



**EFFECT OF CAPITAL MIX ON SUSCEPTIBILITY TO BANKRUPTCY OF COMPANIES LISTED IN THE NAIROBI SECURITY EXCHANGE**

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SECURITY EXCHANGE**

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**ABSTRACT**

*This study sought to examine the effect of capital mix of companies listed in Nairobi Stock Exchange and their susceptibility to bankruptcy. The objectives guiding the study included cost of debt, cost of equity, debt-equity and return on equity on listed companies susceptibility to bankruptcy. Literature review included the theoretical framework guiding through the theories that supported the study variables namely financial theory of investment, option theory, Trade-off Theory, pecking order Theory and the Altman Model, the conceptual framework followed by the empirical studies that existed. The study used descriptive research design to investigate the effect of independent variables on the dependent variable. The study also used stratified and simple random sampling methods where the sampling frame was the best performing companies in NSE and the least performing including those with liquidity issues where secondary data was used and analyzed using STRATA. The study found that Susceptibility to Bankruptcy of listed companies could be jointly explained by Cost of Debt, Cost of Equity, Debt-Equity Ratio and Retained Earnings. Cost of Debt had positive and significant relationship with Susceptibility to Bankruptcy whereas the study revealed positive and significant relationship between Cost of Equity and Susceptibility to Bankruptcy for listed companies. Thirdly, listed companies were mostly financed using Debt and Equity. The level of Debt-Equity had a positive and significant relationship it implied that borrowed capital was invested into investments which had positive net present value and Retained Earnings had a positive and significant relationship between Retained earnings and Susceptibility to Bankruptcy.*

**Key Words:** Cost of Debt, Cost of Equity, Debt-Equity, Return on Equity, Susceptibility to Bankruptcy

## INTRODUCTION

Bankruptcy can be traumatic for a company, its employees, customers, suppliers and other external parties with vested interest and it even gets more worse when it recurs. In the recent past there has been an increasing trend of companies getting bankrupt others even making second trips to bankruptcy, (Humer,2015) the only luck few managing to survive but the rest that forms quite a good percentage are sailing in receivership, take over by those with strong financial stamina and amalgamations contrary to the vision of every business which is prosperity and profitability.

Business failure/insolvency has been associated to various causes which can either be economic factors, financial factors, neglect, disaster and fraud. According to a study by Dun & Bradstreet that examined causes of business failure they found out that most business failures occur due to financial factors which include either use of too much debt by these firms or insufficient capital, (Newton, 2009). Studies by; The University of Tennessee Research on July 27, 2013 and Shane, S Startup Failure rates in 2008 showed 30% business fail in the first year and 60% in the first five years, (Gass, 2013).

Capital is the foundation on which a business is built and as well serves as a catalyst to the direction to which a business may take. The decision of raising capital is a vital in any business organization in the economy but striking the right balance between debt and equity financing which means weighing the cost and benefit of each, (Coplan,2009) and making sure you are not sticking your company to debt you cannot afford to repay and minimizing the cost of capital is a puzzle yet both debt and equity are important means of raising capital.

Identifying the right combination of debt and equity is usually very difficult for firms (Gale, 2009) yet this

decision is vital due to the need to maximize returns to various organization constituents, deal with competitive dynamic business environment and challenges posed by uncertainties that depends on long term goals of the business and the amount of control managers wish to maintain in the firm thus resulting to particular debt to equity ratio which usually varies greatly by industry and company; this influences their financing decisions whose outcome may be either prosperity or bankruptcy.

According to (Nikbakht & Groppelli,2012), too much debt increases the risk of the firm which in turn makes investors apprehensive about the ability of the firm to pay creditors thereby increasing the cost of capital but the tax deductibility feature of interest paid to creditors enables the firm to achieve higher EPS thus boosting the EPS (financial leverage) however the benefits of financial leverage disappear with heavily laden debt, issue of excessive stock equally leads to dilution of EPS and possible loss of voting control hence higher cost of capital.

Companies optimally choose the combination of debt and equity (capital mix) that minimizes their overall cost of capital, this balance minimizes the weighted average cost of capital through a trade-off between debt tax shield benefits and bankruptcy risks and agency costs so there is no one set optimal capital mix that can be theorized for companies to follow other than trying to create a balance that will suit their company, (Andrew .L, 2014) though there is a need to establish a capital mix that holds low financing costs, helps maintain a stable dividend policy, establish a good earning record and maximize the wealth of stakeholders,(Nikbakht & Groppelli,2012)

The capital content of company has been a point of concern globally as a way of reducing the number of companies getting bankrupt which has become a hurdle, (Table 1.1). (Zhenting, Shuting & Anton,

2014) while studying the capital mix of internet companies in their results found out that Google uses more equity than debt financing at a 4.02% debt to equity ratio while that of Yahoo showed low debt to equity ratio of 6.3% and that of Microsoft being 20.24% in the year 2013.

According to, (Andrew, 2014) Australian companies tend to have an average debt to equity ratio of 0.835 which is relatively high when compared to companies in the UK with a 0.531 ratio and those of South Korea with 0.798 and the debt to equity ratio are significantly different between larger firms (.1.417) and small firms (0.459) which reflects a greater access to external debt financing availability to large companies. They further said that smaller firms were restricted from public debt and equity markets.

In the US the number of bankruptcy filings in 2014 were 936,795 which indicated a 12.5% drop from 2013 but this number is four times as more as that of those bankruptcies recorded in the 1980's. In 2005 the state recorded 2.08 million bankruptcies, (Krulick, 2015). Business failure is wide spread in the state and fairly large number of businesses fail each year, the total number of bankruptcies in the US from 1980 to 2015 totaled to 47,208.90 companies (Figure 1.1&2).

Four of the 17 public companies in the US filed for bankruptcy in 2012 including Twinkie maker Hostess Brands and family style restaurant Buffets which were among repeat filers according to BankruptcyData .com which tracks filings by publicly traded companies and repeat filings for companies that were once listed on the stock exchange this number compared with six companies that slid back into bankruptcy in 2011, (Humer, 2015) which serves as more evidence to the contagion.

Kenya has reported a number of bankruptcies in the last two decades, the country's stock market has also been hit by the contagion. The Nairobi Stock exchange CEO in a report said that the stock market had been hit by more it can chew, (NSE, 2014) and majority of the reported bankruptcy cases have directly associated with how these companies finance their operations, The Kenya survey of enterprise attitudes on its study found out that firms seemed to increase their borrowing after listing, (Wagacha, 2011) and for the largest listed firms the debt to equity ratio seemed to rise.

### **Statement of the Problem**

The trend of companies getting bankrupt in Kenya is on the increase notable examples being; Uchumi Supermarkets, Kenya Pipeline, among others (NSE, 2013). How a firm decides on a debt/equity ratio in the capital mix remains a puzzle, (Rao, Al-Yahyaee & Syed, 2007) yet this is crucial for their financial success. (Coplan, 2009) says the optimal ratio of debt/equity should be (1:1) or that of equity/debt be (1:2) to ensure solvency of firms but this is not always the case as even at this point most companies get bankrupt.

Studies conducted by Statistics Canada in 1997 for Industry Canada and by Professor Janis Sarra from the University of British Columbia in 2009 indicated that most bankruptcies revolve around capital, (Desjardins, 2014). The 2013 financial statements of CMC Holdings and Uchumi indicated a debt to equity ratio of 51.84 to 48.16% and 54.44 to 45.56%, both of which have recorded a history of bankruptcy, (NSE, 2014). Attaining a debt to equity proportion that guarantees solvency has been a challenge to many companies hence the compelling need to ascertain a debt to equity proportion that results to zero bankruptcy ratio which is the key motivation to carry out this study.

Companies trading in NSE are viewed as successful and high financial performers any case of bankruptcy emanating from this efficient body sends out mixed alarm creating room for doubts on the efficiency, effectiveness and competitiveness of it over other markets like real estate. Bankruptcy examples like Kenya pipeline and Uchumi supermarkets (NSE, 2013) can easily be cited as prove to challenge effectiveness of nations' stock market.

The stock market attracts a lot of investors both local and foreign but its growth is uneven and this has left many investors losing confidence on the services they get which has resulted to their overwhelming complains, (NSE, 2014), corporate entities, banks, government and other stakeholders are also uncertain on their future survival in this stock market to meeting their investment goals, (Maina & Sakwa, 2012).

Over the past ten years the number of companies trading in NSE has been on decrease due to bankruptcy, (NSE, 2013). This looming bankruptcies will eventually shrink the number of companies if there is no action to be taken to revive the ailing stock market and rekindle many corporate failures by ascertaining the root course of this imminent tragedy which is basically their capital contents, therefore this study sought to investigate the effects of capital mix of companies listed in the NSE and their susceptibility to bankruptcy.

### **Objectives of the study**

The General objective of the study was to establish the effect of capital mix on susceptibility to bankruptcy of companies listed in the NSE. The specific objectives were:-

- To establish the effect of cost of debt on susceptibility to bankruptcy of companies listed in the NSE.

- To determine the effect cost of equity on susceptibility to bankruptcy of companies listed in the NSE.
- To establish the effect of debt-equity ratio on susceptibility to bankruptcy of companies listed in the NSE.
- To determine the effect retained earnings on susceptibility to bankruptcy of companies listed in the NSE.

## **LITERATURE REVIEW**

### **Theoretical Review**

#### **Financial Theory of Investment**

This theory was developed by James Duesenberry, it is also known as the cost of capital theory of investment. It assumes that the market rate of interest represents the cost of capital to the firm and does not change with the amount of investment it makes and thus unlimited funds are available to the firm at the market rate of interest which shows that the supply of funds to the firm is very elastic meaning when more funds are required by the firm for investment spending the cost of funds which is the interest rate will rise and to finance investment spending the firm may borrow in the market at whatever interest rate funds are available

These sources of funds are categorized into retained earnings or borrowed funds and in the case of borrowed funds it can be either through borrowing from banks or through the bond market or it can be borrowing through equity financing or by issuing new stock in the stock market. The opportunity cost of internal funds is usually less than the cost of external funds. When retained earnings are used to finance an investment the cost of using these funds is the opportunity cost i.e. the

return that the firm could obtain to repay debt or to buy the shares of other companies.

When the firm borrows through bank or by bond market the cost of borrowed funds goes up with the amount of borrowings and as the ratio of debt service to earnings from investment of funds rise causing the marginal cost of borrowed funds rise due to the rise in risk. When financing through equity by issuing new shares in the stock market the imputed cost of equity is more costly than the opportunity cost of retained earnings or borrowed funds. The theory points out that the yield cost of equity finance is usually 7% to 10% for large firms and this is usually added to floatation costs and any reduction in the value of existing shares resulting from the issue.

### **Capital Asset Pricing Model**

The Capital Asset Pricing Model by Lintner (1965) and Sharpe (1964) states that the required return (cost of capital) depends on the risk of an investment, CAPM is built on the idea that in an efficient portfolio investors can diversify away unsystematic risk and investors are only compensated on systematic risk which that cannot be diversified. The model stipulates that the only of source of systematic risk is rewarded risk which is measured by beta (Perridon & Steiner, 2007).

CAPM is based on some the assumptions that all investors want to maximize the expected utility of their wealth, and they are risk averse and always have homogenous expectations about returns of the securities, and the returns of these securities follow a normal distribution which is a characteristic of homoscedasticity. There is a risk free rate of return which gives the opportunity to an investor to lend or borrow at this rate of return with the lack of risk. The model also assumes that there are no taxes or other restrictions or obstacles which lead to an imperfect market.

According to Young and Saadi (2011) in determination of cost of equity Capital Asset Pricing Model (CAPM) model prevails. Investors view the cost of capital as the rate of return that is offered to compensate their interests i.e. the interests of shareholders and bond holders for the capital they provide (Brealey et al. 2009; Arnold 2008). And this cost of capital is depends on the riskiness of the capital invested and this can be explained by the risk return relationship.

Companies should ensure to offer the required return because they risk losing their investors because of the increasing mobility and flexibility of capital. According to Capital Asset Pricing Model investors are only compensated for the systematic risk which cannot be diversified away and this risk is measured by the beta factor (Perridon & Steiner, 2007) and the required return of equity always depends on the beta factor i.e. the higher the beta factor the higher the required return

### **Option Theory**

This theory was first developed by Robert Merton, an economist who in 1997 won a Nobel Prize with Myron Scholes. The theory analyses the different claims that debt holders and shareholders have on the firm, it says that the shareholders essentially own a call option on the firm which is the right and not the obligation to buy and therefore what shareholders get all to the upside, their downside and thanks to the limited liability is restricted to the firm going bankrupt and the position of bondholders is that of someone having sold a put option which is the right to sell to shareholders by conferring on them the right to bankrupt the firm and the bondholders main upside is the fee they receive for that option that is the interest on the loans they make to the firm.

The shareholders equity of a levered company are seen as a call option that is granted by creditors to shareholders on the company's operating assets

and the strike price is the value of the debt and the maturity is the date on which the debt is payable and when the debt falls due if the value of the operating assets is higher than the amount of the debt to be repaid the shareholders exercise their call option on the operating asset and pay the creditors the amount due of the debt and if the value of the operating assets is lower than the amount of debt to be repaid the shareholders decline to pay off the debt and the creditors will appropriate the operating assets.

In this case lending to a company is a means of investing in its assets at no risk and the lenders sell to the shareholders a put option at a strike price that is equal to the debt to be repaid. this approach can be used to show value of equity as intrinsic value and time value which is the difference between the present value of capital employed and the debt to be repaid upon maturity and time value is the hope that when the debt matures the enterprise value will have risen to exceed the amount of the debt to be repaid.

This theory gives a better understanding of the impact of certain decisions on the financial situation of creditors and shareholders, all financial decisions ought to be examined from the overall point of view but also in terms of the creation and destruction of the value of various stakeholders i.e. a financial decision could be neutral in terms of the overall value but enhance the value of some financial security at the expense of others. This theory is helpful in analyzing the market view of a company's creditworthiness, in this case the more likely a firm is to default the greater the fee which higher interest rate.

### **The Trade- off Theory**

The Trade-Off Theory was suggested by Myers(1986) and it emphasizes a balance between tax saving arising from debt and the decrease in agency costs, bankruptcy costs and financial distress

costs (Oruc,2009).This theory is among the oldest and is connected to the theory from Miller and Modiglian on capital structure which emphasizes on the optimal capital structure. The Trade-Off Theory is also called tax based theories and bankruptcy costs.

Capital structure theory has been dominated by one basic theory which recommends the idea that the optimal level of debt is where the marginal benefit of debt finance is equal to its marginal cost and a firm can achieve an optimal capital structure through adjusting the debt and equity level thereby balancing the tax shield and financial distress cost, but there has not been any consensus among researchers on what consists the benefit and the costs and the Trade -off theory has been the foundation to explain this capital structure puzzle suggesting that the use of debt up to a certain level offset the cost financial distress and interest tax shield.

According to Danso & Adomako, (2014) the theory suggested the modified MM proposition which points out that the benefit of tax shield is offset by the firm costs of financial distress and the agency costs showing that optimal level of leverage is achieved by balancing the benefits from interest payments and costs of issuing debt (Jahanzeb, Bajuri, Karam & Ahmadimousaabad,2014).

According to Sheikh & Wang (2010) the Trade-Off Theory is should suggest a target capital structure that maximizes the firm's value by minimizing the cost of the prevailing market imperfections. The theory assumes that each source of money has its own cost and return and they are associated with the earning capacity of the firm, its business and insolvency risks (Awan & Amin, 2014) hence a firm with more tax advantage will issue more debt to finance its operations there balance the cost of financial distress and tax shield benefit (Chen, 2011).

Bankruptcy costs are normally costs which are directly incurred when the perceived likelihood that the firm will default on financing is greater than zero, and example of bankruptcy costs include; liquidation costs which is the loss of value as a result of liquidating the net assets of the firm, distress cost which is also the cost a firm incurs if the stakeholders believe that the firm may continue to operate as a going concern (Chen 2011).

### Pecking Order Theory

The Pecking Order Theory assuming a perfect capital market as proposed MM(1958), Myers and Majluf (1984) propose pecking order theory following the findings of Donaldson(1961) which found that management prefer internally generated funds rather than using external funds. Pecking order theory suggests that a firm prefers internal financing over debt capital and explains that a firm utilizes internal funds first then issue debt and finally issue equity as a last resort.

According to Mostafa & Boregowda, (2014) the major factor determining the level of debt ratios are the supply and demand factors but the sources of financing depend on the preference order which is internal finances like reserves and retained earning then debt and finally equity (Chen, 2011) and a firm will maximize its value by choosing to finance its new investments with the cheapest available source of finance (Sheikh & Wang, 2010).

Firms source external funds because internal sources are not always enough in financing their investments and companies will choose from among the external sources of finance in such a way to minimize additional costs of asymmetric information (Luigi & Sorin, 2009) so the hierarchy involved in corporate financing decisions is driven by the cost of financing it (Danso & Adomako, 2014).

The Pecking Order theory argues that firms always choose to employ internal sources (retained earnings and reserves) in financing their projects instead of new debt and they prefer debt to issuance of new shares and in any case managers will not issue the company's undervalued shares if they have the shareholders' interest in mind. According to Mostafa & Boregodwa(2014) , firms issue new shares only at market down price at equilibrium. And managers issue new shares with the expectation to be offset by the net present value of new investment opportunities.

### Altman Z-score bankruptcy prediction Model

The probability that a company can get bankrupt can be predicted, this can be affected by the Atman's Z score that can be used to predict the probability that a company can get bankrupt within two years. The Z score is a combination of four or five common business ratios weighted by coefficients, the coefficients were estimated by identified a set of firms which had been declared bankrupt and then collecting a matching sample of firms which had survived with matching industry and approximate size(assets) The Z score is represented by the following formula;

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.99X_5.$$

Where;

$X_1$  is working capital/ total assets

$X_2$  is retained earnings / total assets

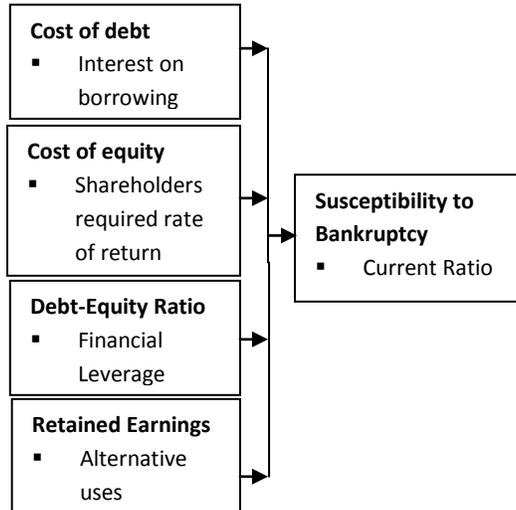
$X_3$  is EBIT/total assets

$X_4$  is market value of equity/ book value of total liabilities

$X_5$  is the sales/total assets

Altman found that the ratio profile for the bankruptcy group fell at -0.25avg and for the non-bankruptcy group

## Conceptual Framework



**Independent variables    Dependent variable**

**Figure 1: Conceptual Framework**

### Cost of debt

Cost of debt represents the cost to a company of its debt finance and interest rates represent the cost of borrowing of capital for a given period of time. The prevailing interest rates are key to many companies because of indexing of interest rates to inflation. Increase in interest rates influences the company's gearing level as the interest rates mean higher expenses incurred for debt capital which reduces gearing level. Interest rates have positive relationship with gearing, (Owusu & Badu, 2009).

Cost of debt is lower than cost of equity, the debt costs increases or decreases in direct relationship to changes in market interest rates and when new bonds are issued the firm incurs floatation costs which in turn raise the cost of debt however debt costs can be reduced because the interest paid is tax deductible but in cases where there is too much debt the risk of bankruptcy rises which in turn makes the cost of debt to increase that ultimately makes any additional debt to be unmarketable, (Nikbakht & Gropelli, 2012)

Managers cannot be issue debt beyond a certain point they should take advantage of financial leverage when debt/equity proportion is manageable and thus, very important for them to experiment the capital mix as reasonable amounts of debt will help lower the cost of capital. Increases in debt due to increased risk of insolvency raises the bankruptcy and agency costs which in turn increase the cost of borrowing due to high fixed interest costs and equally too much debt causes a small decline in EBIT to result in a large decline in EPS making the market and investors suspicious due to the risk involved compelling them to demand high returns which increases the cost of debt, (Nikbakht & Gropelli, 2012)

### Cost Equity

According to Camara et al, (2009) the cost of equity is the return that shareholders require on their investment in the company, it is extensively used in the valuation of investment projects and estimation of equity risk premiums. Cost of equity is also important in optimal capital structure determination, in portfolio performance evaluation, in risk management analysis and attribution analysis. Estimating the of implied cost of equity involves ascertaining the internal rate of return that equates the stock prices to the present value of forecasted cash flows , (Hou et al, 2012)

Various factors influences cost of equity; large company investors usually require less return on their investment which effectively reduces the cost of equity, (Witmer and Zorn, 2007), age of maturity of the firm affects the equity price and so is the cost of equity, (Pastor et al, 2008), nature of business, type of business, transaction costs like commission, fees and other charges incurred in buying or selling a security are usually higher for less liquid stock and investors in this case will require more return for those securities. An increase in financial leverage increases the risk to shareholders which effectively

increases the cost of equity, (Witmer and Zorn, 2007)

Investing in high risk projects whose net value at the required rate of return is zero doesn't result in an immediate change of the value of the enterprise but it increases the creditors' risk however reducing the value of debt does increase the value of shareholders equity with the same amount. and financing by own investments the company increases the enterprise value by the same amount if the return on investment is equal to the required rate of return, part of this additional value goes to the creditors, whose risk is reduced to the detriment of shareholders as the overall value of their shares will not rise by the amount of funds invested.

#### **Debt to Equity Ratio**

Financial leverage arises when a company uses debt to finance part of its operations a higher debt to equity ratio means higher levels of financial leverage, while financial leverage produces high EPS it also causes the EPS to become volatile which increases risk but if the debt to equity ratio remains manageable the value of the firm will be high, (Nikbakht & Groppelli, 2012) when financial leverage (debt/ equity ratio) moves away from the optimum that means the cost of capital starts to increase causing bankruptcy costs and agency costs increase and tax benefit to vanish.

The more debt a firm uses in its capital structure the greater the financial risk. Financial risk indicates the risk to the stakeholders as a result of increase in debt and preference equities in a company's capital structure, as the debt and preferred equities increase the interest payments increase reducing EPS thus increasing the risk of stockholder's return. High financial risk declines the value of the firm due to growing chances of bankruptcy, rising agency costs and adverse effects of high financial costs so when the debt to equity ratio is very high part of

the risk is borne by stockholders is shifted to bondholders who are left with the responsibility of reorganizing and liquidating a company at a loss. (Nikbakht & Groppelli, 2012)

Bankruptcy risk also increases with the increased debt load this is because the cost of debt becoming higher which in turn affects the WACC this is because as gearing increase the bankruptcy risk also increases so does for both the cost of debt and cost of equity. The optimal level of gearing describes a situation with minimal financial cost. The cost of capital and market value of the firm can be maximizes by minimizing the average cost of capital by substituting more expensive equity with cheaper debt.

#### **Retained Earnings**

Retained earnings is the revenue retentions or retained surplus and it is refers to the portion of profit of the company that is put aside for reinvestment for the business or for payment of debt instead of being paid out rather as dividends to the shareholders of the company, (Chasan, 2012). It is part of trading profit for the company which is not distributed out as dividends but put into reinvestment, (Dinayak, 2014)

Due to the limited options of raising funds most executives prefer cash generated from operations as a major source of capital, hence they retain more earnings for reinvestment (Campbell, 2012). The more retained earnings in the company's capital contents the faster it has chances for growth. Retained earnings include accumulated retained earnings and net income from operations less dividends paid out to shareholders (Dinayak, 2014).

Retained earnings usually are internal sources of finance available to the organization and they have many benefits as a source of funds because they are readily available for use and they are cheaper than external sources like equity and they do not lead to

dilution of ownership as they always have a positive connotation because stakeholders perceive that the company has lots of potential investment opportunities (Orwel, 2010).

According to chasan, 2012 retained earnings has a disadvantage as a source of financing as they are a limited source of financing company operations and investment opportunities due to their high opportunity cost. Retained earnings are always a sacrifice made by equity holders which is a forgone dividend to equity holders and this describes their having high opportunity cost when used to raise funds.

### **Bankruptcy**

Bankruptcy/ insolvency refers to a financial situation of a company when it is incapable of a sufficiently successful performance for meeting its liabilities (Sneidere, 2009). In some cases when a company is not able to pay its debts, a secured creditor will appoint a receiver to collect and sell the assets of a company in order to pay off the debt owed to them by the company by a process known as receivership and this case the company is said to be unable to meet its financial obligations or has entered into bankruptcy

When a company experiences financial distress, operating conditions most of the time deteriorate which results into heavy financial burdens. If the company allows the situation to continue and to worsen bankruptcy becomes a reality however if the company takes appropriate steps to remedy the financial conditions to improve its operations it can recover and experience a resurgence therefore in cases of financial distress some companies can experience rebirth while others get bankrupt, ( Wang & Shiu, 2014).

The threat of bankruptcy discourages debt financing, the high levels of leverage in the company will render it unable to make interest and

principal payments when the cash flows are low which can easily result in default by the firm to pay its debts calling for a bankruptcy,(Megginson, 2008). Companies under financial distress incur costs such as expensive financing, opportunity costs of projects and less productive employees both of these factors increase the chances of bankruptcy.

### **Empirical Review**

#### **Cost of Debt**

Kebewar, (2013). In their study of the effect of debt on profitability of French trade companies where they examined empirically the impact debt has on profitability using the generalized method of moments (GMM) on an unbalanced panel of 2325 French companies over the period (1999-2006). They came up with findings that debt has a negative influence on profitability in all size classes of trade enterprises and the influence is more in small and medium enterprises (SMEs).

Kebewar (2013). Examined the role of firm specific interest payments as measured by the interest burden in determining firms survival basing on firm level data for the UK from a period of 2000 to 2009 and found out that there is a strong link between debt servicing cost and firm survival, high levels of debt increases firms chances of getting into financial crisis.

#### **Cost of equity**

Dakhlaui & Gana (2015) estimated the cost of equity capital in the Tunisian stock market where they used a sample of 26 firms listed in the Tunisian stock market from 2003 to 2010 where they conducted a comparative analysis between the CAPM and the three factor model of Fama and French (1993). The results indicated that the four factor model is the best to capture the change in portfolio returns during the same period even though the four factor models don't explain the

returns of all portfolios and a significant positive relationship is set forth between excess returns and market risk premium.

### **Debt to Equity Ratio**

Gathogo & Rangui (2014), examined what determines the capital structures of publicly quoted firms, unquoted firms and small and medium enterprises (SMEs) where a sample of 22 quoted firms 25 unquoted firms and 153 SMES registered by the Kenya Association of Manufacturers were studied. The data for empirical analysis were driven from the financial statements of the firms for the period (2000- 2010). In their findings they observed that the average debt-equity ratio of the listed firms is 0.712 which implied that companies tend to average in order to maintain an almost balanced capital structure.

Tale (2014) investigated the link among capital structure and financial performance of non-financial registered firms at the NSE in Kenya from January 2008 to December 2013. The study population consisted of all the 2014 non-financial listed firms and duly registered with capital markets where secondary data was obtained from financial statements. The findings showed that financial performance is absolutely connected to debt – equity proportion.

Kumar (2012) investigated the choice of debt to equity in respect to the financing pattern of 300 Indian private sector companies comprising of the 20 various sectors from the period of 1999 to 2000 and 2007 to 2008 duly grouping them on the basis of nature, size, region and age. The findings indicated that the debt to equity ratio of the sample companies were 1:12 slightly higher than the generally accepted norm 1:1 showing that the Indian companies were more dependent on debt capital as compared to equity and they preferred long term borrowing over short term however the

researcher did not comment on their vulnerability to bankruptcy

### **Retained Earnings**

Bassey, Onyam & Aganyi, (2016), on their study to examine the impact of retained profits on corporate performance of Niger Mills Company Limited Calabar –Nigeria where the studies the retained earnings of the company for the period of 10 years (2001 to 2010) came up with findings indicating that there is a significant relationship between retained earnings and corporate performance. Using retained earnings as a source of finance has no transaction and bankruptcy costs.

Yhirumalaisamy, (2013) studied the relationship between firm growth and retained earnings behavior of Indian firms where the study selected seven major Indian industries out of 23 choosing a sample of one hundred and forty nine firms which were on average of the most profitable for the period of 15 years from 1996 to 2010. The data was retrieved from PROWESS data base provided by Centre for Monitoring Indian Economy (CMIE). The findings of the study indicated that the fixed investment needs such as investments in fixed assets and inventory are not financed through retained earnings as the coefficients of these variables are not statistically significant. They also found out that cash flow and interest rate were the most influential variables deciding the level of savings. The companies were depended on borrowed capital rather than the two cost-wise extreme sources of capitals i.e. equity capital associated with highest cost and the low cost retained earnings.

### **Bankruptcy**

Kjell (2010) studied the relationship between bankruptcy and growth of firms, the study was aimed at investigating whether firms with high bankruptcy risk also have high expected future growth such a positive relationship indicates

suggests that there is a trade-off between the downside risk of bankruptcy and the upside potential of high growth which is crucial for investors, managers and other stake holders in the firm to be aware of this trade-off, the study also looked at the firm characteristics that are associated with both high bankruptcy risk and high expected growth.

The population under study consisted of the Norwegian non listed firms for the period between 1988 and 2007 of which the data consisted of a large sample of financial reports for Norwegian joint stock companies over the of twenty years which was provided by Norges Bank and D&B. The study found out that characteristics of firms with high bankruptcy risk are similar to those of firms with expected high future growth in sales examples including low equity ratio, low current profitability and low current levels of earnings capacity of capital.

## METHODOLOGY

The study applied correlation design; this design explains how and to what extent an association exists between two or more quantifiable variables, (Oso & Onen, 2009). The target population in the current study comprises of sixty-seven companies listed in the NSE. Multiple regression was used to test the combined influence of the variables using the following model:

$$Y_{i,t} = \beta_0 + \beta_1 X_{1i,t} + \beta_2 X_{2i,t} + \beta_3 X_{3i,t} + \beta_4 X_{4i,t} + \epsilon_{i,t}$$

Where:

$Y_1$  = Bankruptcy of companies listed in NSE

$X_1$  = Cost of debt

$X_2$  = Cost of equity

$X_3$  = Debt-Equity Ratio

$X_4$  = Retained Earnings

$\beta_0$  = constant

$\epsilon_{i,t}$  = Error term.

{ $\beta_i$ ;  $i=1,2,3,4$ } = The coefficients representing the various independent variables.

## FINDINGS

### Descriptive Analysis

As shown in Table 1, descriptive analysis was carried out using minimum, maximum, mean and standard deviation. The average Susceptibility to Bankruptcy was 3.49, with minimum of -1.29 and maximum of 12.28. The average Cost of debt, was 16% with minimum loss of 12%. Thirdly, the average Cost of equity was 3.69 with minimum of -1.84. The average ratio of debt to equity was 59%, with the highly leveraged firm being at 80%. The average Retained Earnings differed most amongst study variables under investigation since it had an average deviation of 2.23 units.

**Table 1: Descriptive Analysis**

	N	Minimum	Maximum	Mean	Std. Deviation	Jarque Berra	P value
<b>Bankruptcy</b>	39	-1.29	12.28	3.49	0.53	23.12	0.85
<b>Cost of debt</b>	39	-0.12	0.23	0.16	0.29	18.52	0.72

<b>Cost of equity</b>	39	-1.84	8.93	3.69	1.36	16.28	0.69
<b>Debt-Equity Ratio</b>	39	0.35	0.80	0.59	0.23	22.03	0.63
<b>Retained Earnings</b>	39	2.7	12.59	8.29	2.23	17.89	0.64

#### Panel Diagnostic Tests

The choice between fitting pooled least squares model against random effects models was determined through use of Lagrangian multiplier test (LM). The test hypothesis that there is uniform variance across all entities under consideration against an alternative hypothesis of non-uniform variance. As shown in Table 2 the p value was less than 0.05, hence null hypothesis could not be rejected and consequently the pooled effects regression model was not appropriate to be fitted in the data.

Secondly, test- parm a test was carried out to investigate fixed across entities under investigation. The test was appropriate to examine whether an introduction of dummy variables was appropriate

prior to fitting hypothesized model. Since, p value was greater than 0.05, it was not appropriate to introduce dummy variables or carry out two-way analysis.

Further, heteroskedasticity and serial correlation were carried. Results shown in Table 4.2 revealed that none of the study variables had p value less than 0.05. Therefore, there was uniform variance across variables and there were not serially correlated.

**Table 2: Panel Diagnostic Tests**

<b>Breusch –Pagan LM Test</b>	$\chi^2$ -value	p-value
	2.411	0.003
<b>Test Results for Time Fixed Effects</b>	F-value	p-value
	0.65	0.783
<b>Heteroskedasticity test</b>	$\chi^2$ -value	p-value
	22.74	0.061
<b>Serial correlation</b>	F-value	p-value
	1.135	0.792

Further, Product Moment correlation coefficient was carried out as shown in Table 3. Results of the study revealed that there was a positive and significant relationship between Susceptibility to

bankruptcy and cost of debt (rho =0.576, p value <0.05). Secondly, there was a positive and significant relationship between cost of equity and Susceptibility to bankruptcy (rho = 0.653, p value

<0.05). Thirdly, there was a positive and significant relationship between Debt to equity ratio and Susceptibility to bankruptcy (rho = 0.612, p value <0.05). Further, there was a positive and significant relationship between retained earnings and

Susceptibility to bankruptcy (rho = 0.543, p value <0.05). A close scrutiny of the relationship between independent variables revealed that there was no multicollinearity since none of those variables had correlation coefficient greater than 0.7.

**Table 3: Correlation Analysis**

	Susceptibility to Bankruptcy	to Cost Debt	of Cost of Equity	Debt Equity	to Retained Earnings
<b>Susceptibility to Bankruptcy</b>	1				
<b>Cost of Debt</b>	.576**	1			
<b>Cost of Equity</b>	0.653**	0.192*	1		
<b>Debt-Equity Ratio</b>	.612**	0.286*	0.005	1	
<b>Retained Earnings</b>	.543**	.252**	0.023	0.016	1

\* Correlation is significant at the 0.05 level (2-tailed).

\*\* Correlation is significant at the 0.01 level (2-tailed).

Since it was not appropriate to fit pooled effect model, then either random or fixed effects had to be fitted. The choice from them can be easily made

using Hausman Tests. Results shown in Table 4 supported use of fixed effects since the p value was less than 0.05.

**Table 4: Hausman Test**

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	
Hausman Test	17.07	4	0.007	
Variable	Fixed	Random	Var (Diff.)	Prob.
Cost of Debt	0.026	0.023	0.003	0.07
Cost of Equity	0.017	0.018	-0.001	0.08
Debt-Equity Ratio	0.013	0.012	0.001	0.74
Retained Earnings	0.011	0.012	-0.001	0.26

## Regression Analysis

**Table 5: Fixed Effects Regression on the effect of capital mix on susceptibility to bankruptcy of companies listed in the NSE.**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Cost of Debt	0.026	0.009	2.888	0.000
Cost of Equity	0.017	0.007	2.429	0.000
Debt-Equity Ratio	0.013	0.006	2.167	0.000
Retained Earnings	0.011	0.005	2.211	0.002
C	0.042	0.024	1.752	0.065
R-squared	0.531	Mean dependent variable		3.49
Adjusted R-squared	0.522	S.D. dependent variable		0.053
S.E. of regression	0.023	Akaike info criterion		-3.215
Sum squared residuals	0.032	Schwarz criterion		-3.215
Log likelihood	142.26	Hannan-Quinn criterion.		-3.06
F-statistic	34.58	Durbin-Watson stat		1.832
Prob (F-statistic)	0.000			

Regression analysis in Table 5 revealed that Cost of Debt, Cost of Equity, Debt-Equity Ratio and Retained Earnings all jointly had influence on susceptibility to bankruptcy since (F= 34.58, P value = 0.000). An R squared of 0.531 (53.1%) shows that changes in Susceptibility to bankruptcy amongst listed companies from could be explained by Cost of Debt, Cost of Equity, Debt-Equity Ratio and Retained Earnings. The remaining percentage could be accounted for by other factors which were excluded from the model.

The first hypotheses of the study stated that Cost of Debt had no significant influence on susceptibility to bankruptcy of listed companies in NSE. Results of the study revealed positive and significant

relationship between Cost of debt and susceptibility to Bankruptcy ( $\beta = 0.026$ , p value <0.05). This shows that a unit change in Cast of Debt increased susceptibility to bankruptcy by 0.026 units while holding Cost of Equity, Debt-Equity Ratio and Retained Earnings constant. These findings were in support of (Kebewar, 2013; Santosuosol, 2014; Jozwaik, Marszalek, & Sekula, 2015) who found positive and significant relationship between Cost of Debt and Susceptibility to Bankruptcy

The second hypotheses of the study stated that cost of equity had no significant influence on susceptibility to bankruptcy amongst listed companies. The findings revealed positive and significant relationship between Cost of Earnings

and Susceptibility to Bankruptcy ( $\beta = 0.017$ ,  $p$  value  $<0.05$ ). This implies that a unit change in Cost of Earnings leads to an increase in susceptibility to bankruptcy by 0.17 units while holding Cost of Debt, Debt-Equity Ratio and Retained Earnings constant. These findings were in support of (Dakhlauil & Gana, 2015; Foong & Goh, 2013), who found positive and significant relationship between Cost of Equity and Susceptibility to Bankruptcy

The third hypotheses stated that Debt-Equity had no significant influence on Susceptibility to Bankruptcy amongst listed companies. The study findings depicted that there was a positive and significant relationship between Debt-equity and Susceptibility to Bankruptcy ( $\beta = 0.013$ ,  $p$  value  $<0.05$ ). This implies that a unit change in Debt-Equity while holding Cost of Debt, Cost of Equity and Retained Earnings constant increases Susceptibility to Bankruptcy by 0.013 units. These findings were in support of (Gathogo & Rangui, 2014; Tale, 2014; Kumar, 2012; Ibrahim & Lee, 2010), who found positive and significant relationship between Debt-equity and Susceptibility to Bankruptcy.

The fourth hypotheses stated that there Retained Earnings had no significant influence on Susceptibility to Bankruptcy amongst listed companies. Results of the study revealed that there was a positive and significant relationship between Retained Earnings and Susceptibility to Bankruptcy ( $\beta = 0.011$ ,  $p$  value  $<0.05$ ). This implies that a unit change in Retained Earnings increases Susceptibility to Bankruptcy by 0.011 units while holding Cost of Debt, Cost of Equity, Debt-Equity Ratio constant. These findings were in agreement with (Bassey, Onyam & Aganyi, 2016; Thuraniira, 2014; Yhirumalaisamy, 2013)) who reported positive and significant influence of firm size on susceptibility to bankruptcy of listed companies.

## CONCLUSION AND RECOMMENDATIONS

From both correlation and regression analysis there is evidence of positive and significant relationship between Cost of Debt and Susceptibility to Bankruptcy for listed companies.

Results of the study revealed positive and significant relationship between Cost of Equity and Susceptibility to Bankruptcy for listed companies. These results were from regression and correlation analysis.

Thirdly, regression analysis revealed positive and significant effect of Debt-Equity ratio and Susceptibility to Bankruptcy for companies. Moreover, correlation analysis revealed positive and significant between Debt-Equity ratio and Susceptibility to Bankruptcy for listed companies.

Finally, regression analysis revealed a positive and significant influence of Retained Earnings and Susceptibility to Bankruptcy for companies. Moreover, their correlation analysis revealed a positive and significant relationship between Retained Earnings and Susceptibility to Bankruptcy for listed companies.

### Conclusion of the Study

Based on the study findings it can be concluded that, Susceptibility to Bankruptcy of listed companies can be jointly explained by Cost of Debt, Cost of Equity, Debt-Equity Ratio and Retained Earnings. From the study findings all these four factors explained more than 50% of the variations in their susceptibility to bankruptcy. This calls for management to continuously evaluate these four facets so as to improve Susceptibility to Bankruptcy.

First, Cost of Debt had positive and significant relationship with Susceptibility to Bankruptcy. There is need for listed companies to develop measures geared towards enhancement of cost of debt. Listed

companies should strive to maximize shareholders wealth.

Whenever investors make Cost of Equity they strive to maximize their wealth. Therefore, there is need for companies to develop measures geared towards increasing market price of its shares. Although, the market price is controlled by forces of demand and supply dissemination of information to the public would influence stock prices depending on its positivity and negativity.

Thirdly, listed companies are mostly financed using Debt and Equity. The level of Debt-Equity Ratio deployed by a firm should a cost saving. Since there was a positive and significant relationship it implies that borrowed capital is invested into investments which have positive net present value. Caution should be exercised when borrowing to avoid excessive borrowing which may negatively affect the performance of listed companies.

There was a positive and significant relationship between Retained earnings and Susceptibility to Bankruptcy. There is need to develop strategic measures which are geared towards promoting profitability of the firm within listed companies. This would impact positively on net asset value of a firm.

### **Recommendations of the Study**

There is need for listed companies to continuously evaluate their business models. This would necessitate adoption of corrective measures which are geared towards improvement of firms' financial performance. Furthermore, listed companies should seek measures aimed at curbing operational costs as such to increase profit.

There is need for listed companies to develop measures which are geared towards minimizing agency conflict with their shareholders. Minimization of agency for example through information disclosure would enhance investment decision making upon boosting investors' confidence.

Thirdly, listed companies ought to examine alternative sources of financing and adopt the cheapest source of finance. This would enhance firm performance and consequently maximize shareholders wealth.

There is need for listed companies to continuously develop products and services which will enhance their market penetration. This can only be achieved through continuous research and development as well as adoption of innovative approaches on product distribution.

### **Suggestions for Further Studies**

The current study investigated the effect of capital mix on susceptibility to bankruptcy of companies listed in the NSE. There were only twenty one companies under consideration and thus there is need to undertake a census on all the listed Companies. Further, the consideration of only a ten-year period would have created biasness associated with small sample size. There is need to carry out a research on the effect of capital mix on susceptibility to bankruptcy of companies listed in the NSE using the recent Bankruptcy Models. Since there are steps toward creation of East African securities exchange. There is need to carry out a study which can draw respondents from East Africa securities exchange in their respective countries.

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