

**DETERMINANTS OF FINANCIAL SOUNDNESS AMONG NON-FINANCIAL
COMPANIES LISTED IN NAIROBI SECURITIES EXCHANGE, KENYA**

ROBERT GITAU MUIGAI (Corresponding Author),

PhD Candidate,

Jomo Kenyatta University of Agriculture and Technology, Kenya

E-Mail address: gitauwamuigai@yahoo.com

Co-authors

Dr. STELLA MUHANJI,

Senior Lecturer,

Kabarak University, Kenya

Dr. TABITHA NASIEKU,

Lecturer,

Jomo Kenyatta University

of Agriculture and Technology, Kenya

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Abstract

Since independence, Kenya has witnessed many cases of corporate failure among listed companies. In addition, instances of operational but financially struggling corporations have been numerous. This has not only resulted to erosion of confidence in the capital market but has also led to loss of investors' wealth. Although subsequent investigative reports conducted by government agencies have attributed this phenomenon to a myriad of factors, the public and analysts alike have criticized the explanations as escapist, politically self-serving and not founded on scholarly underpinning. This study therefore investigated the determinants of financial soundness among non-financial companies listed in the Nairobi Securities Exchange (NSE), Kenya. The study employed quantitative research design. A census of the 40 non-financial companies listed in the Nairobi Securities Exchange, Kenya as at 31st December 2013 was taken. The study used secondary panel data that was extracted from the published annual reports and financial statements of listed non-financial companies for the 10 years period from 2004 to 2013. The study estimated the specified the panel regression model for random effects. Feasible Generalized Least Square regression results revealed that financial leverage, sales growth, liquidity, profitability as well as retained reserves were significant determinants of financial soundness among the listed non-financial firms. However, firm size was not a critical factor in assessing financial soundness of these firms. The study therefore recommended that managers of listed non-financial companies should maintain close tabs on the significant determinants of financial soundness of their firms. In addition, government and regulators should support non-financial firms to ensure continued profitability.

Key words: *Corporate failure, Determinants, financial soundness Non-financial Companies*

1.0 Introduction

Corporate financial soundness has been defined as the state of the firm being out of risk of failure (Damijan, 2014). According to Hillegeist, Keating, Cram, and Lundstedt (2004), financial failure may arise from lack of liquidity, capital inadequacy, poor management or volatile profitability. The implication of this definition is that that financially sound firms are generally solvent and able to meet its financial obligations as they fall due. Sundararajan et al. (2002) Stated that financial soundness provides information on the overall financial health of a firm and is a good indicator of firm quality. In contrast to corporate financial performance which considers specific aspects of the firm's operation such as year-on-year profitability, analysis of financial soundness takes a holistic and comprehensive approach in assessing the viability of the firm (Moorhouse, 2004).

Managers, stockholders, lenders and employees are concerned about their firm's financial soundness. To the managers, their job security as well as personal reputation are in jeopardy should the firm fail. To employees, their basic livelihood is threatened when the firm struggles financially. In addition, when the firm cannot meet financial obligations, both the shareholders'

equity position as well as the creditors' claims are not guaranteed. The government also is interested in the stability of the firms as failure impacts negatively on the entire economic development agenda. This comes in terms of dwindling tax earnings and erosion of investors' confidence (Ming, 2000). This shared interest among the stakeholders creates incessant need to answer the question concerning the causes and indicators of firm failure (Brennan & Schwartz, 1984)

In the international frontier, the world has over the past decades witnessed failure of globally reputed firms. These corporations that include General Motors, Swissair, The CIT Group, Conesco, Pacific Gas & Electric Ltd, Delta Air lines, Parmalat, Enron and WorldCom had been regarded as icons of financial stability prior to filing for bankruptcy. Their collapse therefore came with tremendous surprise to analysts and industry practitioners. This undesirable phenomenon has motivated finance scholars to undertake research aimed at unravelling the causes of poor corporate performance and subsequent bankruptcies.

Within the Kenyan context, there has been many cases of corporate bankruptcy among listed companies since independence. This is evidenced by firms being put under receivership, undertaking financial restructuring or even being delisted from the NSE. Although majority of such cases have been registered from the banking sector; mainly as a result of the banking crises, collapse of non-financial companies such as: Uchumi Super Markets, KCC, KPCU, East African Packaging, Dunlop Kenya, Regent Undervalued Assets Ltd, Lonhro EA Ltd, Theta Group etc. (CMA statistical bulletins, 2003 – 2009) has also been prevalent over the past five decades (Kalani & Waweru, 2007). This situation has led to loss of investors' wealth and confidence in the stock market. It is also noteworthy that studies in this area have provided mixed results on the manner in which different factors influence financial soundness of the firms. It is against this background that this study was carried out.

1.1 Statement of the Problem

The government and the private sector have invested heavily in creating an enabling environment for doing business in Kenya. While some companies have indeed performed exceedingly well as a result, several companies, however, experience declining levels of financial soundness and some have even been delisted from the NSE over the past decade. Momentous efforts aimed at reviving the ailing firms have often not borne fruits resulting to liquidation of these firms. Subsequent investigative reports by government agencies have offered diverse reasons for this phenomenon. These reasons that include mismanagement, capital inadequacy and severe competition have however been criticized as escapist, politically self-serving and not founded on scholarly underpinning (Mwega, 2011). The available academic research has however offered mixed results on how different factors influences corporate financial soundness. It is against this background that this study sought to examine individual factors that determine corporate financial soundness among non-financial firms listed in the NSE.

1.2 Research Objectives

The overall objective of the study was to establish the determinants of financial soundness among non-financial firms listed in NSE. The study was guided by the following specific objectives:

- i. To establish how financial leverage influences the financial soundness of non-financial firms listed in NSE.
- ii. To find out the effect of firm size on the financial soundness of non-financial firms listed in NSE.
- iii. To determine the effect of sales growth on the financial soundness of non-financial firms listed in NSE.
- iv. To establish the effect of profitability on the financial soundness of non-financial firms listed in NSE.
- v. To determine the manner in which liquidity affects the financial soundness of non-financial firms listed in NSE.
- vi. To establish the manner in which reserves levels influences financial soundness of non-financial firms listed in NSE

1.3 Research Hypotheses

Based on the identified objectives, the study tested the following hypotheses:

- i. H_01 : Financial leverage does not significantly contribute to financial soundness of non-financial firms listed in NSE
- ii. H_02 : Assets Firm size is not a significant determinant of financial soundness of non-financial firms listed in NSE
- iii. H_03 : Sales growth does not significantly affect financial soundness of non-financial firms listed in NSE
- iv. H_04 : Profitability level does not significantly influence financial soundness of non-financial firms listed in NSE
- v. H_05 : Liquidity level is not a significant determinant of financial soundness of non-financial firms listed in NSE
- vi. H_04 : Reserves level does not significantly affect the financial soundness of non-financial firms listed in NSE

2.0 Literature review

Financial distress is a condition where the firm is unable to meet financial obligations as they fall due (FitzPatrick, 1931). The implication is that the financial resources available to the firm are insufficient to cover the accruing liabilities resulting to the creditor's promises being broken or honored with difficulty. Edward I Altman (2000) posited that a firm in financial distress naturally falls in a tight liquidity situation which impairs its ability to meet debt obligations on

the due date. He observed that if prolonged, this situation can drive the concerned entity into bankruptcy or liquidation.

2.1 The Distress Lifecycle Theory

The theory propounded by (Hambrick & D'Aveni, 1988) determines financial distress as a phenomenon consisting of subsequent stages each of which contributes adversely to the corporate failure process. The theorists proposed that the financial distress process is marked by the following four phases that have varying time intervals: Performance decline, Economic failure, Technical insolvency, and Default.

Performance decline stage is characterized by significant profitability breaches, gradual drop in sales turnover, fluctuations in operating profits, a decline in products quality, delayed deliveries (hence customer complaints), negative stock returns as well as below industry performance. In this stage the company exhibits significant operational inefficiencies and misses most of the operational goals and related profit margins. Theorists argued that although management may attempt to take corrective measures, the reactive nature of these measures does not compensate for the negative effects accumulated in operating activity and financial distress. The outcome of continued deterioration in the company's performance leads to economic failure. Within the context of financial distress cycle, economic failure signifies a situation where revenues are insufficient to cover operational costs; leading to liquidity squeeze. In addition, the cost of capital exceeds the average industry return on investment (ROI). Generally, this stage is associated with substantial fall in revenues, erosion of stakeholders' trust, loss of intellectual capital (key employees) as well as entry of competitors. Researchers have therefore argued that unlike the previous stage, economic failure is more severe and can lead to irreparable damage. If the downward spiral is not broken, the firm rapidly progresses into the insolvency stage. This stage is marked by significant liquidity shortages leading to breaches in supplier payment terms, non-remittance of pension dues as well as reduction or suspension of dividends (for dividend paying firms). These drastic actions are aimed at limiting cash outflows. Although this may have a temporary positive effect in form of cash injection, it however sends a negative signal to the capital markets and further compromises chances of obtaining credit facilities. Failure to solve the liquidity problem leads to instances of debt overhang which diminishes the net worth of the firm's assets (negative net-worth). The final stage (default) crystallizes when the company cannot meet the financial obligations as they fall due. This results to violation of the debt agreement conditions; which can lead to legal action. According to Gilson et al. (1990), while a company can be insolvent for a long time, it only enters default stage upon maturity of the debt. He opined that the significance of this stage is that it resolves the information asymmetry associated with the true severity of financial distress.

2.2 Empirical Literature

This section reviews the finding by other scholars concerning the factors that determine corporate financial soundness. The variables of interest include: financial leverage, firm size, sales growth, profitability, liquidity and the level of reserves accumulated by the firm to finance its assets. These variables were selected on the strength of findings by previous authors who have recommended financial ratios as effective determinants of corporate financial viability. Specifically Robertson and Mills (1988) examined the indicators of corporate health using liquidity, leverage, activity and profitability ratios to assess a company's performance and its future vision of triumph. Gibson (1982) also opined that financial ratios when used and interpreted properly can be effective in assessing the liquidity, profitability and debt position of a company. Gardiner (1995) confirmed that financial ratio analysis are the versatile tools for predicting financial distress.

Studies on financial distress prediction have identified several factors that are significant indicators of corporate financial soundness. In his pioneering study on financial distress prediction that constituted 79 failed and 79 non-failed firms in the US over the period 1954 – 1964, (Beaver, 1966) identified cash flow to total debt (liquidity) net income to total assets (profitability), and total debt to total assets (financial leverage) as the three financial ratios which provided the most powerful prediction of corporate failure. He further showed that failed firms exhibited depressed ratios than non-distressed firms up to five years prior to bankruptcy. Further, Edward I Altman (1968) sampled 33 bankrupt and 33 non-bankrupt firms in the US's manufacturing industry during the period 1946–1965. He selected 22 financial ratios used to analyze firms within 5 years prior to default and derived the famous Z-score model of financial distress prediction. The model that adopted linear MDA approach to financial distress prediction identified: Net working capital-to-total assets (liquidity), EBIT-to-total assets (profitability), Retained earnings-to-total assets (Reserves level) as well as Market value of equity-to-total liability (financial leverage) as key indicators of financial distress. The author argued that distressed firms were characterized by declining ratios over the two years prior to default. In his re-estimated model for the emerging markets (Z-score model for the emerging markets), (E.I. Altman, 1993) retained similar ratios in the model but replaced equity market value with equity book value. He however dropped sales turnover-to-total assets ratio from the equation as it was not significant. By analyzing 105 bankrupt and 2058 non-bankrupt US firms during the period 1970–1976, Ohlson (1980) applied logistic regression estimation technique to derive a model that comprised of nine explanatory variables. The variables; which were broadly categorized into firm size, leverage, liquidity, profitability and growth provided the most powerful predictors of financial distress in the analyzed firms. Similar to the discriminant analysis, this technique weighted the identified variables in deriving the O-Score that estimated the probabilities of default for each firm in the sample. In a similar style, Center (2007) developed the Z-score model meant for predicting financial distress among the Chinese manufacturing firms. The model that was similar to the Altman's model came up with four financial ratios that were identified as

significant in predicting financial distress for up to three years. The ratios included: Total liabilities-to-total assets (leverage), Working capital-to-total assets (liquidity), Net profit-to-average assets (profitability) and retained earnings-to-total assets (age). On their part, Charitou, Neophytou, and Charalambous (2004) examined the incremental information content of operating cash flows in predicting financial distress and accordingly built a consistent failure prediction models for UK public industrial firms using Neural networks and logit methodology of fifty-one matched pairs of failed and non-failed UK public industrial firms over the period 1988–97. The empirical results signified that an economical model that includes three financial variables of cash flow, profitability and financial leverage variable that capitulated an overall correct classification accuracy of 83% one year prior to the failure. Studies carried out by Khunthong (1997) also found profitability, liquidity, leverage and activity ratios as significant predictors of firm failure among the Thailand corporations. However, in a study aimed at predicting corporate financial distress in Malaysia, Low, Fauzias, and Yatim (2001) found a negative and significant relationship between liquidity, profitability and sales turnover ratios with financial distress. The author opined that these indicators are based on accounting (book) figures; which may not be reflected by the situation on the ground.

Both Jermias (2008) and Abor (2005) found that larger firms naturally enjoy economies of scale in their operations and are generally more profitable than smaller firms. Effectively, they have a lower probability of experiencing financial distress; which implies a positive relationship between firm's size and Z-score index of financial distress. On the other hand, Niresh and Thirunavukkarasu (2014) conducted a study that sought to determine how firm size affected financial strength of Sri-lankan manufacturing firms. The study found that firm size did not have any significant effect on the firms' financial strength. However, finance scholars such as (Dittmar, 2004; Gonenc, 2005) have argued that due to increased debt capacity, large firms may have a tendency to issue more debt and hence suffer from the effects of overleveraging leading to financial distress. On their part, Maina and Ishmail (2014) found a negative and significant relationship between firm size and firm value. The authors opined that large firms are susceptible to managerial inefficiencies that results to poor performance. This finding was similar to that by (Khan, 2012).

Concerning the relationship between sales growth and financial soundness of firms, Babalola (2013) suggested that enterprises with higher growth opportunities generally perform better than those with lower sales growth. In addition, studies by (Abor, 2005; Kodongo, Mokoaleli-Mokoteli, & Maina, 2014; Maina & Ishmail, 2014) found that enterprises with higher sales growth rate are characterized with higher market value. This points to a positive relationship between sales growth variable and financial soundness. However, studies by (Cuong, 2014; Gupta, Srivastava, & Sharma, 2014; Hoque, Hossain, & Hossain, 2014; Velnampy & Nimalathasan, 2010) showed that sales growth variable is negatively related to financial performance of the firm. The authors attributed the negative association to the fact that higher sales growth normally require huge capital to finance turnover.

Within the Kenyan context, Kiragu (1991) carried out a study on the prediction of corporate failure using price adjusted accounting data. He used a sample consisting of 10 failed firms and 10 non failed firms. Financial ratios were calculated from price level adjusted financial statistics. Discriminant model developed showed that times interest coverage, fixed charge coverage, quick ratio, current ratio, equity to total assets, working capital to total debt, return on investments to total assets, change in monetary liabilities, total debt to total assets ratios had high corporate failure predictive ability. Among the 9 ratios, liquidity and debt service ratios were found to be the most critical. The results were consistent with the finance theory relating to the firm's financial and liquidity risk that advocate for the firm to maintain sufficient liquidity and optimal debt levels in order to avoid insolvency problems.

Sitati and Odipo (2011) performed a study aimed at assessing the applicability of the Altman's model of perfecting financial distress among the firms listed in NSE during period 1989 to 2008. The author concluded that the model had up to 80% accuracy in predicting corporate failure in Kenya. The finding of the study was partly collaborated by (Baimwera and Muriuki (2014)) whose study that sought to establish the determinants of financial distress among non-financial firms listed in NSE during the three years period 2007 - 2010 found profitability and retained earnings levels to be significant determinants of financial distress. The study however found leverage and liquidity as insignificant determinants of financial distress. The finding of the study agreed with that by Kimura (1980) who concluded that liquidity ratios were not of significant in bankruptcy prediction but efficiency and profitability ratios were important predictors.

Keige (1991) did a study on effectiveness of financial ratios in predicting business failure in Kenya. By using discriminate analysis, he concluded that financial ratios are effective predictors of company failure. Specifically, he pointed out the current ratio, interest coverage ratio, return on earning to total assets, and return on net worth as the best predictors of firm distress in Kenya He therefore recommended that stakeholders should pay attention to liquidity, leverage and activity ratios.

2.3 Conceptual Framework

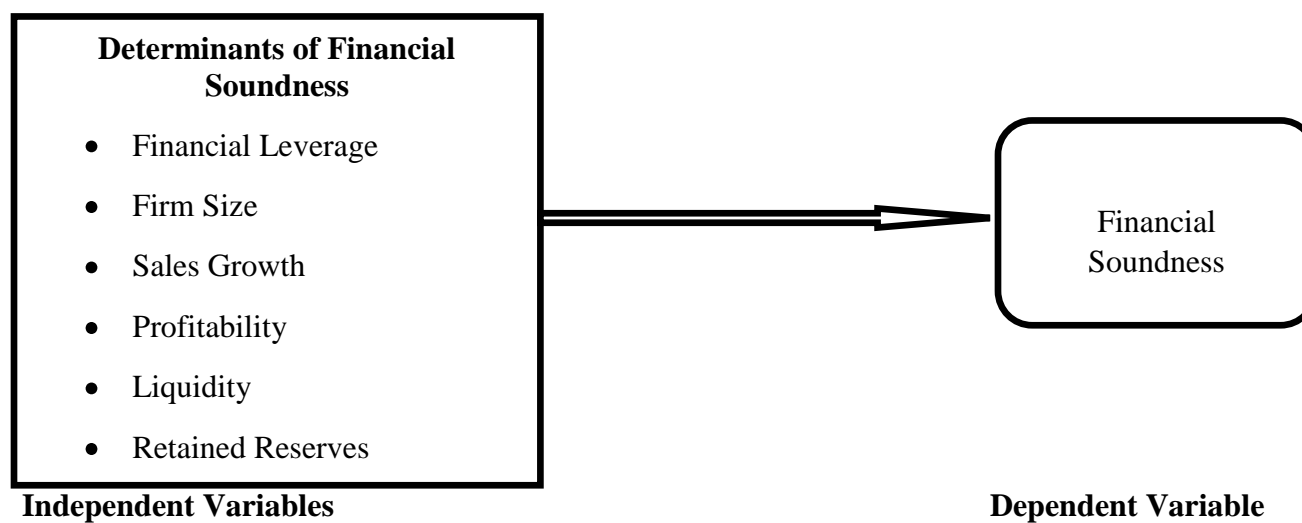


Figure 1: Conceptual Framework

3.0 METHODOLOGY

3.1 Research Design

The study employed quantitative research design. This was because the data used in the study aimed at identifying the factors that contribute to financial soundness of listed firms was of quantitative nature arrived at through ratios.

3.2 Target Population

The population of the study comprised all the non-financial companies listed in the NSE as at December 2013. In total, 40 non-financial firms were listed in the NSE as at that date. According to Mugenda and Mugenda (2003), a census is preferred where the population is small and manageable. Further, census method enhances validity of the collected data by eliminating errors associated with sampling (Saunders, Lewis, & Thornhill, 2009). The study omitted firms listed within banking and insurance sectors since they are associated with tight regulations with regard to capital holding and liquidity operations. As observed by Mwangi, Muathe, and Kosimbei (2014), this heterogeneity makes it difficult to make it difficult to conduct hypothesis testing for the study.

3.3 Data collection Procedures

The study used secondary data that was extracted from audited financial statements and annual reports of individual non-financial firms during the ten years period (2004 – 2013). Where relevant data was missing from the set of audited accounts, NSE handbooks that comprised of summaries of past financial information were used. The data obtained for all variables in each firm was organized in panels. According to Baltagi, Bratberg, and Holmås (2005) Panel data is suitable for longitudinal analysis because it provides both the time and cross-sections dimensions.

3.4 Data Analysis

Upon extracting the relevant data from the financial statements and NSE hand books, Excel program was used to compute the ratios for the study variables in each firm for every year. Descriptive statistics such as measures of central tendency and measures of dispersion were used to summarize and profile the pattern in each firm. In addition, panel regression analysis using Stata Version 11 was employed to establish the nature and significance of the relationship between independent variables and dependent variable. Significance of individual explanatory variable on the dependent variable was carried out using t-test at 5% significance level. Joint significance of the regression model was performed by means of F-test.

3.5 Measurement of study variables

The table below shows how the variables used in the study were measured and operationalized

Variables	Measurements	Notation
Independent Variables		
Financial Leverage	Total debt/Total capital	FINL
Liquidity	Net working capital/Total Assets	LQ
Profitability	EBIT/Total assets	PROF
Size	Natural logarithm of assets	SZ
Sales growth	$\frac{Sales_t - Sales_{t-1}}{Sales_{t-1}}$	SG
Reserves level	Retained Earnings/ Total assets	RE
Dependent Variables		
Financial Soundness	The Z-score index of financial distress as determined from the Altman's (1993) Model for the emerging markets	

$$Z - score = 3.25 + 6.56x_1 + 3.26x_2 + 6.72x_3 + 1.05x_4$$

Where:

Z = Financial distress index (emerging market score),

X₁ = Net working capital/Total assets,

X₂ = Retained earnings/Total assets,

X₃ = Earnings before Interest and Taxes/Total Assets,

X₄ = Book value of equity/Book value of total liabilities

Zones of discrimination: Z > 5.85: Safe zone, 4.15 < Z < 5.85: Gray zone, Z < 4.15: Distress zone.

Source: Altman & Hotchkiss (2006, pp. 267-8)

3.6 Empirical Model Specification

The study estimated the following regression model to determine the relationship between the individual factors and financial soundness.

$$FS_{it} = \alpha_0 + \alpha_1 FINL_{it} + \alpha_2 LQ_{it} + \alpha_3 PROF_{it} + \alpha_4 SG_{it} + \alpha_5 SZ_{it} + \alpha_6 RE_{it} + \varepsilon_{it} \dots (1)$$

Where:

FS_{it} = Financial strength

α_0 = Intercept term

$\alpha_1 - \alpha_6$ represents the coefficients of explanatory variables

ε_{it} = Error term (the time-varying disturbance term is serially uncorrelated with mean zero and constant variance)

$i = 1 \dots \dots 40$

t = time in years from 2004 – 2013

4.0 RESULTS AND DISCUSSIONS

Table 1: Descriptive statistics

Statistics	Mean	Std. Dev.	Maximum	Median	Skewness	Kurtosis	Minimum	Count
Total debt	0.451	0.171	0.882	0.441	0.09	2.211	0.068	367
Profitability	0.125	0.112	0.659	0.101	0.531	3.075	-0.223	367
Liquidity	0.151	0.175	0.606	0.137	0.132	3.09	-0.455	367
RE	0.29	0.202	0.857	0.272	0.001	3.619	-0.533	367
Sales Growth	0.131	0.262	1.187	0.113	0.758	2.746	-0.633	329
Size	15.333	1.685	19.056	15.207	-0.024	2.707	10.956	367

Table 1 shows that non-financial firms listed in NSE were on average geared to approximately 45.1% with a standard deviation of 17%. This implies that the firms preferred equity to debt in financing their assets. This trend could be attributed to the high cost of debt financing as a result of prevailing high interest rates in Kenya. The results further indicate that during the period of study, the firms realized approximately Kshs 0.125 in earnings before tax for every shilling worth of total assets. This showed a relatively modest earning level; which could be attributed to increase in costs of doing business as a results of high inflation and fluctuations in foreign exchange rates. However, the standard deviation of 0.112 together with maximum and minimum observations of 0.659 and -0.223 indicates a high variability in earnings ratio. The liquidity ratio of approximately 15.1% with a standard deviation of 17.5% signify that firms did not prefer keeping much of their assets in form of cash and cash equivalents. This could be informed by the need by businesses to invest available cash so as to generate more revenue. The output also indicate a retained earnings-to-assets ratio of approximately 29%. This showed that about one third of the assets were funded through undistributed profits; which points to a good level of accumulated profits used to finance the assets. The average growth in sales revenue over the 10 year period for the non-financial firms was 13.1% which indicates that majority of the firms realized increased turnover during the period. The results further showed that the average assets-holding by non-financial firms during the period of study was Kshs 4.79 billion with a standard deviation of Kshs 5.3 billion. The maximum observation was Kshs 188.76 billion while the minimum value was Kshs 57.3 million. Both the Skewness and Kurtosis shows that the data on all variables was nearly normally distributed (at 0 and 3) respectively and hence suitable for further statistical analysis.

4.1 Panel data Diagnostic tests

To determine the suitability of the panel data for statistical analysis, various tests were conducted. The tests that aimed at establishing if the panel data fulfilled the cardinal requirements of classical linear regression analysis included: panel unit root test, panel-level heteroscedasticity test, test for multicollinearity among independent variables and serial

correlation test. Where violation to these assumptions was detected, appropriate remedies were employed.

a) Panel Unit Root Test

Panel unit root test was applied on all variables used in the analysis in order to determine whether or not the panel data was stationary. This involved solving for the value of ρ in the general equation:

$$Y_{it} = \alpha + \rho Y_{it-1} + \mu_{it} \dots \dots \dots (2)$$

Where: $t = 1 \dots 10$ years and $i = 40$ firms

If $\rho = 1$, it implied that the observation Y_{it} was dependent on its lag value Y_{it-1} and hence the data was non-stationary. The converse would be true if $\rho < 1$. The necessity of this procedure was to avoid a situation where the obtained regression results were spurious; hence jeopardizing testing of hypothesis concerning the significance or otherwise of the explanatory variables (Granger & Newbold, 1974). The study applied Fisher-type test because it has more advantages than other panel unit root tests. The Fisher-type unit root test requires specification of Dickey-Fuller to test whether a variable has unit root.

Table 2: Fisher-type (with trend) unit root test results

Variable	Statistic	P-value
Financial Leverage	185.9272	0.0000
Size	125.9606	0.0008
Profitability	215.4669	0.0000
Liquidity	255.1846	0.0000
RE	193.5606	0.0000
Sales Growth	286.908	0.0000

Based on the results displayed in Table 2, the study concluded that all the variables under consideration did not have unit root and were therefore used in levels instead of their first difference.

b) Panel-level Heteroscedasticity Test

To test for panel level heteroscedasticity, the study adopted Modified Wald test method. This involved first estimating the specified empirical models for fixed effects with robust-standard errors (Torres-Reyna, 2007) and then running the Modified Wald test against the null hypothesis of homoscedastic (constant) error variance. The tests results provided chi-square distribution value of 120000 with a corresponding p-value of 0.0000. The results shows that the chi-square statistic was significant at 5 percent level and hence the null hypothesis of constant variance was rejected. This signified presence of panel-level heteroscedasticity in the study data as

recommended by (Wiggins & Poi, 2001). To correct this violation of classical linear regression assumptions, the study employed either the feasible generalized least squares (FGLS) estimation technique instead of the ordinary least squares method.

c) Serial Correlation Test

To detect presence of autocorrelation in panel data, the study used Wooldridge test for autocorrelation against the null hypothesis that there was no first order autocorrelation. The test results provided F-statistic value of 22.565 at 1 and 38 degrees of freedom. The F-statistic value had a corresponding p-value of 0.0000 indicating that the null hypothesis was strongly rejected at 5% significance level. The result therefore concluded that the panel data suffered from the problem of first-order autocorrelation. The study dealt with this violation of classical linear regression model assumption by employing FGLS estimation technique.

d) Multicollinearity check

The study performed pairwise correlation between the study variables to detect presence of multicollinearity.

Table 3: Pairwise correlation matrix Results

	Z-score	Total debt	Size	Sales growth	Liquidity	Profitability	RE
Z-score	1						
Total debt	-0.8095*	1					
Size	-0.3133*	0.3234*	1				
Sales growth	0.0934	0.0426	0.0397	1			
Liquidity	0.6997*	-0.4560*	-0.3203*	0.0736	1		
Profitability	0.5318*	-0.2608*	-0.0259	0.3642*	0.3175*	1	
RE	0.7246*	-0.5979*	-0.1893*	0.1079	0.3729*	0.3746*	1

* signifies significance at 5% level

As presented in Table 3, the correlation coefficients between all independent variables were less than 0.8 implying that the study variables did not exhibit severe multicollinearity as recommended by (Gujarati, 2003).

4.2 Panel Model Regression Results and Hypothesis Testing

Hausman Specification Test

In order to establish which model effects (between fixed and random) provided better estimation results for the study, Hausman test was carried out for the specified panel regression model. The test was conducted against the null hypothesis that random effect model was the preferred model. The test results provided a chi-square value of 10.43 and a corresponding p-value of 0.1656. The result indicated that the chi-square statistic was insignificant at 5% level. Effectively, the study

failed to reject the null hypothesis that random effects model was appropriate. Therefore, the panel regression model was estimated for random effects.

Table 4: FGLS Random effects Panel Regression Results

Dependent Variable: Financial Soundness				
Variables	Coefficient	Std. Error	t-value	prob(t-value)
Constant	7.6981*	1.0093	7.63	0.0000
Total debt	-7.2700*	0.5090	-14.28	0.0000
Size	0.0521	0.0646	0.81	0.4200
Sales growth	-0.3817*	0.1644	-2.32	0.0200
Liquidity	6.8233*	0.4593	14.85	0.0000
Profitability	5.4475*	0.5375	10.13	0.0000
Retained Reserves	3.4899*	0.3970	8.79	0.0000
Statistics				
R-Squared	0.9015			
Wald-Statistic	1627			
Prob (Wald)	0.0000			
Rho	0.6290			
Observations	367			

* Signified significance at 5% level

Table 4 shows the results of panel regression model estimation for random effects with financial soundness being the dependent variable and financial leverage, sales growth, size, age, liquidity and profitability as the independent variables. The results shows the model had a coefficient of determination (R-squared) equal to 0.9015 signifying that the fitted explanatory variables explained up to 90.15% of variations in the dependent variable. The Wald statistic of 1627 together with the corresponding probability value of 0.0000 indicated that the explanatory variables were jointly statistically significant at 5% significant level.

The results further showed that financial leverage was negatively and significantly related to financial soundness; with the implication that increasing the level of total debt financing in the capital structure drove the non-financial firms into financial distress. Based on the results, the study rejected the hypothesis; H01: Financial leverage does not significantly contribute to financial soundness of non-financial firms listed in the NSE at 5% level. This finding was consistent with that by Sitati and Odipo (2011) but differed with that of a similar study by Baimwera and Muriuki (2014) who showed that financial leverage had no significant effect on financial distress of non-financial firms listed in NSE.

The results also showed a positive but insignificant relationship between firm size and financial distress index at 5% level. This indicated that the size of the firm was not a significant determinant of financial soundness among non-financial firms listed in Kenya. However, the

effect was positive if at all it was present. The results therefore led the study to accept the null hypothesis; H02: Firm size is not a significant determinant of financial soundness of non-financial firms listed in the NSE at 5% significance level. This finding agreed with that by Niresh and Thirunavukkarasu (2014) but was at variance with that postulated by studies by (Abor, 2005; Jermias, 2008) that found a positive and significant relationship.

The regression output displayed in Table 4 showed a negative and significant relationship between sales growth and financial soundness. The finding implied that non-financial firms with increasing levels of year-on-year sales growth were more distressed than their counterparts with slower growth rates. The results therefore led the study to reject the null hypothesis; H03: Sales growth is not a significant determinant of financial soundness of non-financial firms listed in the NSE at 5% significance level. The finding was in consonance with that by Hoque et al. (2014) whose study attributed the negative relationship to the tendency by such firms to over trade using debt capital. However, the finding was contrary to that by Maina and Ishmail (2014).

Table 4 indicate that liquidity as represented by net working capital to total assets ratio was positively and significantly related with financial soundness variable at 5% level. The result signified that firms with higher levels of liquidity were generally less distressed than companies that depicted lower cash and cash-equivalent holding levels. The finding therefore implied that hypothesis H05: Liquidity level is not a significant determinant of financial soundness of non-financial firms listed in the NSE was rejected at 5% significance level. The observation corroborates the result by (Charitou et al. (2004)) but contradicted the finding by Baimwera and Muriuki (2014)

The regression results further indicated that the coefficient of profitability variable was positive and statistically significant at 5% level. This meant that firms with increasing levels of profitability were more financially sound than firms that were making losses. The implication was that profitability was therefore a significant determinant of financial soundness. The finding was consistent with those by Khunthong (1997) and Edward I Altman (2000). Nonetheless, the result differs with the finding by Low et al. (2001). Based on the results, the study rejected hypothesis; H04: Profitability level does not significantly influence financial soundness of non-financial firms listed in the NSE at 5% level.

From the results displayed in Table 4, retained reserves level was positively and significantly related to financial soundness at 5% significance level. The result meant that during the period of study, firms with higher levels of undistributed profits (retained earnings) were financially stronger as measured by Altman's Z-score index of financial distress modified for emerging markets. Based on the results, hypothesis; H06: Retained reserves level does not significantly affect the financial soundness of non-financial firms listed in the NSE was rejected at 5% significance level. The finding was in support of the pecking order hypothesis of capital structure as propounded by Myers (1977) and was in consonance with empirical finding by (Baimwera and Muriuki (2014)).

5.0 Summary and Conclusion

The study found that financial leverage as represented by total debt was negatively and significantly related to financial soundness of non-financial firms. The study therefore concluded that financial leverage was a significant determinant of financial soundness of non-financial firms listed in NSE. Further, the study found the effect of firm size on financial soundness to be positive but insignificant. The study therefore concluded that firm size was a not critical factor in assessing financial soundness of non-financial firms. The study also revealed that sales growth had a negative and significant relationship with financial soundness measure. Based on this finding, the study concluded that year-on-year changes in sales turnover was an important determinant of financial soundness among non-financial firms. The study also found a positive and significant relationship between liquidity, profitability and retained reserves level variables with financial soundness of non-financial firms. In the light of these findings, the study concluded that the three variables were significant determinants of financial soundness among non-financial firms listed in NSE.

5.1 Recommendations

Based on the empirical findings of the study, the researcher makes a number of recommendations at both firm, and macro levels. Firstly, managers of non-financial firms should utilize debt financing sparingly as excessive debt drives the firms to financial distress. Rather, equity financing should be encouraged. In addition, non-financial firms should emphasize on increasing profitability and liquidity levels so as to improve their level of financial soundness. Also, to be financially viable, non-financial firms should make use of internally generated funds to finance their assets. The managers should also be keen on improving their sales turn-over so as to avert instances of financial distress.

At macro level, government and the regulator (CMA) should take steps that ensure a conducive environment that would motivate non-financial firms to do business profitably. Such steps should include ensuring healthy competition, stable inflation rates, lowering the cost of overheads such as electricity and managing foreign exchange rates, controlling the cost of borrowing etc.

5.2 Suggestion for Further Research

This study was undertaken within the Kenyan context. A study could be conducted to compare the determinants of financial soundness among non-financial firms listed in other countries; preferable within the east African community context. Such a study would provide insight on a comparative analysis of such determinants across the countries.

References

- Abor, J. (2005). The effect of capital structure on profitability: an empirical analysis of listed firms in Ghana. *The journal of risk finance*, 6(5), 438-445.
- Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The journal of finance*, 23(4), 589-609.
- Altman, E. I. (1993). *Corporate Financial Distress and Bankruptcy: A Complete Guide to Predicting & Avoiding Distress and Profiting from Bankruptcy*: Wiley.
- Altman, E. I. (2000). Predicting financial distress of companies: revisiting the Z-score and ZETA models. *Stern School of Business, New York University*, 9-12.
- Babalola, Y. A. (2013). The Effect of Firm Size on Firms Profitability in Nigeria. *Journal of Economics and Sustainable Development*, 4(5), 90-94.
- Baimwera, B., & Muriuki, A. (2014). Analysis of corporate financial distress determinants: A survey of non-financial firms listed in the NSE. *International Journal of Current Business and Social Sciences*, 1(2), 58-80.
- Baltagi, B. H., Bratberg, E., & Holmås, T. H. (2005). A panel data study of physicians' labor supply: the case of Norway. *Health Economics*, 14(10), 1035-1045.
- Beaver, W. H. (1966). Financial ratios as predictors of failure. *Journal of accounting research*, 71-111.
- Brennan, M. J., & Schwartz, E. S. (1984). Optimal financial policy and firm valuation. *The journal of finance*, 39(3), 593-607.
- Center, S. (2007). Corporate Financial Distress Diagnosis in China.
- Charitou, A., Neophytou, E., & Charalambous, C. (2004). Predicting corporate failure: empirical evidence for the UK. *European Accounting Review*, 13(3), 465-497.
- Cuong, N. T. (2014). Threshold Effect of Capital Structure on Firm Value: Evidence from Seafood Processing Enterprises in the South Central Region of Vietnam. *International Journal of Finance & Banking Studies (ISSN: 2147-4486)*, 3(3), 14-29.
- Damijan, J. P. (2014). Corporate financial soundness and its impact on firm performance: Implications for corporate debt restructuring in Slovenia.
- Dittmar, A. (2004). Capital Structure in Corporate Spin-Offs*. *The Journal of Business*, 77(1), 9-43.
- FitzPatrick, P. J. (1931). *Symptoms of industrial failures as revealed by an analysis of the financial statements of failed companies, 1920-1929*: Catholic University of America.
- Gardiner, M. (1995). Financial ratio definitions reviewed. *Management Accounting -London-*, 73, 32-32.
- Gibson, C. (1982). Financial ratios in annual reports. *The CPA Journal (pre-1986)*, 52(000009), 18.
- Gonenc, H. (2005). Comparison of debt financing between international and domestic firms: Evidence from Turkey, Germany and UK. *International Journal of Managerial Finance*, 1(1), 49-68.
- Granger, C. W., & Newbold, P. (1974). Spurious regressions in econometrics. *Journal of econometrics*, 2(2), 111-120.
- Gujarati, D. (2003). Basic Econometrics Fourth Edition McGraw Hill Gujarati, DN,(2003). Basic Econometrics: McGraw Hill. International Edition.
- Gupta, P., Srivastava, A., & Sharma, D. (2014). Capital Structure and Financial Performance: Evidence from India.

- Hambrick, D. C., & D'Aveni, R. A. (1988). Large corporate failures as downward spirals. *Administrative Science Quarterly*, 1-23.
- Hillegeist, S. A., Keating, E. K., Cram, D. P., & Lundstedt, K. G. (2004). Assessing the probability of bankruptcy. *Review of accounting studies*, 9(1), 5-34.
- Hoque, J., Hossain, A., & Hossain, K. (2014). Impact Of Capital Structure Policy On Value Of The Firm—A Study On Some Selected Corporate Manufacturing Firms Under Dhaka Stock Exchange. *Ecoforum Journal*, 3(2), 9.
- Jermias, J. (2008). The relative influence of competitive intensity and business strategy on the relationship between financial leverage and performance. *The British Accounting Review*, 40(1), 71-86.
- Kalani, V., & Waweru, N. (2007). Commercial Banking Crises in Kenya: Causes and Remedies. *Research Paper. York University, Canada*.
- Keige, P. (1991). Business Failure Prediction Using Discriminate Analysis. *Unpublished thesis, University of Nairobi*.
- Khan, A. G. (2012). The relationship of capital structure decisions with firm performance: A study of the engineering sector of Pakistan. *International Journal of Accounting and Financial Reporting*, 2(1), Pages 245-262.
- Khunthong, J. (1997). Red flags on financial failure: the case of Thai corporations.
- Kiragu, I. M. (1991). *The prediction of corporate failure using price adjusted accounting data*. University of Nairobi.
- Kodongo, O., Mokoaleli-Mokoteli, T., & Maina, L. K. (2014). Capital structure, profitability and firm value: panel evidence of listed firms in Kenya. *Profitability and Firm Value: Panel Evidence of Listed Firms in Kenya (April 1, 2014)*.
- Low, S.-W., Fauzias, M., & Yatim, P. (2001). Predicting corporate financial distress using logit model: The case of Malaysia. *Asian Academy of Management Journal*, 6(1), 49-62.
- Maina, L., & Ishmail, M. (2014). Capital structure and financial performance in Kenya: Evidence from firms listed at the Nairobi Securities Exchange. *International Journal of Social Sciences and Entrepreneurship*, 1(11), 209-223.
- Moorhouse, A. (2004). An introduction to financial soundness indicators. *Bank of England (www.bankofengland.co.uk/statistics/ms/articles/art1feb04.pdf)*.
- Mugenda, O., & Mugenda, A. (2003). Research methods quantitative approaches African centre for technology studies (ACTS): Nairobi: Kenya.
- Mwangi, L. W., Muathe, S., & Kosimbei, G. (2014). Relationship between Capital Structure and Performance of Non-Financial Companies Listed In the Nairobi Securities Exchange, Kenya.
- Mwega, F. (2011). The competitiveness and efficiency of the financial services sector in africa: A case study of kenya. *African Development Review*, 23(1), 44-59.
- Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of Financial Economics*, 5(2), 147-175.
- Niresh, A., & Thirunavukkarasu, V. (2014). Firm Size and Profitability: A Study of Listed Manufacturing Firms in Sri Lanka. *International Journal of Business and Management*, 9(4).
- Ohlson, J. A. (1980). Financial ratios and the probabilistic prediction of bankruptcy. *Journal of accounting research*, 109-131.
- Robertson, J., & Mills, R. W. (1988). Company failure or company health?—Techniques for measuring company health. *Long Range Planning*, 21(2), 70-77.

- Sitati, A., & Odipo, K. (2011). Evaluation of Applicability of Altman's Revised Model in Prediction of Financial Distress.
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research Methods for Business Students*: Financial Times Prentice Hall.
- Sundararajan, V., Enoch, C., San José, A., Hilbers, P., Krueger, R., Moretti, M., & Slack, G. (2002). *Financial soundness indicators: analytical aspects and country practices* (Vol. 212): International Monetary Fund.
- Torres-Reyna, O. (2007). Panel data analysis. *Fixed & Random Effects [online]* Available at:< <http://dss.princeton.edu/training/Panel101.pdf>>,[Accessed 15 February 2013].
- Velnampy, T., & Nimalathasan, B. (2010). Firm size on profitability. *Global journal of management and business research*, 10.
- Wiggins, V., & Poi, B. (2001). How do I test for panel-level heteroskedasticity.