying listed companies at NSE correctly into two groups namely: group of listed firms suffering from financial distress and group listed that are healthy financially.

Findings from the study indicate that forecasting power of the Altman's (2003) Z-score model diminishes over the years. Results from this study indicate the accuracy of 86 per cent, 73 per cent, 86 per cent, 80 per cent and 53 per cent in a range of one to five years respectively. The prediction result obtained in one year and results obtained two years prior firms start experiencing financial difficulties support and validates the forecasting ability of Altman's (2003) Z- model.

Overall, forecasting results obtained in this study presents more evidence in addition to previous studies on the reliability and effectiveness of Altman's forecasting model in predicting financial distress and therefore investors together with other interested stakeholders can apply it in all firms quoted in the Nairobi bourse.

5.4 Recommendations

This study has shown a shift from what is expected of listed companies as much as financial stability is concerned. There is a belief among investors that listed firms must exhibit exemplary performance in regard to liquidity because CMA and NSE demands them to be ethical and prudent in their operations at all times. However, this has been the contrary and therefore NSE should make newer policies on listing requirements and make financial stability compulsory to potential and quoted firms.

The accuracy of the Z-Score model obtained from this research study is slightly improved compared to similar studies carried out by scholars. A study undertaken by Karamzadeh for Tehran listed companies (2013) using the Altman's model had an accuracy of 74.4 percent and 64.4 percent in the first and second year before failure respectively. Locally Odipo and Sitati(2010) found that the Altman's forecasting model had an accuracy of 80 per cent in terms of predicting failure correctly. I would therefore recommend all listed companies and stakeholders to use this model when forecasting financial distress of quoted firms they are interested in.

5.5 Limitations of the study

Secondary data was the only source of data that this research relied upon. The audited financial statement of listed companies, NSE Investor Handbook (2016-2017) and CMA online library were the actual document where data was mined. However, the reliability, accuracy and quality of the data obtained were not guaranteed and therefore comparison of the result was equally unreliable to some extent. This is because applied judgment to some extent when designing accounting policies despite of adhering to GAAP, IFRS and the Kenyan Companies Act. Furthermore, the accounting period varied from one company to another. In addition, there was variance in terms of data provided by the NSE investor handbook of 2015/2016 and 2016/2017.

This study limited itself to financial ratios as the only factor applicable to the Z-score in prediction of financial distress. These factors are quantitative in nature and therefore qualitative factors such as inflation, legislation, interest rates capping among others were not put into consideration in this research study.

This study only considered financial statement for five accounting periods ranging from 2012 to 2016. Retained profit was one of the components used to derive one financial ratio used in the Z-score. The accumulated retained profits vary from one firm to another and the amount depend on how long a firm has existed (age of a firm); retained profits for recently established firms is lower compared to mature companies. Lastly, this study does indicate control measures undertaken by management to reverse the impact of financial distress. Common measures normally taken include turnaround strategies that have actually worked for some companies as confirmed by studies carried by Natalia (2007) and (Mbogo and Waweru, 2014).

5.6 Suggestions for further research

My study aimed at confirming the position and effectiveness of Altman's (2003) model of forecasting financial distress among companies quoted at the prestigious Nairobi bourse. However, further studies could be extended to the non-listed companies which are mostly SMEs. These firms normally exhibit characteristics of financial challenges and are more likely to get into financial distress and failure than listed companies. Business failure of such firms is mostly attributed to inadequacy of capital which acts as a buffer to cushion firms against losses and excessive cash outflows. Failure is also attributed to excessive competition leading to lower revenues. Secondly, further research should be undertaken to establish the impact of the age of listing on financial distress situation of quoted companies. Age of listing become a determinant factor because of retained profits used in the ratios derived and applied in the Altman's (2003) Z- score model. Retained profits accumulate over the years and therefore mature firms are likely to have high levels of these funds.

REFERENCES

- Adeyemi, B. (2011). Bank Failure in Nigeria: *A Consequence of Capital Inadequacy, Lack of Transparency and Non-Performing Loans*. *Banks and Bank System*, 6(1), 99- 109
- Altman, E & Hotchkiss (2006). *Corporate Financial Distress and Bankruptcy: Predict and Avoid Bankruptcy, Analyze and Invest in Distressed Debt*. 3rd Edition, New Jersey: John Wiley & Sons.
- Altman, E (1968). *Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy*: *The Journal of Finance*, 22(4), 589-609.
- Altman, E. I. (1993). *Corporate Financial Distress and Bankruptcy. A complete guide to Predicting and Avoiding Distress and Profiting from Bankruptcy*. Second Edition. USA, John Riley and Sons Inc.
- Altman, E.I. (2006). *Corporate financial distress and bankruptcy: Predict and avoid bankruptcy, analyze and invest in distressed debt*. Hoboken, NJ: Wiley. *European Journal of Business and Management* www.iiste.org ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online) Vol.6, No.23, 2014 40
- Andrade, G & Kaplan, S (1998). How Costly is Financial (Not Economic) Distress? *'Evidence from Highly Leveraged Transactions that Became Distressed: The Journal of Finance*, 53(5), 1443-1493.
- Aziz, M. & Dar, H. (2006). Predicting Corporate Financial Distress: *Whither Do We Stand?* *Corporate governance*, 6(1), 18-33.
- Beaver, W. (1966). *Financial Ratios as Predictors of Failure*; *Empirical Research in Accounting, Selected Studies*, *Journal of Accounting Research*, (5): 71-111.

- Bwisa, A.A (2010). Evaluation of applicability of Altman's revised model in prediction of financial distress. Unpublished MBA project. University of Nairobi.
- Campbell, J., Hilscher, J., Szilagyi, J. (2006): In Search of Distress Risk. Working Paper 12362, NBER Series.
- DeAngelo, H & DeAngelo, L. (1990). *'Dividend Policy and Financial Distress: An Empirical Investigation of Troubled NYSE Firms*. The Journal of Finance, 45(5), 1415-1431.
- Espen, S. (1999). Assessment of Credit Risk in Norwegian Business Sector (Master's Thesis, The University of Bergen, Bergen, Norway)
- Fulmer, John G. Jr., Moon, James E., Gavin, Thomas A., Erwin, Michael J., "A *Bankruptcy Classification Model For Small Firms*". Journal of Commercial Bank Lending (July 1984): pp. 25-37.
- Garlappi, L., Shu, T., Yan, H. (2006): *Default Risk, Shareholder Advantage, and Stock Returns*. Working Paper, University of Texas at Austin.
- Gestel, T., Baesens, B, Suykens, J, & Willekens, M. (2006). *Bayesian Kernel Based Classification for Financial Distress Detection'*: European Journal of Operational Research, 172(3), 979-1003.
- Gordon, M.J. (1971). *Towards a Theory of Financial Distress*: The Journal of Finance, 26(2), 347-356.
- Hendel, I. (1996). *Competition under Financial Distress*: The Journal of Industrial Economics, 54(3), 309-324.
- Hillegeist, S.A., Keating, E.K., & Lundstedt, K.G. (2004). *Assessing the probability of Bankruptcy*: Review of Accounting Studies, 9(3) 5-34.

- Hotchkiss, E.S (1995). *Post-Bankruptcy Performance and Management Turnover*: Journal of Finance, 50: 3-21.
- Kamau, M (2007). Cash flow ratios as a predictor of corporate failure. Unpublished MBA project. University of Nairobi.
- Kiege, P.N (1991). Business failure prediction using discriminant analysis. Unpublished MBA project. University of Nairobi.
- Kiragu, M. (1993). The Prediction of Corporate Failure Using Price Adjusted Accounting Data. Unpublished thesis, University of Nairobi
- Kogi, S.K (2003). An analysis of discriminant corporate failure prediction model based on stability of financial ratios. Unpublished MBA project. University of Nairobi.
- Monti, E.N. & Moriano, G, R. (2010). *A Statistical Analysis to Predict Financial Distress*. Journal Service &Management, 45(2), 20-25.
- Moulton, W & Thomas, H 1993, 'Bankruptcy as a Deliberate Strategy: *Theoretical Considerations and Empirical Evidence*', Strategic Management Journal, 14(2), 125-135.
- Mugenda, O. & Mugenda, A. (2003). Research Methodology: Quantitative and Qualitative Approaches. Acts Press, Nairobi, Kenya.
- Nam, C.W., T.S. Kim, N.J. Park and H.K. Lee (2008). *Bankruptcy prediction using a Discrete- Time Duration Model Incorporating Temporal and Macroeconomic dependencies*”, Journal of Forecasting, 27(2), 493- 506.
- Natalia, O. (2007). Corporate Financial Distress: *An Empirical Analysis of Distress Risk* (Doctoral Dissertation No. 3430, University of St. Gallen, St. Gallen, Switzerland).

- Odipo, M.K. And Sitati, A. (2010) Evaluation of Applicability of Altman's Revised Model in Prediction of Financial Distress: A Case of Companies Quoted in the Nairobi Stock Exchange, Unpublished thesis, University of Nairobi.
- Ohlson, J. A. (1980). *Financial ratios and the probabilistic prediction of bankruptcy*: Journal of Accounting Research, 18, pp. 109-131.
- Outecheva, S. (2007). Corporate Financial Distress: *An Empirical Analysis of Distress Risks*, PhD Dissertation at the Graduate School of Business Administration, Economics, Law and Social Science, The University of St.Gallen. Switzerland.
- Pandey, I.M. (2005). Financial Management (10th Ed). New Delphi, India, Vikas Publishing
- Slotemaker, R. (2008). *Prediction of Corporate Bankruptcy of Private Firms in the Netherlands* (A Master's Thesis, Erasmus University, Rotterdam, Netherlands)
- Sudarsanam, S & Lai, J (2001). 'Corporate Financial Distress and Turnaround Strategies: *An Empirical Analysis*: British Journal of Management, 12, 183-199.
- Taliani, I. J. (2010). Predicting financial distress in commercial banks in Kenya. *Unpublished MBA project. University of Nairobi*. European Journal of Business and Management www.iiste.org ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online) Vol.6, No.23, 2014 41
- Tam, K.Y. and M.Y. Kiang (1992), „Managerial applications of neural networks: *The case of bank failure predictions*”, Management Science 38926 – 947.
- Theodossiou, P, Kahya, E, Saidi, R & Philippatos, G (1996). Financial distress and corporate acquisitions: *further empirical evidence*, Journal of Business Finance and Accounting, 23(2). 699–719.

- Turetsky, H & McEwen, R (2001). An Empirical investigation of Firm Longevity. *A Model of the Ex Ante Predictors of Financial Distress*. In: Review of Quantitative Finance and Accounting, 16, 323-343.
- Vassalou, M., Xing, Y. (2004): Default Risk in Equity Returns. In: The Journal of Finance, 59(2), 831-868.
- Warner, Jerold B., (1977). Bankruptcy costs: *Some evidence*. Journal of Finance 32, 337–347.
- Whitaker, R (1999). *The Early Stages of Financial Distress*: Journal of Economics and Finance. 23(2), 123-133.
- Wruck, K (1990). Financial Distress, Reorganization, and Organizational Efficiency: Journal of Financial Economics, 27, 419-444.
- Yim J. and H. Mitchell (2005). *A comparison of corporate distress prediction models in Brazil: hybrid neural networks, logit models and discriminant analysis*”, Nova Economia Belo Horizonte 15, 73-93
- Zmijewski, M. E. (1984). *Methodological issues related to the estimation of financial distress prediction models*: Journal of Accounting Research, 22(2), 59-86.

APPENDICES

APPENDIX 1: Safaricom Limited

FINANCIAL REVIEW FOR FINANCIAL YEAR ENDED 31ST MARCH ('000)

ASSETS EMPLOYED	2012	2013	2014	2015	2016
Non-current Assets	100,705,482.00	103,500,133.00	124,367,073.00	125,471,708.00	130,634,201.00
Current Assets	21,194,195.00	25,356,024.00	32,590,553.00	32,356,897.00	29,523,945.00
Current Liabilities	37,615,900.00	36,591,029.00	52,190,333.00	51,907,951.00	42,605,336.00
Net current Assets	(16,421,705.00)	(11,235,005.00)	(19,599,780.00)	(19,551,054.00)	(13,081,391.00)
Total Net Assets	84,283,777.00	92,265,128.00	104,767,293.00	105,920,654.00	117,552,810.00
FINANCED BY					
Share Capital	2,000,000.00	2,000,000.00	4,203,311.00	2,003,271.00	2,003,271.00
Share premium	1,850,000.00	1,850,000.00		2,200,040.00	2,200,040.00
Retained earnings	59,940,584.00	64,015,128.00	74,431,346.00	75,584,707.00	82,866,067.00
Proposed Dividends	8,800,000.00	12,400,000.00	25,641,874.00	25,641,874.00	30,483,432.00
Shareholders Funds	72,590,584.00	80,265,128.00	104,276,531.00	105,429,892.00	117,552,810.00
Minority interest	(508,886.00)	-	-	-	-
Non current liabilities*	12,202,079.00	12,000,000.00	490,762.00	490,762.00	-
Total Financing	84,283,777.00	92,265,128.00	104,767,293.00	105,920,654.00	117,552,810.00
SALES					
SALES	106,995,529.00	124,287,856.00	163,364,121.00	163,364,121.00	195,685,224.00
Profit Before Taxation	17,369,400.00	25,450,565.00	46,149,545.00	46,149,545.00	55,762,505.00
Taxation	(4,741,793.00)	(7,910,755.00)	(14,278,242.00)	14,278,242.00	(17,658,215.00)
Net Profit	12,627,607.00	17,539,810.00	31,871,303.00	60,427,787.00	38,104,290.00

APPENDIX 2: Mumias Sugar Company Limited

FINANCIAL REVIEW (Kshs. 000's)(Financial year end 30th June)

ASSETS EMPLOYED	2012	2013	2014	2015	2016
Non current assets	20,167,253.00	20,222,053.00	19,209,782.00	17,863,899.00	25,107,708.00
Current Assets	7,171,360.00	7,048,364.00	4,353,304.00	2,569,081.00	1,911,019.00
Current Liabilities	5,720,655.00	8,408,773.00	10,635,149.00	13,670,007.00	10,826,038.00
Net current assts	1,450,705.00	(1,360,409.00)	(6,281,845.00)	(11,100,926.00)	(8,915,019.00)
Total Net Assets	21,617,958.00	18,861,644.00	12,927,937.00	6,762,973.00	16,192,689.00
FINANCED BY					
Share Capital	3,060,000.00	3,060,000.00	3,060,000.00	3,060,000.00	3,060,000.00
Revaluation Surplus	3,350,000.00	3,173,432.00	3,071,442.00	1,955,580.00	7,093,105.00
Retained earnings	9,191,706.00	7,149,058.00	4,510,363.00	916,464.00	(2,459,322.00)
Dividends Proposed	-	-	-	-	-
Share holders funds	15,601,706.00	13,382,490.00	10,641,805.00	5,932,044.00	7,693,783.00
Non current liabilities	6,076,872.00	5,490,730.00	2,286,132.00	830,929.00	8,498,906.00
Total Financing	21,678,578.00	18,873,220.00	12,927,937.00	6,762,973.00	16,192,689.00
TURNOVER					
TURNOVER	15,542,686.00	11,957,823.00	13,075,912.00	5,531,357.00	6,285,917.00
Profit /(Loss) Before Taxation	1,764,029.00	(2,222,699.00)	(34,058,046.00)	(6,307,257.00)	(6,067,381.00)
Tax credit/(charge)	248,650.00	562,293.00	698,451.00	1,662,456.00	1,336,355.00
Profit /(Loss) for the year	2,012,679.00	(1,660,406.00)	(33,359,595.00)	(4,644,801.00)	(4,731,026.00)

APPENDIX 3: BOC Kenya Limited

FINANCIAL REVIEW (Kshs. 000's)(Financial year end 30th June)

ASSETS EMPLOYED	2012	2013	2014	2015	2016
Non current assets	20,167,253.00	20,222,053.00	19,209,782.00	17,863,899.00	25,107,708.00
Current Assets	7,171,360.00	7,048,364.00	4,353,304.00	2,569,081.00	1,911,019.00
Current Liabilities	5,720,655.00	8,408,773.00	10,635,149.00	13,670,007.00	10,826,038.00
Net current assts	1,450,705.00	(1,360,409.00)	(6,281,845.00)	(11,100,926.00)	(8,915,019.00)
Total Net Assets	21,617,958.00	18,861,644.00	12,927,937.00	6,762,973.00	16,192,689.00
FINANCED BY					
Share Capital	3,060,000.00	3,060,000.00	3,060,000.00	3,060,000.00	3,060,000.00
Revaluation Surplus	3,350,000.00	3,173,432.00	3,071,442.00	1,955,580.00	7,093,105.00
Retained earnings	9,191,706.00	7,149,058.00	4,510,363.00	916,464.00	(2,459,322.00)
Dividends Proposed	-	-	-	-	-
Share holders funds	15,601,706.00	13,382,490.00	10,641,805.00	5,932,044.00	7,693,783.00
Non current liabilities	6,076,872.00	5,490,730.00	2,286,132.00	830,929.00	8,498,906.00
Total Financing	21,678,578.00	18,873,220.00	12,927,937.00	6,762,973.00	16,192,689.00
TURNOVER					
TURNOVER	15,542,686.00	11,957,823.00	13,075,912.00	5,531,357.00	6,285,917.00
Profit /(Loss) Before Taxation	1,764,029.00	(2,222,699.00)	(34,058,046.00)	(6,307,257.00)	(6,067,381.00)
Tax credit/(charge)	248,650.00	562,293.00	698,451.00	1,662,456.00	1,336,355.00
Profit /(Loss) for the year	2,012,679.00	(1,660,406.00)	(33,359,595.00)	(4,644,801.00)	(4,731,026.00)

APPENDIX 4: Tran-Century Limited

FINANCIAL REVIEW (Kshs. '000) Year ending 31st December

ASSETS EMPLOYED	2012	2013	2014	2015	2016
Non-current assets	14,335,987.00	15,056,039.00	10,543,514.00	13,104,427.00	13,189,323.00
Current Assets	7,509,767.00	8,784,234.00	1,090,028.00	8,713,554.00	5,722,229.00
Current Liabilities	5,846,150.00	5,907,129.00	1,863,095.00	13,835,076.00	11,362,085.00
Net Current Assets	1,663,617.00	2,877,105.00	(773,067.00)	(5,121,522.00)	(5,639,856.00)
Total Net Assets	15,999,604.00	17,933,144.00	9,770,447.00	7,982,905.00	7,549,467.00
FINANCED BY					
Share Capital	136,975.00	136,975.00	140,142.00	140,142.00	140,713.00
Share premium	379,717.00	379,717.00	565,101.00	565,101.00	621,177.00
Other reserves	1,173,860.00	1,285,113.00	1,575,133.00	1,774,647.00	1,763,809.00
Revenue reserves	3,102,831.00	3,286,015.00	1,278,346.00	(1,015,597.00)	1,499,203.00
Proposed dividends	109,580.00	109,580.00	-	-	-
Shareholders fund	4,902,963.00	5,197,400.00	3,558,722.00	1,464,293.00	4,024,902.00
Non-current liabilities	7,165,632.00	4,714,756.00	847,907.00	4,437,135.00	3,719,601.00
Minority Interest	3,931,009.00	8,020,988.00	2,536,003.00	2,081,477.00	1,472,284.00
Total Financing	15,999,604.00	17,933,144.00	6,942,632.00	7,982,905.00	9,216,787.00
TURNOVER					
Profit/loss Before Taxation	1,226,473.00	858,590.00	(2,114,202.00)	(2,956,073.00)	(1,615,101.00)

APPENDIX 5: Total Kenya

FINANCIAL REVIEW (Kshs. '000') (Financial Year End 30 June)

ASSETS EMPLOYED	2012	2013	2014	2015	2016
Non current assets	9,632,145.00	9,946,901.00	10,301,663.00	10,766,844.00	10,805,922.00
Current Assets	23,348,459.00	30,037,264.00	22,240,137.00	23,433,827.00	25,355,086.00
Current Liabilities	17,933,163.00	23,488,077.00	14,924,210.00	15,380,662.00	15,409,648.00
Net current Assets	5,415,296.00	6,549,187.00	7,315,927.00	8,053,165.00	9,945,438.00
Total Net Assets	15,047,441.00	16,496,088.00	17,617,590.00	18,820,009.00	20,751,360.00
FINANCED BY					
Share Capital	9,974,771.00	9,974,771.00	9,974,771.00	9,974,771.00	9,974,771.00
Share Premium	1,967,520.00	1,967,520.00	1,967,520.00	1,967,520.00	1,967,520.00
Revaluation surplus	-	-	-	-	-
Retained earnings	2,250,385.00	3,436,769.00	4,483,132.00	5,657,455.00	7,406,999.00
Revenue reserves	-	-	-	-	-
Proposed Dividends	-	-	-	-	-
Shareholders Funds	14,192,676.00	15,379,060.00	34,025,169.00	36,949,036.00	19,349,290.00
Non current Liabilities	854,765.00	1,117,028.00	1,192,167.00	1,244,627.00	1,426,434.00
Total Financing	15,047,441.00	16,496,088.00	73,410,999.00	58,969,387.00	20,775,724.00
TURNOVER					
Profit Before Taxation	(64,301.00)	2,084,517.00	2,276,005.00	2,618,696.00	3,935,363.00

APPENDIX 6: East Africa Portland Cement

FINANCIAL REVIEW (Kshs. '000') (Financial Year End 30 June)

ASSETS EMPLOYED	2012	2013	2014	2015	2016
Non-Current Assets	11,520,764.00	12,531,640.00	12,393,196.00	19,955,246.00	25,727,272.00
Current Assets	2,456,031.00	3,602,063.00	3,324,061.00	3,157,336.00	2,114,848.00
Current Liabilities	2,399,178.00	3,319,478.00	3,512,289.00	3,765,371.00	4,962,120.00
Net Current Assets	56,853.00	282,585.00	(188,228.00)	(608,035.00)	(2,847,272.00)
Total Net Assets	11,577,617.00	12,814,225.00	12,204,968.00	19,347,211.00	22,880,000.00
FINANCED BY					
Share Capital	450,000.00	450,000.00	450,000.00	450,000.00	450,000.00
Share Premium	648,000.00	648,000.00	648,000.00	648,000.00	648,000.00
Reserves*	3,503,423.00	5,992,257.00	5,606,675.00	12,711,593.00	
Proposed Dividends					-
Shareholders fund	4,601,423.00	7,090,257.00	6,704,675.00	13,809,593.00	17,946,760.00
Non-Current Liabilities	6,976,194.00	5,723,968.00	5,500,293.00	5,537,618.00	4,933,240.00
Total Financing	11,577,617.00	12,814,225.00	12,204,968.00	19,347,211.00	22,880,000.00
TURNOVER					
Profit /Loss Before Taxation	(972,715.00)	1,775,383.00	(386,631.00)	7,157,070.00	4,145,755.00
Taxation(Credit)/(Charge)	60,199.00	355,905.00	(12,931.00)	(185,001.00)	411,003.00
Net Profit / Loss	(912,516.00)	2,131,288.00	(399,562.00)	6,972,069.00	4,556,758.00

APPENDIX 7: East Africa Cables

BALANCE SHEET (Kshs '000')PERIOD ENDS ON 31 DECEMBER

ASSETS EMPLOYED	2012	2013	2014	2015	2016
Non Current Assets	3,217,203.00	3,226,081.00	4,042,701.00	5,439,068.00	5,318,844.00
Current Assets	3,031,439.00	3,583,184.00	3,846,795.00	2,945,075.00	2,229,562.00
Current Liabilities	2,532,226.00	2,631,154.00	3,293,689.00	3,155,110.00	3,319,124.00
Net Current Assets	499,213.00	952,030.00	553,106.00	(210,035.00)	(1,089,562.00)
Total Net Assets	3,716,416.00	4,178,111.00	4,595,807.00	5,229,033.00	4,229,282.00
FINANCED BY					
Share Capital	126,563.00	126,563.00	126,563.00	126,563.00	126,563.00
Share Premium	545.00	545.00	545.00	545.00	545.00
Reserves*	2,195,607.00	2,285,329.00	2,288,497.00	2,332,057.00	1,871,844.00
Proposed dividends	-	-	-	-	-
Shareholders fund	2,322,715.00	2,412,437.00	2,415,605.00	2,459,165.00	1,998,952.00
Minority Interest	602,314.00	654,101.00	676,272.00	690,822.00	557,457.00
Non current Liabilities	791,387.00	1,111,573.00	1,503,930.00	2,079,046.00	1,672,873.00
Total Financing	3,716,416.00	4,178,111.00	4,595,807.00	5,229,033.00	4,229,282.00
TURNOVER					
Profit Before Taxation	753,243.00	585,400.00	507,483.00	(1,087,004.00)	(810,349.00)
Taxation	231,183.00	187,198.00	166,334.00	345,800.00	227,747.00
Net Loss/Profit	522,060.00	398,202.00	341,149.00	(741,204.00)	(582,602.00)

APPENDIX 8: Bamburi Cement Limited

BALANCE SHEET (Kshs '000')PERIOD ENDS ON 31 DECEMBER

ASSETS EMPLOYED	2012	2013	2014	2015	2016
Non- Current Assets	26,576,000.00	26,979,000.00	25,446,000.00	14,673,000.00	13,676,000.00
Current Assets	16,462,000.00	16,037,000.00	15,545,000.00	13,648,000.00	12,564,000.00
Current Liabilities	7,011,000.00	5,991,000.00	6,768,000.00	497,600.00	4,413,000.00
Net current Assets	9,451,000.00	10,046,000.00	8,777,000.00	13,150,400.00	8,151,000.00
Total Net Assets	36,027,000.00	37,025,000.00	34,223,000.00	27,823,400.00	21,827,000.00
FINANCED BY					
Share Capital	1,815,000.00	1,815,000.00	1,815,000.00	1,815,000.00	1,815,000.00
Retained earnings	18,875,000.00	18,874,000.00	18,874,000.00	1,169,100.00	11,000,000.00
Reserves*	(611,000.00)	8,241,000.00	7,693,000.00	7,214,000.00	6,990,000.00
Proposed dividend	-	-	6.00	7.00	6.00
Shareholders Funds	20,079,000.00	28,930,000.00	38,580,113.00	30,003,113.00	19,805,006.00
Minority Interests	2,475,000.00	2,580,000.00	2,391,000.00	2,391,000.00	2,391,000.00
Non Current Liabilities**	5,166,000.00	5,515,000.00	5,104,000.00	2,293,000.00	1,947,000.00
Total Financing	36,027,000.00	37,025,000.00	80,762,226.00	58,830,119.00	24,143,006.00
TURNOVER					
Profit Before Taxation	7,176,000.00	5,516,000.00	5,801,000.00	6,100,000.00	5,234,000.00
Taxation	2,294,000.00	1,843,000.00	1,898,000.00	1,751,000.00	1,455,000.00
Net Profit	4,882,000.00	3,673,000.00	3,903,000.00	4,349,000.00	3,779,000.00

APPENDIX 9: Uchumi Supermarket PLC

FINANCIAL REVIEW (Kshs '000') (Financial Year End 30 June)

ASSETS EMPLOYED	2012	2013	2014	2015	2016
Non-current Assets	3,347,742.00	3,848,218.00	4,634,417.00	4,635,709.00	3,338,177.00
Current Assets	1,594,146.00	1,725,315.00	2,250,436.00	1,777,287.00	1,664,039.00
Current Liabilities	2,203,769.00	2,448,121.00	3,350,169.00	5,179,947.00	6,432,172.00
Net current Assets	(609,623.00)	(722,806.00)	(1,099,733.00)	(3,402,660.00)	(4,768,133.00)
Total Net Assets	2,738,119.00	3,125,412.00	3,534,684.00	1,233,049.00	(1,429,956.00)
FINANCED BY					
Share Capital	1,327,133.00	1,327,133.00	1,327,133.00	1,824,808.00	1,824,808.00
Share Premium	-	-	-	-	-
Revaluation and Translation reserves	1,330,677.00	1,598,279.00	2,030,181.00	(1,085,453.00)	(3,922,185.00)
Retained earnings	-	-	-	-	-
Accumulated Losses	-	-	-	-	-
Proposed Dividends	-	-	-	-	-
Shareholders Funds	2,657,810.00	2,925,412.00	3,357,314.00	739,355.00	(2,097,377.00)
Non current liabilities	80,309.00	200,000.00	177,370.00	493,694.00	667,421.00
Total Financing	2,738,119.00	3,125,412.00	3,534,684.00	1,233,049.00	(1,429,956.00)
TURNOVER					
TURNOVER	13,802,191.00	14,270,598.00	14,457,687.00	12,888,974.00	6,402,937.00
Profit /Loss Before Taxation	403,343.00	485,902.00	452,749.00	(3,513,064.00)	(2,671,497.00)
Tax credit/(charge)	(129,366.00)	(128,892.00)	(68,461.00)	91,704.00	(165,235.00)
Profit After Taxation	273,977.00	357,010.00	384,288.00	(3,421,360.00)	(2,836,732.00)

APPENDIX 10: TPS Eastern Africa Limited

FINANCIAL REVIEW (Kshs '000) (Financial Year End 31st December)

ASSETS EMPLOYED	2012	2013	2014	2015	2016
Non Current Assets	11,413,799.00	13,865,058.00	13,711,998.00	13,491,212.00	13,620,435.00
Current Assets	1,943,895.00	2,271,039.00	2,227,179.00	2,324,588.00	3,362,680.00
Current Liabilities	2,173,754.00	2,618,112.00	2,770,758.00	2,234,326.00	2,050,420.00
Net current Assets	(229,859.00)	(347,073.00)	(543,579.00)	90,262.00	1,312,260.00
Total Net Assets	11,183,940.00	13,517,985.00	13,168,419.00	13,581,474.00	14,932,695.00
FINANCED BY					
Share Capital	148,211.00	182,174.00	182,174,108.00	182,174,108.00	182,174,108.00
Share premium & reserves*	5,150,300.00	6,573,489.00	6,372,503.00	4,392,668.00	4,392,668.00
Retained earnings	2,379,290.00	2,575,064.00	2,603,955.00	2,309,434.00	2,603,955.00
Proposed dividends	192,674.00	245,935.00	245,935.00	45,543,527.00	245,935.00
Shareholders Funds	7,870,475.00	9,576,662.00	191,396,501.00	234,419,737.00	189,416,666.00
Minority interest	56,760.00	979,413.00	1,007,922.00		1,007,922.00
Non current Liabilities	3,256,705.00	2,961,910.00	2,755,930.00	3,896,123.00	5,367,074.00
Total Financing	11,183,940.00	13,517,985.00	195,160,353.00	238,315,860.00	195,791,662.00
SALES					
Profit Before Taxation	721,516.00	755,717.00	220,101.00	(210,976.00)	325,301.00
Taxation credit/(expense)	(227,928.00)	(304,706.00)	(54,318.00)	(69,637.00)	(195,973.00)
Profit/(Loss) After Taxation	493,588.00	451,011.00	165,783.00	(280,613.00)	129,328.00

APPENDIX 11: Nation Media Group Limited

FINANCIAL REVIEW (Kshs '000) (Financial Year End 31st December)

ASSETS EMPLOYED	2012	2013	2014	2015	2016
Non-current Assets	3,429,200.00	3,877,900.00	4,569,300.00	5,171,800.00	5,010,800.00
Current Assets	7,248,200.00	7,566,300.00	7,375,000.00	7,524,900.00	7,163,300.00
Current Liabilities	3,216,700.00	3,116,400.00	3,118,300.00	3,591,100.00	3,456,000.00
Net current Assets	4,031,500.00	4,449,900.00	4,256,700.00	3,933,800.00	3,707,300.00
Total Net Assets	7,460,700.00	8,327,800.00	8,826,000.00	9,105,600.00	8,718,100.00
FINANCED BY					
Share Capital	392,800.00	471,400.00	471,400.00	471,400.00	471,400.00
Reserves	116,800.00	119,200.00	63,300.00	(56,400.00)	89,100.00
Retained earnings	5,563,100.00	6,176,900.00	6,765,400.00	7,076,200.00	6,859,500.00
Proposed Dividends	1,178,400.00	1,414,100.00	1,414,100.00	1,414,100.00	1,414,100.00
Shareholders Funds	7,251,100.00	8,181,600.00	8,714,200.00	8,905,300.00	8,834,100.00
Minority interests	72,400.00	61,800.00	53,900.00	48,400.00	47,000.00
Non current liabilities	137,200.00	84,400.00	57,900.00	151,900.00	1,520.00
Total Financing	7,460,700.00	8,327,800.00	8,826,000.00	9,105,600.00	8,882,620.00
SALES					
Profit Before Taxation	3,504,600.00	3,587,100.00	3,624,000.00	2,823,200.00	3,021,900.00
Taxation	(994,300.00)	(1,053,900.00)	(1,163,500.00)	(600,500.00)	(771,100.00)
Profit/Loss After Taxation	2,510,300.00	2,533,200.00	2,460,500.00	2,222,700.00	2,250,800.00

APPENDIX 12: LongHorn Publishers

FINANCIAL REVIEW (Kshs '000) (Financial Year End 31st December)

ASSETS EMPLOYED	2011	2012	2013	2014	2015	2016
Non-Current Assets	182,719.00	217,631.00	200,695.00	198,711.00	225,844.00	354,026.00
Current Assets	526,934.00	444,044.00	484,324.00	548,820.00	463,476.00	1,512,918.00
Current Liabilities	298,248.00	397,090.00	299,153.00	313,211.00	308,942.00	919,377.00
Net current Assets	228,686.00	46,954.00	185,171.00	235,609.00	154,534.00	593,541.00
Total Net Assets	411,405.00	264,585.00	385,866.00	434,320.00	380,378.00	947,567.00
FINANCED BY						
Share Capital	58,500.00	58,500.00	58,500.00	58,500.00	146,250.00	272,440.00
Share premium	5,039.00	5,039.00	5,039.00	5,039.00	5,039.00	368,289.00
Translation deficit	(7,948.00)	(34,953.00)	(7,590.00)	(7,269.00)	(15,838.00)	(19,193.00)
Retained earnings	346,214.00	235,999.00	329,917.00	378,050.00	245,026.00	326,031.00
Shareholders' Funds	401,805.00	264,585.00	385,866.00	434,320.00	380,477.00	947,567.00
Non-Current Liabilities	9,600.00	-	-	-	-	-
Total Financing	411,405.00	264,585.00	385,866.00	434,320.00	380,477.00	947,567.00
TURNOVER						
Profit/Loss Before Taxation	213,075.00	(25,949.00)	151,327.00	147,226.00	119,285.00	171,407.00
Taxation	(85,329.00)	3,484.00	(57,409.00)	(52,293.00)	(28,694.00)	(39,502.00)
Loss/Profit for the year	127,746.00	(22,465.00)	93,918.00	94,933.00	90,591.00	131,905.00

APPENDIX 13: Kenya Airways Limited

FINANCIAL REVIEW (Kshs'000) (Financial Year End 31 March)

ASSETS EMPLOYED	2012	2013	2014	2015	2016	2017
Non Current assets	55,599,000.00	94,088,000.00	119,021,000.00	141,011,000.00	128,705,000.00	119,397,000.00
Current assets	21,833,000.00	28,608,000.00	29,636,000.00	41,052,000.00	29,710,000.00	26,747,000.00
Current liabilities	23,756,000.00	50,841,000.00	63,756,000.00	80,640,000.00	73,476,000.00	71,301,000.00
Net current assets	(1,923,000.00)	(22,233,000.00)	(34,120,000.00)	(39,588,000.00)	(43,766,000.00)	(44,554,000.00)
Total net assets	53,676,000.00	71,855,000.00	84,901,000.00	101,423,000.00	84,939,000.00	74,843,000.00
FINANCED BY						
Share capital	2,308,000.00	7,482,000.00	7,482,000.00	7,482,000.00	7,482,000.00	7,482,000.00
Share premium	-	8,670,000.00	8,670,000.00	8,670,000.00	8,670,000.00	8,670,000.00
Reserve**	20,280,000.00	11,446,000.00	8,477,000.00	(25,718,000.00)	(57,367,000.00)	
Revaluation reserve		3,557,000.00	3,557,000.00	3,557,000.00	5,497,000.00	
Proposed dividends	373,908.542	-	-	-	-	-
Shareholders funds	22,962,000.00	31,155,000.00	28,186,000.00	(6,009,000.00)	(35,718,000.00)	16,152,000.00
Non-current liabilities	30,653,000.00	40,646,000.00	56,672,000.00	107,386,000.00	120,606,000.00	119,758,000.00
Minority interest	61,000.00	54,000.00	43,000.00	46,000.00	51,000.00	49,000.00
Total Financing	53,676,000.00	71,855,000.00	84,901,000.00	101,423,000.00	84,939,000.00	135,959,000.00
TURNOVER						
Profit /loss before taxation	2,146,000.00	(10,826,000.00)	(4,861,000.00)	(29,712,000.00)	(26,099,000.00)	9,988,000.00 ^Δ
Taxation	(486,000.00)	2,962,000.00	1,479,000.00	3,969,000.00	(126,000.00)	84,000.00 ^G
Profit /loss after tax	1,660,000.00	(7,864,000.00)	(3,382,000.00)	(25,743,000.00)	(26,225,000.00)	10,072,000.00

APPENDIX 14: Kakuzi Limited

FINANCIAL REVIEW (Kshs '000) (December 31 st)

ASSETS EMPLOYED	2012	2013	2014	2015	2016
Non Current assets	2,334,227.00	2,546,888.00	2,589,132.00	2,817,369.00	3,015,067.00
Current Assets	1,237,473.00	1,170,655.00	1,268,322.00	1,640,706.00	2,049,347.00
Current Liabilities	146,023.00	147,181.00	177,421.00	369,210.00	416,738.00
Net Current Assets	1,091,450.00	1,023,474.00	1,090,901.00	1,271,496.00	1,632,609.00
Total Net Assets	3,425,677.00	3,570,362.00	3,680,033.00	4,088,865.00	4,647,676.00
FINANCED BY					
Share Capital	98,000.00	98,000.00	98,000.00	98,000.00	98,000.00
Reserves	(1,289.00)	9,986.00	3,981.00	8,936.00	14,872.00
Proposed dividends	73,500.00	73,500.00	73,500.00	98,000.00	117,600.00
Retained earnings	2,631,014.00	2,722,542.00	2,809,247.00	3,170,961.00	3,615,786.00
Shareholders' Funds	2,801,225.00	2,904,028.00	2,984,728.00	3,375,897.00	3,846,258.00
Minority Interest	-	-	-	-	-
Non current Liabilities	624,452.00	666,334.00	695,305.00	712,968.00	801,418.00
Total Financing	3,425,677.00	3,570,362.00	3,680,033.00	4,088,865.00	4,647,676.00
SALES					
Profit/ loss before taxation	567,806.00	239,306.00	232,799.00	667,341.00	757,779.00
Taxation	(159,150.00)	(74,278.00)	(72,594.00)	(207,627.00)	(195,354.00)
Non controlling interest	(29,299.00)				
Profit/Loss after taxation	379,357.00	165,028.00	160,205.00	459,714.00	562,425.00

APPENDIX 15: Eaagads Limited

FINANCIAL REVIEW (Kshs '000) (Year End 31 March)

ASSETS EMPLOYED	2012	2013	2014	Restated **2015	2016	2017
Non current assets	488,369.00	452,319.00	412,792.00	599,702.00	644,781.00	775,263.00
Current Assets	84,987.00	47,242.00	33,001.00	132,846.00	116,384.00	147,539.00
Current Liabilities	4,530.00	35,475.00	37,938.00	48,723.00	20,317.00	11,500.00
Net Current Assets	80,457.00	11,767.00	-4,937.00	84,123.00	96,067.00	136,039.00
Total Net Assets	568,826.00	464,086.00	407,855.00	683,825.00	740,848.00	911,302.00
FINANCED BY						
Share Capital	20,098.00	40,196.00	40,196.00	40,196.00	40,196.00	40,196.00
Reserves *	180,965.00	82,546.00	41,854.00	171,417.00	173,736.00	201,736.00
Revaluation surplus	280,386.00	279,394.00	278,402.00	442,995.00	478,004.00	608,654.00
Proposed dividends			-	-	-	-
Shareholders' Funds	481,449.00	402,136.00	360,452.00	654,608.00	691,936.00	850,586.00
Non current Liabilities	87,377.00	61,950.00	47,403.00	29,217.00	48,912.00	60,716.00
Total Financing	568,826.00	464,086.00	407,855.00	683,825.00	740,848.00	911,302.00
TURNOVER						
Profit/(Loss) before taxation	36,178.00	-83,223.00	-58,676.00	-9,305.00	9,691.00	32,212.00
Taxation (credit/charge)	-14,373.00	24,008.00	16,992.00	30,460.00	-9,214.00	-14,105.00
Net Profit	21,805.00	-59,215.00	-41,684.00	21,155.00	477.00	18,107.00