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An In-Depth Analysis of the Altman's Failure Prediction Model on Corporate Financial Distress in Uchumi Supermarket in Kenya

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Abstract
Many firms in developing and transitional economies are in financial distress situation, due to low level of debt service coverage. The study of financial distress has become a significant global issue after the global financial crisis of 2008. The soaring global financial crisis which has resulted to increased cases of business failures resulting from the effect of bankruptcy as well as insolvency. This study therefore was conducted with the objective of Altman's failure prediction model in predicting corporate financial distress in Uchumi Supermarkets in Kenya. The study sourced data from secondary sources. The data was obtained from financial reports, library, and organization's records such as in-house magazines, journals, publications as well as website and other resourceful information available at the Uchumi supermarket secretariat for 5 years from 2001 to 2006. The data extracted include ratios such as current assets and liabilities, total assets, retained earnings, earnings before interest and taxes, book value of the equity and sales. Data analysis involved preparation of the collected data, coding, editing and cleaning of data in readiness for processing using SPSS and Microsoft office excel. In the analysis, Multivariate Discriminant Analysis (MDA) statistical technique as used by Altman (2006) was adopted. Altman (2006) is of the opinion that ratios measuring profitability, liquidity and solvency are the most significant ratios. The study has established that the Altman failure prediction model was appropriate to Uchumi supermarket as it recorded declining Z-score values indicating the company experienced financial distress and that is why the company was delisted from the NSE in 2006. In line with these results, the study has recommended that; the policy makers of Uchumi supermarket should continuously adopt the use of Altman failure prediction model in order to determine the growing of the company and the state in which the company occurs as recommended by the Altman model in which there are safe zone, grey zone and distress zone. This study highly recommends to the potential investors in companies to use the Altman failure prediction model as an assessment tool. The results could raise certain questions about the state of a company and could ultimately result in an investor investing or purchasing a company that is profitable and well-managed company since declining Z-score values depicts a failing company.
Keywords: Financial Distress, Financial Ratios, Altman's Failure Prediction Model.

1. Introduction

Financial distress is defined as "the likelihood of bankruptcy, which depends on the level of liquid assets as well as on credit availability" (Hendel, 1996). This is the probabilistic definition, but various researchers have given various contextual definitions for financial distress. There is no exact definition given for financial distress by any scholar, this is due to its complexity and variety of causes. Financial distress is surprisingly hard to define precisely. This is true partly because of the variety of events befalling firms under financial distress. The list of events is almost endless but here are some examples: dividend reductions, plants closing down, losses, employee layoffs, management resignations, plummeting stock prices. "Financial distress is a situation where a firm's operating cash flows are not sufficient to satisfy current obligations (such as trade credits or interest expenses) and the firm is forced to take corrective action" (Wruck, 1990).

Many firms in developing and transitional economies are in financial distress situation, due to low level of debt service coverage. According to Outecheva (2007) very low volume of liquidity and negative cash flow combined with high leverage leads for financial distress amongst many corporate firms. As soon as firms have reached a certain level of leverage but do not strategically conform to their business plans, financial distress can occur even in a booming economic environment. High levels of leverage in the firms and increasing volatility make equity value vulnerable, so that each possible decline in the enterprise value may rapidly impair equity (Altman & Hotchkiss, 2006).

Garrett (2008) noted that when the firm is in a financial distress, it faces one of two possible conflicts; either cash shortage on the assets side of the balance sheet, or as a debt overhang in liabilities. Both sets of circumstances however draw similar results, namely that cash flow is insufficient to cover current obligations. This forces firms into negotiations with creditors about the conditions of deferment on their debt repayment during the ensuing period of distressed restructuring. When the firms enter financial distress, they are quickly confronted with the dilemma of raising capital to fund their restructuring (Outecheva, 2007). Given that, few are liable to trust this risky investment, especially when taking into consideration that a financial boost is not a guarantee to provide a lasting solution to the problems at hand.

Traditional views of the causes of financial distress, which have over time been partially confirmed by empirical results (Andrade and Kaplan, 1998; Asquith et al., 1994; Theodossiou et al., 1996 and Whitaker 1999), provide some evidence that financial distress arises in many cases from endogenous risk factors, such as mismanagement, high leverage, and a non-efficient operating structure in place.

1.1.1 Financial Distress

Opler and Titman (1994) define financial distress more broadly as a costly event that affects the relationship to debt holders and non-financial stakeholders. As a consequence, a company gains an impaired access to new capital and bears the increasing costs of maintaining this stricken relationship. As a rule, the term "financial distress" is used in a negative connotation in order to describe the financial situation of a company confronted with a temporary lack of liquidity and with the difficulties that ensue in fulfilling financial obligations on schedule and to the full extent (Gordon, 1971).

Gordon (1971) argued on his article that the development of the theory of financial distress as a process having specific dynamics. Gordon highlights that financial distress is only one state of the process, followed by failure and restructuring, and should be defined in terms of financial structure and security valuation. The corporation enters this state when its power to generate earnings is becoming weak and the amount of debt exceeds the value of the company's total assets. Whitaker (1999) interpreted financial distress as a crucial event whose occurrence separates the time of a company's financial health from the period of financial illness and requires undertaking corrective actions in order to overcome the troubled situation.

Andrade and Kaplan (1998) identify two forms of financial distress: the first one is default on a debt payment, and the second one is an attempt to restructure the debt in order to prevent the default situation. Financial distress occurs when a company does not have capacity to fulfill its liabilities to the third parties (Andrade and Kaplan, 1998). Increasing non-performing loan of commercial banks and delisted of public companies in Indonesia is a typical phenomenon of corporate financial distress. Gestel et al. (2006) characterize financial distress and failure as the result of chronic losses which cause a disproportionate increase in liabilities accompanied by shrinkage in the asset value.

Turetsky and MacEwen (2001) define financial distress as a series of subsequent stages characterized by a special set of adverse financial events. Each stage of financial distress has a distress point and continues until the next distress point is reached. Technically, each stage of financial distress is defined as an interval between two distress points. The onset of financial distress begins with a volatile decrease from positive to negative cash flow. The following dividend reduction signalizes the change to the next stage leading to default. Technical default on debt precedes troubled debt restructuring which usually tends to reduce the risk of potential bankruptcy. Thus, for the first time, researchers succeeded in describing financial distress as a continuous process with a clear structure and a categorization of the distress events.

1.1.2 Altman's Failure Prediction Model

Altman developed several discriminant functions; the first one called Z-score was developed in 1968 using public firms stratified by industry and size. This model has high predictive power two years prior to bankruptcy. Additionally, two adaptation of the 1968's Z-score model are presented: the Z'-score Altman (1993) which is similar to the previous one except the discrimination zones and the Z"-score Altman (2006) which differs from the previous MDA models in that it uses four financial ratios and has lower discrimination zones compared to the previous ones.

A financial ratio is a relative magnitude of two selected numerical values taken from an enterprise's financial statements (Pandey, 2010). Often used in accounting, there are many standard ratios used in evaluating the overall financial condition of a corporation. In financial analysis, a ratio is used as a benchmark for evaluating the financial position and performance of a firm (Edmister, 1972). Financial ratios may be used by managers within a firm, by current and potential shareholders (owners) of a firm, and by a firm's creditors. Financial analysts use financial ratios to compare the strengths and weaknesses in various companies.

The core ingredient of multivariate discriminant analysis is financial ratios. This confirms that financial ratios and ratio analysis are valuable tools for tracking financial health of an enterprise. Olson (1980) used eight traditional financial ratios in his model and concluded that total liability divided by total assets, current liability divided by current assets, and size are the most important predictors. Predictive power of financial ratio depends on its ability to discriminate between bankrupt and non-bankrupt. Financial ratios

applications include determination of internal liquidity, financial risks, operating performance and growth. Financial ratios are interrelated and therefore are analyzed in relation to each other. Changes in financial ratios and cash flow trend overtime or compared with similar firms in the industry may indicate potential problems or symptoms in specific area (Altman, 2006). For example increasing or high current ratio indicates poor efficiency of working capital and related symptoms could be high cash conversion cycles, low receivables turnover or low return on assets. Benjamic and Terry (1997) used trend and interactions between three net cash flows and found that non-bankrupt firms usually have unstable trend with negative cash flows in the third, second and first years prior to bankruptcy.

1.1.3 Predicting Financial Distress Using Altman's Model

The use of financial ratios as predictors of corporate financial distress was first given a serious thought by Beaver (1966). Beaver used a number of financial ratios from failed and non-failed firms and concluded that some ratios are more predictors than others. Beaver (1996) concluded that ratio of cash flow to debt was the single best predictor of financial distress five years prior to official filing of bankruptcy.

Beaver's (1966) statistical model was univariate, in that it used traditional financial ratio analysis, which ratios served as explanatory variables or predictors and these variables were observed one after another. Thus the integrated effect of any set of financial ratios or variables is lost. Beaver's (1966) univariate analysis assumed a linear proportionate relationship between a set of financial ratios variables. This however is not the case, since in most cases; a constant may also play a role in the relationship between two financial variables.

Potential errors inherent in univariate analysis are minimized using multivariate analysis. Altman (1968) model used multivariate discriminant analysis to study a group of 33 failed and non-failed firms and the results indicated a number of financial ratios that distinguished between failed and non- failed firms. Altman (1993) developed the second revised model which used five ratios in predicting failure like the 1968 model but the difference was the discrimination zones. Lately, Altman (2006) developed another MDA model which used four financial ratios instead of five used previously. These ratios cover the area of management efficiency, profitability, liquidity and gearing. Edmister (1972) produced a model based on seven financial ratios and combinatorial analysis of ratio trends and current levels for testing failure of small businesses. This study therefore is expected to predict corporate financial distress through the use of various financial ratios.

1.1.4 Brief Overview of Uchumi Supermarket

Uchumi Supermarket is a public limited company incorporated in 1975 under the Companies Act (Cap 486 of the Laws of Kenya). On 17th December 1976, Uchumi shareholders - ICDC, KWAL and KNTC - all Government owned parastatals, entered into a management contract with Standa SPA of Italy. Standa, a leading supermarket group with a presence in Europe and vast retail experience was given the task to manage and train Kenyan personnel who would eventually take over the running of the organization. The first three branches were opened in 1976. Uchumi became a trendsetter in low pricing to the advantage of all consumers, while at the same time maintaining high standards in quality of goods and services.

In the 1990's Uchumi spearheaded the hypermarket concept in Kenya. The introduction of the hypermarket concept and specialty shops has been a runaway success. It was credited for having revolutionized the retail food sector by giving customers a variety of products to choose from and introducing the concept of self-service. It has also been a major outlet for local manufacturers and suppliers of fresh produce (over 2500 suppliers with an 85 to 15 ratio in favour of local suppliers' vis-à-vis imports).

In early 2000s Uchumi started to experience financial and operational difficulties occasioned by a sub-optimal expansion strategy coupled with weak internal control systems. This resulted in a marked diminution of the company's resources, which culminated in its inability to meet its obligations on an ongoing basis. Initial restructuring of Uchumi did not forestall the deteriorating performance of the company. As a result, on 31st May 2006, the Board of Directors resolved that the company ceases operations and on 2nd June 2006, the Debenture Holders placed the company under receivership. Simultaneously, the CMA suspended the company's listing on the NSE.

Following a framework agreement between the Government of Kenya, suppliers and debenture holders, the company was revived and commenced operations from 15th July, 2006 under Specialized Receiver Manager (SRM) and interim management. In 2008 the company returned a profit of Kshs 106 million against a loss of Kshs 257 million the previous year marking a turnaround of Kshs. 356 million. Today, Uchumi is one of the largest commercial retailing companies in the country, operating 15 branches - 11 in Nairobi, three up country (Karatina, Meru and Eldoret) and one in Kampala, Uganda.

2.0. Literature review

2.1.Theoretical Review

Prediction models are constructed based on some theoretic arguments. These theories are able to predict financial distress in firms by looking at distress conditions present in those firms. These theories include; entropy theory, credit risk theory, cash management theory and gambler's ruin theory.

2.1.2 Entropy Theory

According to the Entropy Theory (Balance Sheet Decomposition Measure Theory), one way of identifying firms' financial distress could be a careful look at the changes occurring in their balance sheets (Aziz & Dar, 2006). This theory employs the Univariate Analysis and Multiple Discriminant Analysis (MDA) in examining changes in the structure of balance sheets. Univariate Analysis is the use of accounting based ratios or market indicators for the distress risk assessment (Natalia, 2007). The financial ratios of each company, therefore, are compared once at a time and the distinction of those companies through a single ratio with a cut – off value is used to classify a company as either distressed or non- distressed (Monti & Moriano, 2010).

MDA (Multivariate Statistic or Multivariate analysis) is a statistical analysis in which more than one variable are analyzed at the same time (Slotemaker, 2008). The aim of MDA is to eliminate the weakness of univariate analysis. First, single ratios calculated by univariate analysis do not capture time variation of financial ratios. This means that accounting ratios have their predictive ability one at a time, and it is impossible to analyze, for instance, rates of change in ratios over time. Second, single ratios may give inconsistent results if different ratio classifications are applied for the same firm. Third, many accounting variables are highly correlated, so that the interpretation of a single ratio in isolation may be incorrect. The single ratio is not able to capture multidimensional interrelationships within the firm. Finally, since the probability of failure for a sample is not the same as for the population, specific values of the cutoff points obtained for the sample will not be valid for the population (Natalia, 2007). Therefore, if a firm's financial statements reflect significant changes in the composition of assets and liabilities on its balance-sheet it is more likely that it is incapable of maintaining the equilibrium state. If these changes are likely to become uncontrollable in future, one can foresee financial distress in these firms (Aziz & Dar, 2006).

2.1.3 Credit Risk Theory

Credit is the provision of goods and services to a person or entity on agreed terms and conditions where the payments are to be made later with or without interest. During the contract period, not all debtors will repay their dues as and when they fall due. When the debtor does not pay their dues on the due date, the lender is exposed to credit risks which may in turn lead to default. Credit risk is therefore the investor's risk of loss, financial or otherwise, arising from a borrower who does no pay his or her dues as agreed in the contractual terms (Natalia, 2007). Credit risk theories, closely related to Basel I and Basel II accords; mostly refer to the financial firm. The proposed Basel II framework consists of three pillars: (1) minimum capital requirements, currently set equal to 8%, according to a purposely-defined capital ratio, (2) supervisory review of an institution's internal assessment process and capital adequacy, (3) effective use of public disclosure to strengthen market discipline as a complement to supervisory efforts. The current Basel II Accord utilizes concept of a capital ratio that is calculated dividing bank's capital amount by a measure of risk faced by it (referred to risk-weighted assets)

As noted by Westgaard and Wijst (2001), credit risk is the risk that a borrower/counterparty will default, i.e., fail to repay an amount owed to the bank. Credit risk includes all of the counterparties and reasons for which they may default on their obligations to repay. Following Basel II guidelines, in the last few years, a number of attempts have been made to develop internal assessment models to measure credit risk. A few of them have gained more respect than others including JP Morgan's CreditMetrics, Moody's KMV model, CSFP's Credit Risk+ and McKinsey's Credit Portfolio View. More importantly, with one or two exceptions, these models and risk predictions thereof have been based on either micro or macroeconomic corporate finance theories. Collectively these models may be referred as credit risk theories.

2.1.4 Cash Management Theory

Cash management theory is concerned with the managing of cash flows into and out of the firm; cash flows within the firm and cash balances held by the firm at a point of time by financing deficit or investment surplus cash. Short-term management of corporate cash balances is a major concern of every firm. This is so because it is difficult to predict cash flows accurately, particularly the inflows, and there is no perfect coincidence between cash outflows and inflows (Aziz & Dar, 2006).

During some periods cash outflows will exceed cash inflows because payments for taxes, dividends or seasonal inventory will build up. At other times, cash inflow will be more than cash sales and debtors may realize in large amounts promptly (Pandey, 2005). An imbalance between cash inflows and outflows would mean failure of cash management function of the firm. Persistence of such an imbalance may cause financial distress to the firm and, hence, business failure (Aziz & Dar, 2006).

2.1.5 Gambler's Ruin Theory

Gambler Ruin theory was developed by Feller, W in 1968 who based it on the probability theory where a gambler wins or loses money by chance. The gambler starts out with a positive, arbitrary, amount of money where the gambler wins a dollar with probability p and loses a dollar with a probability (1-p) in each period. The game continues until the gambler runs out of money (Espen, 1999). The firm can be thought of as a gambler playing repeatedly with some probability of loss, continuing to operate until its net worth goes to zero (bankruptcy). In context of the firm's financial distress, firm would take the place of a gambler. Firm would

continue to operate until its net worth goes to zero, point where it would go bankrupt. The theory assumes that firm has got some given amount of capital in cash, which would keep entering or exiting the firm on random basis depending on firm's operations. In any given period, the firm would experience either positive or negative cash flow. Over a run of periods, there is one possible composite probability that cash flow will be always negative. Such a situation would lead the firm to declare bankruptcy, as it has gone out of cash. Hence, under this approach, the firm remains solvent as long as its net worth is greater than zero. This net worth is calculated from the liquidation value of stockholders' equity.With an assumed initial amount of cash, in any given period, there is a net positive that a firm's cash flows will be consistently negative over a run of periods, ultimately leading to bankruptcy (Aziz & Dar, 2006). The major weakness of this theory is that it assumes that a company starts with a certain amount of cash. There two main difficulties with this theory when predicting bankruptcy is that the company has no access to securities markets and the cash flows are results of independent trials and managerial action cannot affect the results (Espen, 1999).

2.2 Causes of Financial Distress

Financial distress results from deterioration of a firm's financial performance and can have many causes. Poor management, unwise expansion, intense competition, too much debt, massive litigation, and unfavorable contracts are just a few of the possible causes. (Natalia, 2007). According to Jahur and Quadir (2012), the common causes of financial distress and business failure are often a complicated mix of problems and symptoms. The most significant causes of financial distress in young companies are capital inadequacy where the business did not start with enough capital and has struggled from day one. Capital in any business serves as a mean by which loses may be absorbed. It provides a cushion to withstand abnormal losses not covered in the current earning pattern (Adeyemi, 2012). Ooghe & Prijcker (2008) pointed out the causes of corporate failures or bankruptcy to be the characteristics of management e.g. inappropriate management qualities and skills, and corporate policy and poor strategies. Scherrer (2003) noted that often management does not recognize the internal signals of failure and blame external changes for their business decline. Hotchkiss (1995) examined the relationship between management changes and post-bankruptcy performance. Over 40% out of 197 public companies that emerged from between 1979 and 1988 continued to experience operating losses in three years following bankruptcy, 32% re-enter bankruptcy or privately restructure their debt. Hotchkiss (1995) suggested that the continued involvement of pre-bankruptcy management in the restructuring process is strongly associated with poor post-bankruptcy performance. Her results show that retaining pre-bankruptcy management is strongly related to worse post-bankruptcy performance.

Where other companies have undertaken management succession planning for key roles and identified high potential in their company's employee's, usually firms in financial distress do not prepare at all for top management succession (Galloway & Jones, 2006). This could lead to recruiting unbalanced management team which lack essential skills to steer the company ahead. Any wrong investment decision made may plunge the companies to financial distress since some of the decision s involves huge cash outlay are irreversible.

The importance of innovation to a firms' future has been documented extensively, though the level of risk associated with innovation has been examined to a small degree (Chao, Lipson & Loutskina, 2012). The probability that innovation will drive a firm to financial distress is high especially where the competitors introduces innovative and competitive products which reduces the attractiveness of the company's products and services (Jahur & Quadir, 2012). Therefore, innovation can either give a firm a competitive edge to its rivals or will see its demise equally.

While most companies rely on their financial performances as the key barometer of financial health, it is important not to ignore managerial and operational signals (Zwaig & Pickett, 2012). Many profitable businesses have found themselves in trouble due to rapid expansion like Uchumi Supermarkets or the introduction of a formidable competitor (Zwaig & Pickett, 2012). In each of these instances, the companies were successful before an operational event or unheeded signal led to financial problem and in some cases the subsequent failure of the company. In other countries, the business that were able to recognize earlier warning signs such as Zellers, Canadians Tire and The Bay have survived by diffentiating themselves or changing and improving their business model (Zwaig & Pickett, 2012)

2.3 The Costs of Corporate Financial Distress

In theory, financial distress and bankruptcy matter if they impose dead-weight costs on the firm that are borne by the shareholders through an ex ante compensation to the creditors for the possibility of incurring these costs ex post. In addition, financial distress and bankruptcy may impose costs on stakeholders other than the firm's capital contributors. To the extent that financial distress and bankruptcy are costly, and if these costs are inevitable, then virtually all corporate financial decisions will be affected by such costs. Thus, the magnitude of the financial distress and bankruptcy costs is an important empirical question.

2.3.1 Direct Costs

Direct bankruptcy costs are the legal, administrative and advisory fees that the firm bears as a result of entering the formal bankruptcy process. Warner (1977) estimates the direct cost to be around 4% of the firm's pre-

bankruptcy value, using a sample of railroad bankruptcies during 1933 and 1955. Weiss (1990) uses a sample of 37 bankrupt firms in the period 1980-1986, and estimates the direct costs to be around 3% of the pre-bankruptcy firm value. Altman and Hotchkiss (2006) provide a nice summary of the estimates of the direct bankruptcy costs in the literature. The findings in all these studies suggest that direct bankruptcy costs are unlikely to represent a significant determinant of the firm's capital structure decision.

In more recent years we have witnessed several mega bankruptcy filings by companies, such as Lehman Brothers, Enron, and WorldCom. The total direct bankruptcy costs for Enron were estimated to top one billion dollars. Even though this only represents about 1.6% of the firm's pre-bankruptcy value, this staggering number still implies that a lot of resources were used up in the bankruptcy process of the former energy giant. With the pre-bankruptcy assets value of $639 billion, Lehman Brothers' bankruptcy is by far the largest corporate bankruptcy in the US history. It is also likely to be the most expensive corporate failure. As of November 2011, the legal costs associated with Lehman Brothers' bankruptcy have totaled about $1.5 billion.

2.3.2 Indirect Costs

Potentially more significant and substantial are the indirect costs of financial distress and bankruptcy. These costs can be viewed as opportunity costs, in that they collectively represent the outcome of sub-optimal actions by corporate stakeholders when the firm becomes financially distressed (Altman and Hotchkiss, 2006). Thus, costs that arise because of inter- or intra-group conflicts of interest, asymmetric information, holdout problems, lost sales and competitive positions, higher operating costs, and ineffective use of management's time all potentially represent the indirect costs of bankruptcy.

Several studies claim the indirect costs of financial distress to be significant and positive. For example, Altman (1984) measures the indirect costs of bankruptcy as the decline in the sales of bankrupt firms relative to others in the same industry and as the difference between the realized earnings and the forecasted earnings. On that basis, the author argues that indirect bankruptcy costs on average range from 11% to 17% of firm value up to three years prior to bankruptcy. However, this study does not clearly distinguish costs attributable to financial distress from those attributable to economic distress.

2.4 Financial Distress Corporate Turnaround Strategies

Whitaker (1999) categorizes financial distress into categories. Distress due to poor management (firm specific distress) and distress as a result of economic decline (common factors). There are various financial distress corporate turnaround strategies, these include;

2.4.1 Managerial Restructuring

Changes in top management are argued to be one of the main conditions for successful turnarounds as they are a tangible signal to creditors that action is being taken by the distressed firm (Hofer, 1980). Incompetent managers may have been the cause of financial distress through poor planning or inefficient decision making. Whitaker (1999) refers this as firm-specific distress. These managers need to be replaced with management teams who can accurately assess the source of distress and implement strategies necessary for successful turnaround (Lohrke, Beheian, & Palmer, 2004). Pearce & Robbins (1993) also stress the importance of management in turning distressed firms around. They argue that a management team lacking in the skills needed to respond efficiently and in a timely manner will result in continued decline and the eventual failure of the company.

Sudarsanam and Lai (2001) suggest that creditors will only provide continued financial support if they are reassured that management will be able to cope with distress. Denis & Kruse (2000) find that 36% of the sample firms they study experience managerial turnover in top executives following performance declines. Managerial restructuring includes replacement of senior management and/or the Chief Executive Officer. Overall, managerial restructuring may be a crucial factor in the turnaround process of a distressed firm.2.4.2 Operational Restructuring

Operational restructuring refers to the efficiency/operating turnaround stage. This stage aims to restore profitability by controlling costs and reducing overheads through the sale of surplus fixed resources such as land, equipment, and offices. By decreasing input and maximizing output firms can generate cash flow (at least in the short term) and enhance efficiency. When firms recognize distress, operational restructuring is usually the first strategy implemented. However, although necessary, operational restructuring is primarily a short term fix used to generate cash flow quickly. Sudarsanam & Lai (2001) argue that if used as a stand-alone strategy, it may not be enough for recovery from distress. Past literature suggests that operational restructuring in the form of purchases are less likely than sales. Nevertheless, if productivity can be significantly improved, distressed firms may build new plants or invest in more advanced technology and equipment.

2.4.3 Asset Restructuring

When a distressed firm sells off lines of businesses which are unprofitable or not at the core operations of the company, it is considered to be engaging in asset restructuring. The aim of this form of restructuring is to realign the focus of the firm by reducing unrelated diversification and refocusing the business portfolio around core competencies (Warner, 1997). Chang (1996) finds that poorly performing firms will be motivated to divest lines of business which do not generate competitive advantages. Asset restructuring allows the firm to re-evaluate its

operations and reorganize business units into more efficient groups. This form of restructuring is especially necessary if agency costs have resulted in over diversification by management.

Although contraction policies have been found to be the dominant form of restructuring (John, Lang, & Netter 1992). Asset restructuring could also refer to actions which increase the size of the firm such as investments, strategic alliances, joint ventures, and licensing agreements (Sudarsanam & Lai, 2001). For example, acquisition of related businesses that fit core competencies could help to increase the competitive advantage of distressed firms through economies of scale. These restructuring strategies are risky however as they require capital expenditure from firms already experiencing low cash flows. Since smaller firms will generally have lower cash reserves, this form of restructuring may not be appropriate or possible.

2.4.4 Financial Restructuring

Financial restructuring generally refers to changes in the firm's capital structure in terms of leverage. This seeks to reduce payment pressures through equity-based and debt-based strategies. Where equity-based strategies may involve dividend cuts or issuance of shares as a means to retain or generate funds, debt-based strategies involve the adjustment of interest, maturity, or debt/equity ratio. DeAngelo & DeAngelo (1990) find that large firms are likely to respond to distress with rapid and aggressive dividend reductions. Funds retained are then able to be used to pay debt obligations. Share issues are another way in which distressed firms can generate funds to support continued operations.

2.4.5 Restructuring Effectiveness

Past research have also examined factors which affect the success of completing certain restructuring strategies. Moulton & Thomas (1993) find that firm size dominates all other variables in predicting successful completion of the reorganization process. Large firms with varied assets are more likely to successfully restructure as they are better able to survive substantial losses, have more businesses to serve as the core, and have sufficient assets which can be sold to provide cash for continued operations. Sudarsanam & Lai (2001) in their study found that recovered firms are more likely to engage in investments and acquisitions in their restructuring decisions. This suggests that firms that recover from distress are more expansionary, forward looking, and have an external market focus. Non-recovered firms are found to be more internally focused and engage in short term fire-fighting techniques of operational and financial restructuring.

Barker and Duhaime (1997) also argue that successful turnaround depends on the firm's ability to change its strategy, structure, and ideology rather than restructuring based on short term efficiency or cost cutting tactics. They find that effective restructuring results from shifting the strategic change to better suit the needs of the market and the competitive environment in which a firm operates. Cost-cutting and layoffs are also found to be ineffectual strategies by Denis & Kruse (2000) who find that improvements in operating performance are mostly attributable to asset restructuring.

2.5 Empirical Review

Prediction of corporate financial distress and bankruptcy is a subject which has gained a great deal of interest by researchers in finance starting in the late 1960s. The first step in the evolution of the quantitative firm failure prediction model was taken by Beaver (1966), who developed a dichotomous classification test based on a simple t-test in a univariate framework. He used individual financial ratios from 79 failed and non-failed companies that were matched by industry and assets size in 1954 to 1964 and identified a single financial ratio – Cash flow/ Total Debt as the best predictor of corporate bankruptcy.

Beaver's study was then followed by Altman (1968), who suggested a multivariate technique, known as Multivariate Discriminant Analysis (MDA). By using 33 bankrupt companies and 33 non-bankrupt companies over the period 1946 – 1964, five variables were selected to be most relevant in predicting bankruptcy. These five were: Working Capital to Total Assets, Retained Earnings to Total Assets, Earnings before Interest and Taxes to Total Assets, Market Value of Equity to Book Value of Total Debt and Sales to Total Assets. Z-Score was determined and those companies with a score greater than 2.99 fell into the non-bankrupt group, while those companies having a Z-Score below 1.81 were in the bankrupt group. The area between 1.81 and 2.99 is defined as the zone of ignorance or the gray area. The MDA model was able to provide a high predictive accuracy of 95% one year prior to failure.

Logit analysis which did not have the same assumptions as MDA was made popular in the financial distress prediction problem by Ohlson (1980). He used 105 bankrupt companies and 2058 non-bankrupt companies from 1970 to 1976. The results showed that size, financial structure (Total Liabilities to Total Assets), performance and current liquidity were important determinants of bankruptcy. In the logistic analysis, average data is normally used and it is considered as a single period model. Hence, for each non-distressed and distressed company, there is only one company-year observation. The dependent variable is categorized into one of two categories that is distressed or non-distressed.

Zmijewski's (1984) probit model was first applied to the firm failure prediction. However, this type of binary econometric model was less intensely used in this field. Some studies that implied the use of logistic and probit models for the distress prediction problem were made by Lennox (1999) and Menard (1995). In 2004,

some econometric problems with the single period logit model were discussed by Hillegeist (2004). First, is the sample selection bias that arises from using only one, no randomly selected observation for each bankrupt company, and second, the model fails to include time varying changes to reflect the underlying risk of bankruptcy. Being based on a dichotomous classification, the traditional static model is not suited to handle the temporal concept.

Shumway (2001) demonstrated that these problems could result in biased, inefficient, and inconsistent coefficient estimates. To overcome these econometric problems he proposed the hazard model for predicting bankruptcy and found that it was superior to the logit and the MDA models. This particular model is actually a multi-period logit model because the likelihood functions of the two models are identical. For this reason, the discrete-time hazard model with time-varying covariates can be estimated by using the existing computer packages for the analysis of binary dependent variables. The main particularities of the hazard model consist in the facts that firm specific covariates must be allowed to vary with time for the estimator to be more efficient and a baseline hazard function is also required, but which can be estimated directly with macroeconomic variables to reflect the radical changes in the environment.

Further on, Nam et al (2008) extended the work of Shumway (2001) and developed a duration model with time varying covariates and a baseline hazard function incorporating macroeconomic variables, such as exchange rate volatility and interest rate. Using the proposed model, they investigated how the hazard rates of listed companies in the Korea Stock Exchange are affected by changes in the macroeconomic environment and by time varying covariate vectors that show unique financial characteristics of each company. By investigating the out-of-sample forecasting performances of their model compared to the results of both a traditional dichotomous static model and also a logit model with time-varying covariates but no baseline hazard function, they demonstrated the improvements produced when allowing temporal and macroeconomic dependencies.

In another study, Abdullah et al (2008) compared three methodologies of identifying financially distressed companies in Malaysia this are: multiple discriminant analysis (MDA), logistic regression and hazard model. In a sample of 52 distressed and non-distressed companies with a holdout sample of 20 companies, the predictions of hazard model were accurate in 94,9% of the cases examined. This was a higher accuracy rate than generated by the other two methodologies. However, when the holdout sample was included in the sample analyzed, MDA had the highest accuracy rate of 85%. Among the ten determinants of corporate performance examined, the Ratio of Debt to Total Assets was a significant predictor of corporate distress regardless of the methodology used. In addition, Net Income Growth was another significant predictor in MDA, whereas the Return on Assets was an important predictor when the logistic regression and hazard model methodologies were used.

In recent years many types of heuristic algorithms such as neural networks and decision trees have also been applied to the bankruptcy prediction problem and several improvements in the financial distress prediction were noticed. For example the studies made by Tam and Kiang (1992) and Salchenberger et al. (1992) provided evidence to suggest that neural networks outperform conventional statistical models such as discriminant analysis, logit models in financial applications involving classification and prediction. Soon after that, hybrid Artificial Neural Network methods were proposed in some financial distress prediction studies. For example, Yim and Mitchell (2005) tested the ability of a new technique, hybrid ANN's to predict corporate distress in Brazil. The models used in their study were compared with the traditional statistical techniques and conventional ANN models. The results indicated that the most relevant financial ratios for predicting Brazilian firm failure are Return on Capital Employed, Return on Total Assets, Net Assets Turnover, Solvency and Gearing.

Various aspects of corporate financial distress have been reviewed in the Kenyan context. Kogi (2003) did a study to develop a discriminant model incorporating financial ratio stability that could be used to predict corporate failure. He sought to identify critical financial ratios with significant predictive ability. His finding showed that it was possible to predict corporate failure with up to 70% accuracy three years before actual occurrence using stability discriminant model. Kiege (1991) had earlier formulated a model to predict business failure among Kenyan companies which achieved a prediction accuracy of 90% two years before actual failure.

Ng'ang'a (2006) sought to explore and expose possible indicators of impending failures among many firms in developing countries and developed a prediction model for insurance companies in Kenya. He derived a failure prediction model using cash-flow information and multiple discriminant analysis techniques. The model yielded an overall correct classification accordance of 85% a year prior to failure confirming that cash-flows can be used to give clear and precise information about an entity's financial health.

Taliani (2010) carried out a study on predicting financial distress in commercial banks in Kenya. His study revealed that none of activity and turn-over ratios was found to be critical in predicting financial distress in commercial banks in Kenya. The model attained 70% and 100% correct classification in year 1 and year 3 respectively. The findings are consistent with the studies by Kiragu (1991), Kiege (1991) and Nganga (2006). Bwisa (2007) in his study noted that Altman financial distress prediction model was applicable locally. He found out that model is applicable in the sense that 6 out of 10 failed firms that were analyzed indicated 70% validity of

the model.

3.0. Research Methodology

This study applied multivariate discriminant analysis model in predicting financial distress in an organization. The research design adopted in this research was a descriptive study. According to Cooper and Schindler (2001), a descriptive study or a formal study is a study that is typically structured with clearly stated investigative objective. This design was applied by (Chong, 1998; Metho 2007; Muchira, 2007; Kogi, 2003 & Keige, 1991) in their studies on prediction of financial distress amongst different firm.

According to Denvir and Millet (2003), research design provides the glue that holds the research project together. A structure is used to restrictive the research, to show how all the major parts of the project, which include sample of groups, measures, treatment or programs and methods of assignment work together to try to addition control research question. This is because the study seeks to predict financial distress using Altman's failure prediction model.

3.1 Data Collection

According to Mugenda and Mugenda (1999), a population is a well-defined as a set of people, services, elements and events, group of things or households that are being investigated. The population consisted of 5 leading supermarkets in Kenya from 2001 to 2006. This period was considered long enough to provide sufficient variables to assist in determining a trend in predicting corporate financial distress.

A case study was used in this study. Judgmental sampling technique was used in this study. Yearly data for the period 2001 to 2006 was used. The study was limited to Uchumi supermarkets due to lack of readily available data among the other firms that have experienced financial distress since most of them were not listed at Nairobi securities Exchange.

The study sourced data from secondary sources. The data was obtained from financial reports, library, and organization's records such as in-house magazines, journals, publications as well as website and other resourceful information available at the Uchumi supermarket secretariat for 5 years from 2001 to 2006. The data extracted include ratios such as current assets and liabilities, total assets, retained earnings, earnings before interest and taxes, book value of the equity and sales.

3.2 Data Analysis

According to Marshall and Rossman (1999), data analysis is a process of bringing order, structure and interpretation of mass collected data. Data was systematically organized in a manner to facilitate analysis. Data analysis involved preparation of the collected data, coding, editing and cleaning of data in readiness for processing using SPSS package version 20. SPSS was preferred because it is systematic and covers a wide range of the most common statistical and graphical data analysis.

For the purpose of this study, Multivariate Discriminant Analysis (MDA) statistical technique as used by Altman (2006) was adopted. Altman (2006) is of the opinion that ratios measuring profitability, liquidity and solvency are the most significant ratios. Altman combined a number of ratios and developed on insolvency prediction model.

3.2.1 Analytical Model

Revised Z"-score model, Altman (2006) was used. Z"-score is a linear combination of four common business financial ratios, weighted by coefficients. Analysis of the four measures were objectively weighted and summed up to arrive at an overall score that becomes then the basis for classifying firms as either distressed or non-distressed. The model used is in the form below;

$$\mathbf{Z" = W_1X_1 + W_2X_2 + W_3X_3 + W_4X_4}$$

Where **Z"** = Discriminant score (Dependent variable)

$\mathbf{W_1W_2W_3W_4}$ = Discriminant coefficients

$$\mathbf{Z" = 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4}$$

X = Independent Variables which are:

$\mathbf{X_1}$ = (Current Assets – Current Liabilities)/Total assets

$\mathbf{X_2}$= Retained earnings/ Total assets

$\mathbf{X_3}$= Earnings before Interest Taxes/Total assets

$\mathbf{X_4}$= Book values of Equity/Total liabilities

Discrimination zones

Z" > 2.6 ⟶ "Safe" zone

1.1< Z" < 2. 6 ⟶ "Grey" zone

Z" < 1.1 ⟶ ***"Distress" zone***

4.0. Findings

4.1 The Z- Model calculated from 2001 to 2005

Table 4.1 The Calculated values of Z in 2001

Independent variables	Values	Discriminant	Independent variables* Discriminat	Z value
Working capital/Total assets	0.363944	6.56	2.387473984	
Retained earnings/total asset	0.047655	3.26	0.155355595	
Earnings before interest taxes/total assets	0.079037	6.72	0.531127288	3.906259
Book values of equity/total asset	0.792669	1.05	0.832302097	

Source: Research findings

The findings in table 4.1 indicates that the calculated Z"-score model value in the years 2001 was 3.906259.

Table 4.2 Calculated values of Z in the year 2002

Independent variables	Values	Discriminant	Independent variables* Discriminat	Z value
Working capital/Total assets	0.35838	6.56	2.350973418	
Retained earnings/total asset	0.048508	3.26	0.158137248	
Earnings before interest taxes/total assets	0.080565	6.72	0.541394885	3.874569
Book values of equity/total asset	0.784823	1.05	0.824063699	

Source: Research findings

The findings in table 4.2 indicates that the calculated Z"-score model value in the years 2002 was 3.874569

Table 4.3 Calculated Z value in 2003

Independent variable	Values	Discriminant	Independent variables* Discriminat	Z value
Working capital/Total assets	0.368714	6.56	2.418765315	
Retained earnings/total assest	0.049125	3.26	0.16014691	
Earnings before interest taxes/total assets	0.06809	6.72	0.457565716	3.831677
Book values of equity/total asset	0.757332	1.05	0.795198866	

Source: Research findings

The findings in table 4.3 indicates that the calculated Z"-score model value in the years 2003 was 3.831677.

Table 4.4 Calculated value in 2004

Independent variable	Values	Discriminant	Independent variables* Discriminat	Z value
Working capital/Total assets	0.337601	6.56	2.214660746	
Retained earnings/total assest	0.049349	3.26	0.160878956	
Earnings before interest taxes/total assets	0.071588	6.72	0.481073616	3.587988
Book values of equity/total asset	0.696547	1.05	0.731374227	

Source: Research findings

The findings in table 4.4 indicates that the calculated Z"-score model value in the years 2004 was 3.587988.

Table 4.5 Calculated value of Z in 2005

Independent variable	Values	Discriminant	Independent variables* Discriminat	Z value
Working capital/Total assets	0.038989	6.56	0.255766189	
Retained earnings/total assest	0	3.26	0	
Earnings before interest taxes/total assets	0.200165	6.72	1.345107153	1.950748
Book values of equity/total asset	0.333214	1.05	0.349874267	

Source: Research findings

The findings in table 4.5 indicates that the calculated Z"-score model value in the years 2005 was 1.950748

4.2. Inferential Statistical analysis

Table 4.6 Descriptive statistics of the variables

	Mean	Std. Deviation	N
Z values	3.4302482	.83650389	5
Working capital/Total asset	.2935256	.14278466	5
Retained earnings/Total asset	.0389275	.02177105	5
Earnings before interest taxes/Total asset	.0998889	.05629291	5
Book values of equity/Total liabilities	.6729168	.19361433	5

Source: Research findings

The findings in table 4.6 indicate the descriptive statistics of the variables in which the mean of the Z-score value is 3.430 with standard deviation of 0.8365. The mean of working capital/ Total assets is 0.2935 with standard deviation of 0.1428. The findings also indicate that the means of Retained earnings/Total assets, Earnings before interest taxes/total asset and book values/total liabilities are 0.0389, 0.0999, and 0.6729 with standard deviations 0.0217, 0.0563 and 0.1936 respectively.

Table 4.7 The correlation

		Z values	Working capital/Total asset	Retained earnings/Total asset	Earnings before interest taxes/Total asset	Book values of equity/Total liabilities
Pearson Correlation	Z values	1.000	.996	.985	-.977	.999
	Working capital/Total asset	.996	1.000	.995	-.992	.991
	Retained earnings/Total asset	.985	.995	1.000	-.997	.976
	Earnings before interest taxes/Total asset	-.977	-.992	-.997	1.000	-.965
	Book values of equity/Total liabilities	.999	.991	.976	-.965	1.000
Sig. (1-tailed)	Z values	.	.000	.001	.002	.000
	Working capital/Total asset	.000	.	.000	.000	.001
	Retained earnings/Total asset	.001	.000	.	.000	.002
	Earnings before interest taxes/Total asset	.002	.000	.000	.	.004
	Book values of equity/Total liabilities	.000	.001	.002	.004	.
	N	5	5	5	5	5

Source: Research findings

The findings in table 4.7 indicates that there is a strong positive correlation between Z values and Working capital/Total asset (r=0.996). The findings indicate that the correlation is significant at 5% significance level given that p-value (0.000) is less than alpha (0.05) the findings in table 4.7 indicate that there is a strong negative correlation between Z values and Earnings before interest taxes/Total asset (r=-0.977). The findings indicate that the correlation is significant at 0.05 level of significance since the p-value (0.002) is less than alpha (0.05).

Table 4.8 Regression coefficient

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.735	.210		8.269	.007
	Retained earnings/Total asset	-6.323	3.464	-.165	-1.825	.319
	Earnings before interest taxes/Total asset	-4.948	1.126	-.333	-4.397	.142
	Book values of equity/Total liabilities	3.619	.106	.838	34.216	.019

a. Dependent Variable: Z values

Source: Research findings

The findings in table 4.8 indicate the regression model generated by the independent and the dependent variable. The model generated is given as Z=1.735 – 6.323 Retained earnings/Total assets – 4.948 Earnings before interest taxes/Total asset + 3.619 Book values of equity/ Total liabilities. The findings indicate that the coefficient of Book values of equity/ Total liabilities is positive and significant at 0.05 level of significance given that the p-value (0.019) is less than alpha (0.05). The findings indicate that the constant (1.735) is significant at 0.05 level of significance given that p-value (0.007) is less than alpha (0.05) indicating that Z depends on the independent variables.

Table 4.9 The variables excluded

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Working capital/Total asset	1.120[b]	.	.	1.000	1.717E-005

a. Dependent Variable: Z values
b. Predictors in the Model: (Constant), Book values of equity/Total liabilities, Earnings before interest taxes/Total asset, Retained earnings/Total asset
Source: Research findings

The findings in table 4.9 indicates that working capital was excluded in the regression model since it is insignificant as indicated by the null p-value and null t value.

Table 4.10 Significance of the regression model

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.799	3	.933	15485.450	.006
	Residual	.000	1	.000		
	Total	2.799	4			

a. Dependent Variable: Z values
b. Predictors: (Constant), Book values of equity/Total liabilities, Earnings before interest taxes/Total asset, Retained earnings/Total asset
Source: Research findings

The findings in table 4.10 indicates that the regression model generated by the variables (Z as the dependent variable, and Book values of equity/Total liabilities, Earnings before interest taxes/Total asset, Retained earnings/Total asset as the independent variables) is significant at 0.05 level of significance given that the p-value (0.006) is less than alpha (0.05) as indicated by the ANOVA table.

Table 4.11 Summary statistics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.000[a]	1.000	1.000	.00776195

Source: Research findings

The study findings in table 4.11 indicate the R squared and the adjusted R squared. The R squared (1.000) indicates that 100% of the variation in Z is accounted for by the independent variables (Book values of equity/Total liabilities, Earnings before interest taxes/Total asset, Retained earnings/Total asset). The adjusted R squared (1.00) indicate that if population was used instead of a sample, the variation in Z would be 0% less.

4.3. Predicted values of the Z Model from 2001 to 2005

Table 4.12 The predicted values of Z using the model generated

Year	**Predicted Z values**
2001	3.911270677
2002	3.869920321
2003	3.8282592
2004	3.589547999
2005	1.950484767

Source: Research findings

The findings in table 4.12 indicates that the predicted value of Z in the year 2001 was 3.911 in which it was the highest and declined up to 2005 in which Uchumi supermarket recorded the lowest Z- value of 1.950

4.4. Interpretation of the Findings

The study findings indicates that there is a strong positive correlation between Z values and Working capital/Total asset (r=0.996), the findings indicate that the correlation is significant at 5% significance level and that there is a strong negative correlation between Z values and Earnings before interest taxes/Total asset (r=-0.977). The findings indicate that the correlation is significant at 0.05 level of significance. The regression coefficient indicate that the coefficient of Book values of equity/ Total liabilities is positive and significant at 0.05 level of significance given that the p-value (0.019) is less than alpha (0.05). The findings indicate that the constant (1.735) is significant at 0.05 level of significance given that p-value (0.007) is less than alpha (0.05) indicating that Z depends on the independent variables.

The R squared (1.000) indicates that 100% of the variation in Z is accounted for by the independent variables (Book values of equity/Total liabilities, Earnings before interest taxes/Total asset, Retained earnings/Total asset). The adjusted R squared (1.00) indicate that if population was used instead of a sample, the variation in Z would be 0% less.

The study findings indicate that there was a decline in the working capital of Uchumi supermarket from the year 2001 to 2005. This indicated that the company started experiencing reduction in the working capital due to financial difficulties. This indicated that the company was on its way of decline and probably caused by mismanagement of the financial resources. The study has established that the Z-core values from the year 2001 to 2004 decline however, the company as indicated by the value was in the safe zone. The company had the Z-score value of 1.95 in the year 2005 which indicated that the company was in the grey zone. This indicated that the company was in a financial distress that led to its insolvency in the year 2006.

4.5. Conclusions

The z-score model is a very practical tool that can be used to predict the insolvency of companies as well as maintaining and monitoring of companies being risk managed. Company liquidations are a daily occurrence and more often than not, credit granters lose out. The Altman prediction models can effectively be used to breach that gap in the credit industry in particular for the delisted companies at Nairobi Stock Exchange. Furthermore, this tool could be used by investors when considering investing in a private company to ascertain the state of the company's financial position.

From the study, the Uchumi supermarket company started experiencing financial problems in the year 2001 since there was a decline in the working capital from the year 2001 to 2005. This indicated that the company had started facing financial difficulties by reporting a declining balance sheet. The study has shown that there was a rise in the credit of the company since the total liabilities rose from the year 2001 to 2005 with a rapid rise from the year 2004 to the year 2005. This indicates that the company needed to sustain itself against the financial difficulties experienced. This depicts that there was a mismanagement of the company with regards to the financial resources of the company. The study has also revealed that there was a decline in the book value of equity of the company from the year 2001 to year 2005 indicating that the company was on its verge of collapse since the book value was recorded below the other in every year. This further confirmed financial ditress experienced by the company.

The Z-score value obtained using the Altman failure prediction model reported declining values from the year 2001 to 2005 in which the company moved from a safe zone to a grey zone in the year 2005. This model has truly depicted a failing company due t financial distress and therefore has given a true picture of the company until it went liquidated in the year 2006 and subsequent delisting from the NSE. The company was later put under receivership by the government in order to revive it.

Considering this and the insolvency of Uchumi Supermarket, the Altman failure prediction model could contribute considerably to the successes of the company when assessing the credit worthiness of companies in order to avoid financial distress.

4.6 Recommendations to the policy makers

The policy makers of Uchumi supermarket should continuously adopt the use of Altman failure prediction model in order to determine the growing of the company and the state in which the company occurs as recommended by the Altman model in which there are safe zone, grey zone and distress zone.

This study highly recommends to the potential investors in companies to use the Altman failure prediction model as an assessment tool. The results could raise certain questions about the state of a company and could ultimately result in an investor investing or purchasing a company that is profitable and well managed since declining Z-score values depicts a failing company.

The study recommends that the Altman failure prediction model should use the prevailing economic situations such as changes in the economy, markets and industries in the economy in order to predict a true picture of the company in the economy.

Reference

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 (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 & Hotchkiss, E. (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.I. (2006). Corporate financial distress and bankruptcy: Predict and avoid bankruptcy, analyze and invest in distressed debt. Hoboken, NJ: Wiley.

Alexander, A. (2001). Japan Confronts Corporate Restructuring. Japan Economic Institute. World Bank Institute Development Studies, Washington, DC, USA

Aziz, M. & Dar, H. (2006). Predicting Corporate Financial Distress: Whither Do We Stand? Corporate governance, 6(1), 18-33.

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.

Asquith, P, Gertner, R & Sharfstein, D. (1994). Anatomy of Financial Distress': An Explanation of Junk Bond Issuers: The Quarterly Journal of Economics, 109, 625-677.

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 Altmans revised model in prediction of financial distress. Unpublished MBA project. University of Nairobi.

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)

El-Zayaty, W. (2003) Financial Rations as A Predictor Of Failure Empirical Research in Accounting Selected Studies. Journal of Accounting 5 (2) 71-12)

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.

Galloway, G. & Jones, D. (2006). Human capital and M & A. Board Briefing. Journal of finance, 3(3), 18-21.

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.

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 (Doctorial Dissertation No. 3430, University of St. Gallen, St. Gallen, Switzerland).

Ohlson, J. A. (1980). Financial ratios and the probabilistic prediction of bankruptcy: Journal of Accounting Research, 18, pp. 109-131.

Opler, M. and Titman, S. (1994). Financial Distress and Corporate Performance: The Journal of Finance, 25(3), 45-56.

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

Shumway, T. (2001). Forecasting bankruptcy more accurately: A simple hazard model: Journal of Business, 74 (1), 101-124.

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.

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.

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.

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