

**CORPORATE FINANCIAL DISTRESS PREDICTION AND
TURNAROUND STRATEGIES IN NIGERIA’S OIL AND GAS
SECTOR**

BY

OMOLEKAN, Olushola Joshua

B.Sc., M.Sc. (Ilorin)

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Supervisors:

Dr. R. A. GBADEYAN

Dr. J. A. BAMIDURO

MAY, 2017

CERTIFICATION

This Ph.D. Research Thesis has been read and approved as meeting the requirements for the Award of Ph.D. in Business Administration in the Department of Business Administration, Faculty of Management Sciences, University of Ilorin, Ilorin, Nigeria.

Dr. R. A. Gbadeyan
Supervisor

Date

Dr. J. A. Bamiduro
Co-Supervisor

Date

Dr. U. Gunu
Head of Department

Date

Dr. I. B. Kadiri
Postgraduate Coordinator

Date

Internal Examiner

Date

External Examiner

Date

DEDICATION

This Thesis is dedicated to the Almighty God.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the study

In the last three decades, Nigeria economy has witnessed great decline in organisational performance due to corporate failure in almost all her sectors. The rate at which profitable businesses go into extinction is very alarming which colossal implication is evidenced by decrease in overall standard of living, loss of jobs, decline in Gross Domestic Product (GDP), and general social disequilibrium in the macro economy. The economic liberalization in 1992 exposed Nigerian companies to large scale domestic and international competition, while few firms confront the situation, a reasonable number of organisations were adversely affected and were in financial distress (Adeyemi, 2011). Financial distress is a state when a firm cannot meet or face intricacy to pay off its financial obligations to all stakeholders. The likelihood of corporate financial distress increase when a firm's fixed costs are high, assets are illiquid, or there is a fall in revenues. These situations led most companies to bankruptcy and eventual collapse.

The distress scenario observed in virtually all the sectors of Nigeria economy. For example, in the banking sector, the rate of banks failure has risen sharply since late 1980s. The rapid increase in the incidence and magnitude of distress has reached an alarming proportion that confidence and credibility are steadily being eroded. Prior to 1989, the scale of distress in the banking system was generally modest. Serious cases of distress were relatively few, and quite amenable to control by the monetary authorities. However, from 1990 to 1995 the situation has changed dramatically. In 1990, eight (8) banks were identified as distressed while two years

later, in 1992, the figure jumped by 100% to sixteen (16) banks. By 1994, the situation had become so serious with fifty-five (55) distressed banks as against thirty-eight (38) as at the end of 1993. The number rose to an unsurpassed level of sixty- (60) at year-end of 1995. This implies that at the end of that year, an average of one (1) out of every two (2) banks was distressed (Maishanu, 2013). Beyond 1998, many banks had to be liquidated by the regulatory authorities and in 2011, three banks had to be nationalised to avoid the consequences of liquidating them and the negative effect on the economy. Literature evidence shows that many of the failed banks had sustained distress long before their final collapse (Bello, 2010)

In the textile industry, a decline of the companies were observed from 124 to 45 firms between 1994 and 2005, and this accounts for a decrease in employment by 87 percent from 150,000 to about 20,000 in that period, and the few surviving firms operating at less than 40 percent installed capacity; total collapse of the industry is imminent (Okebalama, 2014). Likewise, in the manufacturing sector, specifically in the last two decades, Nigeria undergone a sharp decline in manufacturing activity leading to loss of approximately 8,708 jobs in manufacturing sector due to plant shut downs and relocations such as **Dunlop** relocate to Ghana, Unilever moved their manufacturing point to Ghana and the likes due to lower cost of production in those neighbouring countries. Nigeria has only 5percent of its GDP coming from manufacturing as against 20percent for Mauritius and South Africa (Ayeni, 2012; Soderbom & Teal, 2002). Recently, on 16th of July 2017, airlines companies were agitating for merger to survive the turbulent economy (Olowo, 2017). With these and many more, it shows that no sector in the Nigerian economy is free from crisis.

The oil boom in the 1970s has placed Nigeria among oil producing countries in the world and second in Africa (Thompson, 2016). This development plays down other sectors with much

attention on the oil at the expense of other sectors especially agriculture which used to be the major source of the nation's revenue. Overdependence on oil revenue turns the economy of Nigeria to mono-product economy where her major income being derived. Availability of enough revenue from this venture paves way for massive corruption among the political office holders, as the wealth derived is concentrated in the hands of few citizens. In Nigeria, 70% of her population lives on less than one US Dollar per day, despite the fact that her oil revenue is more than three hundred and forty US Dollar since 1970s. Thus, oil exports, as main revenue source for development does not seem to work. Besides, the capital intensive nature of oil firms concentrate the sector in the hand of foreign multinational companies to explore which compounded the problem of Nigeria's oil and gas sector. These problems are traceable to resource curse or Dutch disease syndrome. The attention given to this sector has led to its growth which brings about the incorporation of many companies in the different segments of the sector such as downstream, upstream, and midstream which offer employment opportunities for many Nigerians and contributes to economic growth and development.

The oil and gas sector in Nigerian economy are estimated to worth over ~~₦~~232.10 billion as at 2015 (NSE Fact book, 2015). Yet, this sector has really suffered great shocks and distresses recently. Thus, the distress syndrome are more pronounce in the banking sector but in the real sense of it, other sectors in the Nigerian economy especially the oil and gas firms have experienced distress in the recent years. Besides outright failure, a small number of oil and gas firms make use of over fifty percent of their installed capacity. The rationale for this repulsive development is due to exchange rate problems, vandalisation of pipeline, inflation, unstable government policies and other macro economy disequilibria. The low effective utilization of capacity leads to unfavourable business times for most oil and gas firms.

Of recent, commercial banks in Nigeria shamed and named defaulting customers, the assessment published by “This day’s Newspaper” on 10th of August 2015 captured the list of defaulting customers in 16 Nigerian banks. The report show a total amount of ₦238 billion as Non-Performing Loan (NPLs). ₦47.572 billion out of this figure is accrued to oil and gas sector as bad loans while firms in the trading concerns and service sectors such as schools, hotels, micro small and medium scale enterprises and logistics firms have the highest amount of bad loan totalling to ₦129 billion (Obina, 2015). Nigerian economy still depends on oil production and prices for survival. Now, oil prices are falling, which portends deep challenges for especially indigenous oil, and gas firms in the country. Many organizations in this sector have experienced distress while consequently some has collapsed. This development necessarily called for an examination of the revival efforts of these organisations.

To ensure sustainable economic growth, it is crucial to control the number of businesses that failed. Corporate solvency must be controlled in the most effective manner as to guarantee the systematic growth and survival of that organization. However, to control a firm’s liquidity therefore, it is imperative to make use of tools that are more hands-on rather than kneejerk in their move towards discovery and remediation of the possible problem. The most valuable tool for any business organisation must be the one that gives an “advance” warning of an imminent disaster rather than the sign of it, as symptoms become obvious when a patient is attack.

In Nigeria, organisations faced with risks, which hinder their growth. These kinds of risks include political insecurity, fierce competition from international companies and instability of monetary and fiscal policies. The risk of default, bankruptcy or failure is one of the vital risks in businesses. Risk is not 100percent avoidable in any business but predictable and it can be

efficiently controlled. The signs of possible corporate failure become evident months in lieu of actual bankruptcy. Prediction of waning business activities leading to failure or bankruptcy gives room for corrective measures or actions by the stakeholders. This study, therefore, examine corporate financial distress prediction and turnaround strategies in Nigerian oil and gas sector using Multiple Discriminant Analysis Model and Survival Analysis as predictive tools.

1.2 Statement of the problem

The continuous entrances and exits of companies are natural components in the economic system. Over the years, a huge number of businesses have succeeded, while others have struggled for survival and subsequently failed (Lakshan & Wijekoon, 2013). Interest in corporate financial distress prediction has grown rapidly in recent years due to the number of businesses that are collapsing.

Many organisations when in distress, particularly the banking industry seems to lose hope of survival because of the public confidence that may be eroded. Organisations that are not bank oriented appear to be safe from this because the underperformance is not so glaring and noticeable by the public. Hence, the probability of survival of ailing firms in oil and gas industry appears to be greater than distressed banks. Ailing organisations can be remedied for the purpose of survival than banks.

Corporate failure often results in major costs; direct and indirect costs to stakeholders, such as shareholders, suppliers, customers, managers, creditors, employees, investors, auditors, and the community. Likewise, financial distress leads to direct and indirect costs on the firm. Direct costs include tangible and any other expenses paid for the purpose of liquidation or a means of

reorganisation towards rejuvenations of ill enterprise. These direct costs include; lawyer cost, bankruptcy fees, accountants' levy and other professional services in a case of liquidation while loss sales because of perceived bankruptcy, which leads to decline in firms' profit, are classified as indirect cost. Customers are always willing to buy from the firms that are stable to deliver on promise rather than the ones that might fail. In the same vein, suppliers are reluctant or less generous in offering credit facilities to the firms that might soon close down their operation. This impaired relationship has serious adverse effect on the firm and may even worsen the situation leading to bankruptcy.

Business failure is characterized by loss of job directly and indirectly. Besides, employees morale of distress firms are low due to perceived job insecurity while high profile staff will strive to move to a safer enterprise in the bid to protect their career. A lot of managerial time and opportunities were lost dealing with distress or finding a way to get out of it. In most distress cases, management concentrate their time and effort solving liquidity issues and short term financing rather than long term shareholders' wealth.

Aside from the economic and financial cost, business failure is associated with social cost. Corporate collapse has negative mental effect on the entrepreneurs, business owners, managers, proprietors and their families. Generally, failure ruins lives, cause depression, destroy health, leads to loss of confidence in its victims and pushes them to the edge of committing suicide and beyond. Many of these costs can be ameliorated if distress could be predetermined before failure occurs and if estimate could be made for firm's survival within a reasonable time frame.

The noticeable failure in the banking, brewing, textile, agriculture, oil and gas, consumer goods companies and many more posed serious problems to the developing countries like Nigeria

because the consequences are huge and capable of hindering expected growth and development. Early prediction and application of remedial measures will ravage most of these problems. There are several business decisions, but, one of the most paramount decisions in any business that has continuity and survival as one of its objective is the solvency decision. The consequences of failure are enormous and far reaching on the business firms, the society they operate and the economy at large.

Meanwhile, many academics scholars and professional bodies have studied corporate collapse and have developed models and theories in the bid to predict corporate failures far ahead of times to curb the menace and consequences attributed to business failure. Yet, there seems to be divergence of interest among scholars as many researches resulted in contradictory opinions. However, solvency prediction and corporate survival issues is complex. Studying this area of business is encumbered, challenged and motivated as no single theory exist to understand and explain corporate survival, no techniques guarantee effective survival prediction. Thus, over 40 years of bankruptcy prediction through multivariate statistical models, no sound agreement has been reached among prediction scholars on solvency prediction models variables. The need to resolve these disagreements motivate this study to investigate the existing solvency prediction models, evaluate the models and suggest appropriate models for corporate financial distress prediction.

Besides, there are divergence views on the appropriate turnaround strategies to adopt by financially distressed firms. Different authors with different opinion based on the effectiveness of turnaround strategies that are capable of rejuvenating distressed firms. The need to harmonise

these views in determining the most suitable strategy based on contingency or situational approach motivate this study.

1.3 Research Questions

In line with the problems identified, this study generates the following research questions:

- i. Is there any susceptibility to corporate financial distress in Nigerian quoted oil and gas firms?
- ii. How effective are the turnaround strategies employed by the financially distressed companies towards rejuvenation?
- iii. What is the effect of solvency metrics on the corporate survival of Nigerian oil and gas firms?
- iv. To what extent does corporate governance attributes influence the survival likelihood of quoted Nigerian oil and gas companies?

1.4 Objectives of the study

The main objective of this study is to examine the corporate financial distress prediction and turnaround strategies in Nigerian oil and gas sector using Multiple Discriminant Analysis and Survival analysis model. The specific objectives are to:

- i. evaluate the susceptibility to corporate financial distress of quoted oil and gas companies in Nigeria;
- ii. evaluate the effectiveness of turnaround strategies in financially distressed companies towards rejuvenation;

- iii. examine the effect of solvency metrics on corporate survival of Nigerian quoted oil and gas firms; and
- iv. determine the influence of corporate governance attributes on the survival likelihood of quoted Nigerian oil and gas companies.

1.5 Research Hypotheses

In line with the research objectives, the study formulated the following hypotheses;

H₀₁: there is no susceptibility to corporate financial distress in Nigerian quoted oil and gas companies

H₀₂: there are no effective turnaround strategies to rejuvenate financially distressed companies

H₀₃: there is no effect of solvency metrics on corporate survival in a given time frame based on the state of the financial health of companies

H₀₄: corporate governance attributes have no significant influence on the survival likelihood of quoted Nigerian oil and gas companies.

1.6 Significance of the study

It is great of expectation that this study provide a sound basis for organisational solvency prediction for business executives and managers. However, the research was carried out in oil and gas sectors of Nigeria, the study can be adopted and used by organisations in different

sectors. This is because it provides guidance, which will enhance effective and efficient corporate financial distress prediction as well as the management of the distress to rejuvenate distressed companies. Healthy organisations contribute meaningfully to the growth and development of any nation, they provide employment opportunities for the populace and improve countries Gross Domestic Product (GDP).

Timely and accurate prediction of business financial status is crucial because it gives a direction to the investors and stakeholders on the information relating to the credit worthiness of firms. This is essential in taking investment and financial decisions, which are vital aspect of financial management. Subsequent to global financial crisis, prediction of bankruptcy as becomes a common phenomenon in order to give clearer firm's financial position or state. Besides, knowing the financial health or status of firms is of great interest to regulatory authorities, creditors, shareholders and other users of firms' financial statement. According to Rajasekar, Ashraf and Deo (2014), firm's financial health status prediction is of its own quality as it perfectly point out a company's financial status.

Corporate financial distress prediction gives an “advance” warning of an imminent financial danger rather than the signs of it, as symptoms become obvious when a patient is attack. Knowledge of contemporary corporate financial distress prediction models gives an early warning of insolvency signals to organisations for them to be proactive (i.e. Finding solutions and management of distress towards rejuvenation and survival) rather than being reactive. It helps the stakeholders, i.e. shareholders, financiers, employees, contractors, customers and the government in taking appropriate decision.

Also, it is expected that from the findings of this study, academics and researchers shall be furnished with relevant information regarding prediction of corporate financial distress and its management in Nigeria. The findings will stimulate other researchers to venture into corporate financial distress in other sectors of the Nigerian economy that are not included in this study. This will also add to the general body of knowledge and point of reference for other future related research.

To the Government, the findings of this research can be used to assist in policy formulation regarding taxation, interest rate and other regulatory requirements in Nigeria to enhance business growth and development. The policy maker can decide on how well to manage distressed companies in order to improve their performance.

Employees and prospective employees of the selected companies will be furnished with the needed information that will help them in taking decisions relating to their job and career.

To the Shareholders, the findings shall create some basic awareness and help them in understanding the circumstances under which Nigerian firms operate and hence reduce conflict between shareholders and management. Also, it will help investors in guiding their investment decisions.

1.7 Scope of the study

This study is designed to predict corporate financial distress and develop turnaround strategies in oil and gas sector of Nigeria using Altman's discriminant analysis and survival analysis. The

study focused on the quoted companies on the floor of Nigerian Stock Exchange. Financial statement generated from the annual report and book of accounts of the selected companies from 2000 to 2015 and information from the Nigeria Stock Exchange (NSE) Fact book and Securities Exchange Commission (SEC) were used. Oil and gas sector was selected from the twelve (12) classified industries/sectors on the list of quoted companies in the Nigeria Stock Exchange fact book due to the number of companies under their classification, contribution to the economy and high probability of insolvency due to the capital require, foreign competition, fluctuations in global oil prices and operating working capital. Besides, Nigeria economy is being regarded as monoeconomy due to her dependence on oil since the oil boom in 1970s and the fall in oil prices observed recently which is having an adverse effect on oil and gas companies and Nigerian economy at large.

The study analysed the concept of corporate financial distress, distress predictive models, causes of distress, distress management, strategies for distress rejuvenation and survival in Nigerian companies. It examined the success and failure as well as recommends corrective measures. The variables of interest are Financial ratio (i.e. Profitability ratio, Liquidity ratio, Leverage ratio and Activity ratio); Market based variable (such as stock return, return standard deviation and book to market equity); corporate governance attributes (i.e. board independence, board size, ownership concentration); and Company specific variables (i.e. Company size, Company age and Company squared size).

Quoted companies in the context of this study refer to as those organisations that are listed in the Nigerian Stock Exchange (NSE) fact books. The reason for this restriction is the availability of data as most oil and gas that are not quoted on the floor of Nigeria stock exchange may not be

required to publish their annual report, which is the major source of information/data for this study. Selected companies under this classification were; JAUPAUL Oil, Afroil Plc., Beco Petroluem, Conoil Plc., Oando Plc., Eterna Plc., Mobil Oil Plc., Forte Oil Plc., MRS oil Nigeria Plc., African Petroleum Plc., Total Nigeria, Agip, National Oil, Unipetrol, Texaco, Chevron and Union venture and Petroleum Plc. Seventeen (17) companies were quoted as at 2015 (NSE Fact book, 2015).

CHAPTER TWO

LITERATURE REVIEW

2.1 Preamble

This section reviewed existing literatures related to the concept of corporate financial distress, turnaround strategies, survival probability and its management. Applicable theories to the concept were also adopted and empirical review of past researches and studies on the concept and models of corporate financial distress were examined and reviewed.

2.2 Conceptual clarifications

The unsuccessful business enterprise definitions given are in numerous ways to describe the formal process faced by firms and/or to classify the economic problems they encountered. Bankruptcy, Insolvency, Default and Failure were basic four terms frequently found in literature. However, these terms are mostly used interchangeably, they have distinct difference in their proper usage (Altman, 2006).

Bankruptcy is defined as the net worth state of an enterprise, which can either be formal or legal statement, supported by a petition to either dissolve firms' assets or try a recovery program (Altman, 2006). Rejuvenation program is legally defined as insolvent reorganisation. The legal reorganisation is an official process that is regularly the last evaluation in a sequence of attempted remedies.

However, insolvency is another concept depicting the negative performance of a firm and it is used usually in technical terms. Technical insolvency occurs only when a firm does not meet-up

its current obligations, indicating lack of liquidity (Altman, 2006). It may be a momentary condition but if often, it is the instant cause of legal bankruptcy declaration. A situation of critical insolvency is when firm's total liabilities is more than the fair valuation of its total assets. Therefore, the firm records a negative real net worth.

Failure, on the other hand by economic criteria, defines as the realized rate of return on invested capital, including allowances for risk consideration, which considerably and continuously on similar investments is lower than predominant rates. Different economic measures have been used, including deficient income to cover expenses and cases of an average return on investment being lower than the firm's cost of equity. There are no statements about the presence and discontinuance of any entity in this economic situation. Normative conclusions to stop activities based on the likely returns and the capability of the variable cost of a firm to cover up. It is suffice to say that business enterprise could be in economic breakdown for many years, and still fail to meet up its obligations due to the total or little absence of lawfully enforceable debt (Whitaker, 2000). Altman (2006) opine that, when a company fails to continually meet the rightfully enforceable creditors demands, it is often called legal failure. Though, legal as a word can be misleading due to its condition, as defined, may occur without formal court contribution. On the other hand, business failure can be referred to as businesses that terminates operation following obligation or bankruptcy; companies who terminate operation with debt to creditors after actions such as attachment, execution or foreclosure; or those that withdraw voluntarily, without paying unsettled obligations; or those once involved in court actions as arrangement, receivership or reorganisation; or those that willingly co-operate with creditors.

Another condition corporately associated with distress is default. Default can either be technical or legal and would always involve the association between the debtor and creditor. Technical default takes place when a debtor breaches a state of an contract with a creditor. This can be the grounds for a legal action (Altman & Hotchkiss, 2006).

2.2.1 The Concept of Financial Distress

Harris and Gibson (2006) describe financial distress in a broad perspective as a costly occurrence that affects the relationship with non-financial stakeholders and debtors. Consequently, a company increases its weak access to fresh capital thereby bearing the increased costs of maintaining this disturbed relationship. As a regulation, “financial distress” as a term is used in negative situations to describe the financial state of a company faced with a temporary liquidity deficiency and with complications that arise in the fulfilment of the financial obligations onplan and to the full extent (Galloway & Jones, 2006).

Bwisa (2010) in his article argued that the advancement of financial distress theory is a process having specific dynamics. Financial distress as Gordon highlighted, is only one phase of the process, accompanied by failure then restructuring, and should also be defined in relation to security valuation and financial structure.

The corporation encounters this situation when its earning generating ability becomes weaker and the sum of debtis greater than the value of the company’s total assets. Whitaker (1999) understood financial distress as a vital occurrence that differentiates the time of a company’s financial health from its financial illness thereby taking corrective measures to overcome the disturbing situation.

Gestel, Baesens, Suykens and Willekens (2006) categorized two types of financial distress: the first one is non-payment of a debt, and an attempt to debt restructuring to avoid the default situation. Financial distress arises when a company lacks the ability to fulfil its liabilities to the third parties. Increase in commercial banks and delisted of public companies non-performing loans in Nigeria is a distinctive phenomenon of corporate financial distress (Ayeeni, 2012). Gestel, Baesens, Suykens and Willekens (2006) illustrate failure and financial distress as the outcome of chronic losses caused by a disproportionate increase in liabilities which is followed by reduction in the asset value.

Turetsky and MacEwen (2001) explain financial distress as a sequence of successive stages characterized by a distinct set of opposing financial events. Each stage having a distress point continue the next distress point is reached. Each stage of financial distress technically is an interval between two distress points. The beginning of financial distress starts with having a volatile decrease from a positive cash flow to negative cash flow. The reduction in shows the change to the next phase of financial distress leading to default. Technical default on debt leads to troubled debt restructuring usually reducing the risk of probable bankruptcy. Thus, for the first time, researchers thrived at describing financial distress as an unceasing process with a clear structure and a classification of the distress events.

2.2.2 Predicting Financial Distress Using Altman's Model

Beaver was the first to give a serious thought on the use of financial ratios as a predictor of corporate financial distress in 1966. Beaver discovered and afterwards concluded that some ratios are more predictors than others after many trials from failed and non-failed firms. In his

1966, he concluded that ratio of cash flow to debt was the best sole predictor of financial distress five years prior to authorized filing of bankruptcy (Janer, 2011).

Beaver's used the univariate statistical model because of its traditional financial ratio analysis, the ratios served as clarifying variables or predictors and they were observed one after another. Thus, the unified effect of any set of financial variable or ratio is lost. Beaver's univariate analysis presumed a linear proportionate relationship between a set of financial ratios variables (Kamau, 2007). It is however not the case, because in most cases; a constant can play a role in the relationship between two financial variables.

Potential errors present in univariate analysis are lessened using multivariate analysis. Several discriminant functions were developed by Altman; Z-score being the first one was developed in 1968 using public firms stratified by size and industry. This model has a high predictive power two years prior to bankruptcy.

Furthermore, two versions of the 1968's Z-score model are existing: 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 (Altman, 2006).

Altman employed the multivariate discriminant analysis to study a group of 33 failed and non-failed firms, the results indicated quite a number of financial ratios that differentiated between failed and non- failed firms. The second revised model developed by Altman (2006) used five ratios in predicting failure as the 1968 model but discrimination zones was the difference. Recently, he developed a MDA model in which four financial ratios instead of five were used. These ratios cover the area of gearing, liquidity, management efficiency and profitability.

Pandey (2005) defined financial ratio as a virtual magnitude of two selected numerical values extracted from a company's financial statement. In accounting, there are quite a number of standard ratios used in evaluating the overall financial condition of a corporation. In financial analysis, the benchmark used for evaluating the financial performance and state of a firm is a ratio (Qasim & Ramiz, 2011). Financial ratios can either be used by potential and current shareholders of a firm, managers within a firm or by the firm's creditors.

Financial ratios are used by financial analysts to compare the company's weaknesses and strength. 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) cited in Natalia (2007) concluded that total liability divided by total assets, current liability divided by current assets, and size are the most important predictors after using eight traditional financial ratios. Predictive power of financial ratio depends on its capacity to differentiate between non-bankrupt and bankrupt. Financial ratios applications include determination of internal liquidity, financial risks, operating performance and growth.

Altman (2006) explained that, 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. 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. Benjamin and Kamalavali (2006) 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 first, second and third year before bankruptcy.

2.2.3 Business Failure Indicators

A financially distressed company is one whose Earnings Before Interest and Taxes (EBITDA) is lower than its interest expenses.

Financial leverage encompasses the replacement of fixed-cost debt for owner's equity in light of increasing equity returns. Financial performance is improved by financial leverage when financial business prospects are positive but negatively impact on financial performance when things are going poorly. Therefore, increasing the ratio of debt to equity in a firm's capital structure implicitly makes the firm fairly less solvent and more financially risky than a company without debt (Bello, 2010). Capital adequacy is the ability of a firm to have sufficient capital to finance its planned future plans. If a firm's capital is inadequate, then it must be able to either successfully issue new equity, or acquire new debt. The amount of debt a company can successfully absorb and repay from its continuous operations, is referred to as the company's debt capacity (Thynne, 2006).

Cash Flow

Many small and newly formed businesses often has this single most important as the reason for business failure. This problem arises when the money from sales coming into the company is not sufficient to cover the costs of production. It is central to note that it is the availability of money to pay debts when the debts are due not a case of generating enough revenue during a given year to cover costs (Patrick & Ooghe, 2004).

Business Planning

Many businesses before it receives loans or financial help from a bank have to put together a business. These plans take time and effort which is crucial for success. Poor information or bad planning on which the plan is to be based would likely lead to difficulties for the firm (Chiritou, 2002). For instance, if the sales plan of the firm is 3,000 units monthly in its first year because it used only inadequate market research and eventually sells 600 monthly, it will soon be in serious danger of failure.

Demand

A fall in sales might be a sign that there is something wrong with either the price or the product or an aspect of marketing mix being used. Often, falling sales could be due to competition providing a better service or product. For any firm to do revert this, they would have to recognize it in the first place (Moyer, 2006).

Changes in fashion, taste and technology can lead to demand for products to fall - the firm needs to be cognisant of these trends. Demand can fall for other reasons out of the firm's control. It might be as a result of change in economic climate of the country. People may intend to cut down their spending due to not having much to spend on firm's products or services or increased interest rates if the economy is experiencing a downturn (Sipika & Smith, 2002).

Company's image

To develop a high profile image for a company by acquiring a fancy logo, an expensive office space and website will do little to enable the success of the business. Moreover, high overheads (due to expensive website maintenance cost and space) can drive out any business very fast,

since the golden principle for the any successful business is to keep low overheads especially at the early stage (Argenti, 2003). Customer base diversification is an important influence in building the business, also being able to flexibly adapt to new trends and ideas is vital to staying in business (Eidleman, 2003).

Rise in costs or lack of control over costs

Production costs can rise for quite a number of reasons. It could be because of increase in prices of raw materials, increase in wages, payment by businesses for meeting some new legislation or standard and so on. Most times, such changes could be in a firm's plan and they also have the capacity to consider them but when unexpected rise in costs arise, it can catch a firm by surprise and result into insolvency (Kip, 2002).

Uncontrolled Growth

Another cause that may lead a firm to fail if not handled properly is uncontrolled growth. Obesity in an individual's health is also a business problem. For a business to experience growth, proper planning must be in place. A professional management team, proper systems and control and flexible organizations is required for successful growth (Eidleman, 2003).

2.2.4 Causes of Financial Distress

Deterioration of a firm's financial performance results to financial distress and can have many other causes. Too much debt, intense competition, unfavourable contract, poor management, massive litigation and unwise expansion are a few of several possible causes. (Natalia, 2007). Jahur and Quadir (2012) stipulate that a complicated mix of symptoms and problems are often the general causes of business failure and financial distress.

Capital inadequacy is the most essential cause of financial distress in young companies whereby the business does not have enough capital to start with and struggles from day one. In any business, capital aids the absorption of losses. It offers an opportunity to endure abnormal losses not incurred in the current earning pattern (Adeyemi, 2011). Ayeni (2012) outlined the characteristics of management as the reasons for corporate bankruptcy or failures e.g. poor strategies, corporate policy and inappropriate management qualities and skills. Adam, Williams, Serah and Okibo, (2014) noted that management does not often recognize the internal signs of failure and blame external changes for their business failure.

In some situations, other companies would undertake managerial succession planning for important roles and identify high potentials among their employees, when in financial distress, companies do not prepare for top managerial succession (Galloway & Jones, 2006). This could result to recruiting an unbalanced management team lacking essential skills to move the company ahead. Any wrong investment decision made may drive the company into financial distress since the decisions mostly involve irreversible huge cash outlays.

Innovation being of importance to a firms' future has been documented broadly, though it has been examined that the level of risk associated with innovation is to a small degree (Rajasekar, Ashraf & Deo, 2014). The probability of innovation leading a firm to financial distress is on the high especially where its competitors develop innovative and competitive products thereby reducing the attractiveness of the company's products and services (Qasim & Ramiz, 2011). Innovation can therefore give a firm competitive edge to its rivals or see its demise equally.

Companies mostly rely on their financial performances as a major barometer of its financial health, it is beneficial not to ignore operational and signals (Zwaig & Pickett, 2012). Profitable

businesses have been in trouble due to sudden expansion or the introduction of a challenging competitor (Zwaig & Pickett, 2012). In every of these instances, the success of these companies came before an unheeded signal or operational event that led to financial problem and in some cases subsequent failure of the company.

2.2.5 The Costs of Corporate Financial Distress

In theory, bankruptcy and financial distress can impose costs on stakeholders other than the firm's capital contributors (Taffler, 2001). 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.

Direct Costs

Direct costs are the administrative, advisory and legal fees that are incurred by the firm bears due to the formal liquidation process. Millihni (2003) calculates the direct cost to be approximately 4% of the pre-bankruptcy value of the firm, with a sample of railroad bankruptcies from 1933 to 1955. Weiss (1990) as cited in Kip (2002) used 37 bankrupt firms as sample between 1980-1986, thereby calculating the direct costs to be approximately 3% of the firm's pre-bankruptcy value. Altman and Hotchkiss (2006) offered a summary of direct bankruptcy cost estimates in their literature. All the study's findings suggest that cost of direct bankruptcy are not likely to signify a substantial factor of the capital structure decision of the firm.

Indirect Costs

Potentially, the indirect costs of financial bankruptcy and distress are more relevant and significant. These indirect costs can be seen as opportunity costs, because they identify the result of sub-optimal decisions collectively by stakeholders when the firm is financially bankrupt (Altman & Hotchkiss, 2006). Thus, costs incurred as a result of holdout problems, higher operating costs, intra or inter-group conflicts of interest, lost sales, competitive positions, ineffective time management and asymmetric information, potentially represent bankruptcy indirect costs altogether.

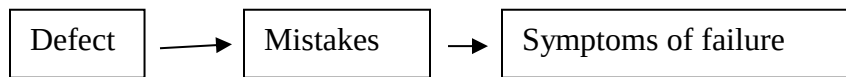
2.2.6 Business Failure Models

Models of business failure can be broadly categorized into two groups: qualitative models, based on an assessment of the company concern internally; quantitative models, are largely based on published financial information. They both attempt to point out characteristics, whether non-financial or financial, thereby being used to differentiate between failing and surviving firms (Robinson & Maguire, 2001).

Qualitative models

This model rests on the conclusion that the organizational performance is limited to the sole indicators. Therefore, qualitative models rests on qualitative or non-accounting variables. The A score model is one of the most used models and it is attributed to Argenti (2003), which proposed that failure process follows an expected sequence:

Figure2.1: Process of Failure



Source: Argenti(2003)

Quantitative models

Quantitative models point out values of financial ratios differently marked between failing and surviving companies, and can be used subsequently to identify companies exhibiting characteristics of previously failing (Argenti, 2003). Financial indicators of impending failure that are commonly-accepted are: high variability of income, assets in relation to low profitability, high gearing, poor capital and dividend liquidity, and low equity returns.

Edward Altman's Z – Score Model

Credit managers mostly use traditional ratio analysis to determine companies having future failures. Altman (2006) opined that ratios measuring solvency, liquidity and profitability ratios are most significant. It is however difficult to know which is more significant as several studies have identified several ratios as potential problem indicators. For example, a company with poor liquidity ratios may be heading for liquidation. The good profitability of the company may reduce the potential risk highlighted by poor liquidity ratios. Therefore, it may be incorrect to use traditional ratio analyses.

Altman's 1968 model took the following form -:

$$Z = 1.2A + 1.4B + 3.3C + 0.6D + .999E$$

$Z < 2.675$; then the firm is classified as "failed"

WHERE $A = \text{Working Capital} / \text{Total Assets}$

$B = \text{Retained Earnings} / \text{Total Assets}$

$C = \text{Earnings before Interest and Taxes} / \text{Total Assets}$

$D = \text{Market Value of Equity} / \text{Book Value of Total Debt}$

$E = \text{Sales} / \text{Total Assets}$

$Z = \text{Overall index}$

Financial Ratios in Z score

Z-score is calculated by multiplying each of the financial ratios by an appropriate coefficient and then summing the results. The ratios rely on retained earnings, market value of equity, total assets, EBIT, net worth and working capital. Working Capital is calculated by subtracting current liabilities from current assets (Milkete, 2001). Total Assets is the sum of the assets section of the financial position statement. Retained Earnings can be found in the equity section of the financial position statement. Earnings before Interest and Taxes (EBIT) is the profit or loss from any extraordinary or unusual items from operations excluding the tax effects of these items. It is calculated as follows: Calculate the net income; subtract any income tax benefits, add back any income tax expenses then add back any interest expenses. Market Value of Equity is the sum value of all shares of preferred and common stock. The dates of the values chosen does not exactly need to correspond with the financial statement dates to which the market value is compared (Milkete, 2001). Another name for net worth is Shareholders' Equity

2.2.7 Applied Forecast Methods: A Review

The application advantages, assumptions and drawbacks of the multivariate statistical forecast applied methods is done under this section.

Logistic regression analysis (Logit)

This is a widely used approach to model relationships between likelihood of a binary response and explanatory variables (Chatfield & Collins, 2000). The survival/bankruptcy values to the weighted independent variables is procedurally ordered by fitting a regression function logic calculated by the maximum likelihood method.

The advantages of the method are easy interpretation, exact appearance of relative contributions and robustness. Drawbacks are the accidental emergence of multicollinearity, possibility of small-sample biasedness, application of predefined function-type and sensitivity to outliers. If the rate of solvency is different from the population sample, the calculated probability of the value of survival may be modified by probability-calibration in a way that the desired rate equals the average probability of survival, while at the same time, the procedure of probabilities calculated for the observations must be preserved (Bilanas & Harris, 2004).

Decision trees

A decision tree by iteration s to be built by a procedure using constructing branches, univariate partitioning and setting simple decision rules (Ahn, 2000). An homogeneous class is the most important goal to be achieved. As long as the algorithm finds partitioning variables, branches are been established. The first partitioning variable is found at the top of the tree. After partitioning, the solvent and insolvent classification is denoted by the root of the tree.

The few application assumptions and the obvious interpretation of the decision rules are the advantages of the method. Drawbacks of the method are the non-overlapping between the groups, accidental appearance of overtraining and the assumption of discrete classification capability. The relative role of variables cannot be unambiguously determined and no statistical testing can be carried out on the model. The probability of survival values can be estimated on the basis of decision rules (Janer, 2011).

Neural networks (NN)

Neural networks are information processing systems having the ability to perform concurrently in a shared way and built on the basis of biological neural systems (Charitou, 2002). Networks gain their problem-solving ability by learning and consist of interconnected, parallel function in neurons. Neural networks have fundamental components such as the elementary neurons organized in layers. The learning process establishes the weighting of the networks.

The method possesses some advantages such as: intelligent learning of relationships, universal approximation feature and few application assumptions. Drawbacks are arriving at local minima, the inability to carry out statistical tests, the black box problem, the indirect determination of relative contributions and the accidental appearance of overtraining (Perez, 2006). Neural networks can estimate chances of survival/bankruptcy values automatically. If the population's rate of solvency and the sample are substantially different from each other, probability-calibration might be important.

Some publications by early researchers (Ghiassi, Saidane & Zimbra, 2005) have proven that a more accurate forecast is provided by a dynamic neural network model because they perform significantly better than the traditional neural networks such as feed forward or back

propagation. Therefore, in empirical research, the neural network model was trained by the exhaustive prune technique (Stein, 2005). Network training measures are taken with exhaustive prune to ensure a very detailed search for possible models space.

Case-based reasoning approach (CBR)

Case-based reasoning (CBR) can be defined as a similar process to human being decision process. The essential idea involves using previous cases and their solutions to solve new problems. The CBR's approach solution algorithm is based on both a combination function and a distance function. The combination function adds up the results from several neighbours to get an answer while the distance function also known as the Euclidean distance estimates the distance between two records. An interesting characteristic method is that solutions are very encompassing and can be reused directly or indirectly to solve new problems encountered (Sudarsanam & Lai, 2001). This method was introduced firstly by researchers like Jo and Han (1996), into the domain of business failure prediction (Jo, Han, & Lee (1997), Bryant (1997) as cited by Sudarsanam & Lai(2001)). Evidence from the results of their study was not enough to say that CBR models were more applicable than other reference models. However, some researchers have proven interest in this method, attempting to increase its initial predictive performance.

Operations research (OR)

Operations research before World War II originated in the military efforts. Operations research can be defined as an interdisciplinary mathematical science that relies on the effective use of organizational technology. Mathematical programming techniques is applied by operations research to decision making, focusing on optimal or near-optimal solutions to complex problems.

Mathematical programming (MP) methods compared to statistical techniques offer three major advantages (Stein, 2011). Firstly, as nonparametric methods, MP methods do not rely on firm assumptions like statistical techniques do. Secondly, MP methods are correctly able to function on a broader variety of data. Finally, any outlier observations has less influence on the fitted model in MP technique. The literature has introduced different models and methods. Freed & Glover in 1981 were one of the first to introduce linear programming methods to the classification problem. Subsequent studies followed their work thereby implementing complimentary and comparable models. In general, findings have shown that mathematical programming approaches can function as good as traditional statistical techniques (Sunday, 2011). Also, when assumptions underlying the statistical approach are seriously violated, MP approaches may be preferred. However, Sun (2011) found out that practitioners and researchers and will be more eager to accept MP approaches as nonparametric procedures when there is the availability of simple but powerful multiple-class MP model.

Support vector machines (SVM)

Support vector machine (SVM) as one of the latest methods was implemented and developed to forecast corporate liquidation/bankruptcy. Boser, Guyon, & Vapnik in 1992 introduced the technique and Vapnik and Cortes propagated it in 1995, the underlying idea of this technique is to plan the input vector into a high dimensional feature space through a nonlinear mapping chosen a priori (Agarwal & Taffler, 2008). A linear decision surface in this space is built with unique properties that ensure the ability to network under high generalization. SVM is fast becoming popular because of many striking features and outstanding generalization performance on a wide range of difficulties. Also, this technique suggests two main advantages: (i) it assumes the principle of minimization of structural risk that reduces over fitting the model on the training

data set for a stronger classifying ability, and (ii) it takes linear non-separable situations into account, which extends the model's possibilities and flexibility in finding suitable or undiscovered variables in predicting bankruptcy (Qasim & Ramiz, (2011).

However, a major principle drawback of this technique is the procurement of little variable explanation that contributes to bankruptcy (Patrick & Ooghe, 2004). Therefore, this technique offers superior predictive capacity but researchers who attempt to fix an anticipated bankruptcy (at least in a simple stand-alone mode) do not prefer it.

Soft computing

This technique is a combination of various individual techniques towards the maximization of the advantages so as to minimize combined weakness of the model. The basic idea is that, in more conventional techniques, gains achieved by certainty and precision are not justified by their costs (Nazmil & Shamen, 2012). Among researchers and practitioners, this method has recently become popular and one of the recent trend in corporate prediction modelling (Dong & Su, 2010). Association and combination have many different possibilities. Combination of methods is not reserved exclusively to only artificial intelligent methods but is often found complementary (Nazmil & Shamen, 2012). Operations research, statistical methods, as well as other methods useful in bankruptcy can be combined to generate the ultimate model. For instance Huang, Tsai, Yen, and Cheng (2008) posited a hybrid financial analysis model which included trend and static analytic models to build and train back-propagation neural network (BPN) model. Their performance surpassed other models including back-propagation neural network model, decision tress and discriminant analysis.

Other techniques

In this study, several models are discussed. However, the outlined techniques are not thorough and several different models were not discussed in this review implemented for testing bankrupt prediction. Among these models are: Fuzzy set theory, Genetic algorithm (GA); Risk index model; Cash flow models; Gambler's ruin model; Rough sets; Isotonic separation; and others such as Gambler's ruin Model, Gaussian processes, Option pricing theory, Cash flow models, Return variation models, Risk index models, Trait recognition, Self-organizing learning array method and Dynamic modelling techniques to mention but few.

Multivariate Discriminant Analysis was adopted in this study to predict corporate financial distress of selected companies in Nigeria because the model had been used to predict banks failure in Nigeria by different authors but scanty research available for oil and gas companies. Besides, other methods of predicting failure such as support vector machines, soft computing and the likes are not popular in Nigeria due to technology and other factors involved.

2.2.8 Survival Analysis Techniques: An Overview

Survival analysis is one of the statistical method used to study the timing and occurrence of events. In this statistical technique, an 'event' is known as a qualitative change situated in time (Chancharat, 2008). Since the state of companies might vary from 'healthy' to 'distress' and then to bankruptcy or failure, in this study, the interest of event is known to be when a company enters into financial distress.

However, over a time horizon of different periods, the changes usually occur rather than immediately. The identification of symptom variables in initial conditions. The conditional

symptoms then changes over time in a progressive way as financial distress worsens (Perez, 2006).

This study adopts survival analysis method to examine corporate financial distress in comparison to traditional methods: there are two major advantages to survival analysis. These advantages are: its ability to manage censored observations and time-varying variables. The time varying variables are the explanatory variables that changes with time. It is expected that the symptoms of financial distress are known through the decrease in financial ratio or that the effect of the ratios on corporate distress do not stay the same over time (Chancharat, 2008). In contrast to the traditional method, which determines at a given point in time, the level of variable as it makes in time, the observation at a click. A major advantage of survival analysis technique is the procedural estimation that considers variable changes in value overtime. It becomes a reasonable application of statistical technique because of the gradual occurrence of financial distress, but over a number of years, a firm's financial health is preceded by deterioration. (Chancharat, 2008).

Censored observations are te observations that never experience the event during the observation time (Stein, 2005). In this study, the active companies are the censored observations because they have not entered into a financial distress state during the period of study. It is possible with survival analysis to implement the information from these observations by adding them to censored observations and by using the partial or maximum likelihood technique to provide consistent parameter estimates. In contrast to the traditional technique, it cannot incorporate information from censored observations (Chancharat, 2008).

Survival analysis involves two main functions, the hazard and survivor function. The survival function, $S_{(t)}$, gives the probability that the time until the event is experienced by the firm, T , is greater than a given time t . Given that T is a random variable that explains the event time for some particular observation, then the survival function is defined as;

$$S_{(t)} = \Pr (T > t) \quad \dots\dots 1$$

The hazard function explains the immediate risk of an occurring event at time t given the firm survival to time t (Gujarati, 2002). Another name for hazard function is the ‘hazards rate’ because of its quality dimension that possesses the form of the number of events per time interval. The hazard function is defined as

$$h_{(t)} = \lim_{\Delta t} \frac{\Pr(t < T < t + \Delta t / X, T > t)}{\Delta t} \quad \dots\dots 2$$

The relationship between the hazard and survival function is that the hazard function is equal to the change in log-survival function, that is,

$$H(t) = \frac{d \ln(s(t))}{Dt} \quad \dots\dots 3$$

To calculate hazard and survival functions, there are parametric and nonparametric models. The advantage of adopting parametric models is the specific completion of the model making a better prediction of survival time, but may also result to an inconsistent estimation due to some distributional assumptions (Chancharat, 2008). The nonparametric methods are very useful for descriptive purposes.

The Cox proportional hazards model is a semi-parametric model for survival analysis, which is most widely used. In Cox’s study in 1972, there are two significant innovations, namely, the

proportional hazards model and maximum partial likelihood. The proportional hazards model is represented as follows;

$$H_{1(t)} = h_0(t) \exp(X_i \beta) \quad \dots 4$$

Where $h_0(t)$ is an arbitrary unspecified baseline hazard rate that measures the time effect of hazard rate for an individual with all zero valued variables. X represents the vector of those variables influencing the hazard β is the vector of their coefficients. It is the specific lack of baseline hazard function that makes the model semi-parametric or distribution free.

Equivalently, the regression model is written as;

$$\text{Log } h_{i(t)} = \alpha(t) + \beta_1 X_{i1} + \beta_2 X_{i2} + \dots + \beta_n X_{ik} \quad \dots 5$$

Where $\alpha(t) = \log h_0(t)$ and $h_0(t)$ is an arbitrary unspecified baseline hazard rate (Chancharat, 2008).

The model does not require the specification of survival times of probability distribution in particular, but possesses the property that different individuals have proportional hazard functions, that is,

$$\frac{h_i(t)}{h_j(t)} = \exp[\theta_1(X_{i1} - X_{j1}) + \theta_2(X_{i2} - X_{j2}) + \dots + \theta_n(X_{in} - X_{jn})] \quad \dots 6$$

there is no variability with time t for two individuals in hazard function ratio. These special properties make the Cox proportional hazards model robust and popular amongst researchers.

To estimate the coefficient of β , Cox proposed a partial likelihood function based on a conditional failure probability by assuming that there are no tied values in the survival times. The

function was later modified to handle ties (Stein, 2005). The SAS PROC PHREG can be used to complete the calculation much more easily.

In the above Cox PH model, it assumed that the ratio of hazard functions for any two individuals is independent of time t , or that the variables are not time –dependent. However, it is common in practice for a study to include both time-dependent and time-independent variables. The most common time-dependence variables are those that are observed repeatedly at different follow-up time points, which is true of most of the variables in the dataset. Other kinds of time-dependent variables include those that change with time according to a known mathematical formular, for example, age (Agarwal & Taffler, 2008). In general, the hazard function of Equation 2 depends on the complete time path of regression $X(t)$, so that equation 2 become

$$H(t) = \lim_{Dt} \frac{Pr\{t < T < t+dt/X(t), T > t\}}{Dt} \dots\dots 7$$

A time – varying variable may exhibit feedback and this will result in the coefficients β in the regression equation 5 are also depend on time t . This situation should be common in financial studies because a company is always willing to adjust its behaviours according to relative variables (Stein, 2005). This study assumes that the variables are weakly exogenous; that is, whether the process underlying the time variation is stochastic or deterministic, the parameters of that process in estimating the hazard model under consideration do not need to be considered.

One rather simple solution is to replace the time-dependent variable by its mean value during the spell. A tedious, but useful method for handling one or more time-dependent variables is represented using the counting process style. The subject will be represented as one or more observations, each consisting of a time interval, the status, and the values of fixed variables over

the interval (Perez, 2006). The per-subject residuals for a given subject is the sum of residuals for its observations

Prediction or determination of corporate status in term of classification in to either distress or healthy firms is not the most important. Rather, the early identification of distress and providing means of survival in the midst of distress with the view of rejuvenation is essential. Survival analysis through hazard and survival function not only bring out the cause of distress but revealed survival options of either restructuring, change strategy or opt for merger and acquisition with the view of firms survival and continuity

2.2.9 Corporate Governance mechanisms and companies' survival: A link

The central strategic question is the reason why firms succeed or fail. Corporate governance is the order by which companies are directed, managed and controlled (Chancharat, 2008). The responsibility of a company's governance and firm strategy developments is on the board of directors (Whitaker, 2000). It is also expected that survival and corporate performance is affected by corporate governance attributes.

Over the last two decades, corporate governance structure in explaining companies' survival has become a projecting topic. This is because corporate failure in most countries of the world. Recently, some authors has investigated the survival of companies by utilizing corporate governance attributes for example, Taliani (2010) explored the influence of ownership and incentives induced on the survival of high-tech and young firms confirming that the firm in new economy industries needs a governance structure different from that needed by traditional firms. The study also found a nonlinear relationship between board size and expected corporate

survival time. Furthermore, Thynne (2006) discovered a positive relationship between insider retention of ownership and the survival of e-companies (i.e. internet firms)

Besides, this study allows time-varying variables rather than using time-variant variables in Cox proportional hazards variables. In this study, the influences of companies are explored. The determinants include, offering characteristics, company-specific variables, corporate governance attributes and financial ratios. This research explores the influence of companies survival in relation to corporate governance (Chancharat, 2008). There are three areas of corporate governance including board independence, board size and ownership concentration, it will be examined based on the Cox proportion hazards model to see if these attributes affect the survival likelihood of companies. Studies on survival of companies in Nigeria are scanty, this study will add to the existing literature on this concept with particular reference to Nigeria economy.

2.2.10 Corporate Governance Structure and Corporate Survival

Agency theory development opine that there is a link between corporate governance and firm performance (Audretsch & Lehmann, 2004). If corporate governance performance is influenced by corporate governance, then corporate survival will be affected (Goktan et al., 2006).

In literature, there is a clear link between corporate governance structure and corporate survival. For instance, Lee and Yeh (2004) presented the link between corporate governance and financial distress and pointed out that weak corporate governance firms are liable to economic downturns and the probability of being financially distressed. This finding is in line with Johnson et al. (2000). In this section, the study explore three aspect of corporate governance which includes board size, board independence and ownership concentration.

1. Board Size

Mixed results are existent in relation to the effect of the board size of survival of firms. Lamberto and Rath (2008) pointed that procedures of good governance approve larger board sizes on the basis of resulting in accountability will result. Also, Pfeffer and Salancik (1978) as cited by Lamberto and Rath (2008) argued that there would be a wider range of views and external connections with large boards, thereby exploiting greater opportunities and strengthen the power of the board relative to the CEO.

However, board size is discovered to have inverse relationship with firm value (Elsayed, 2007). It was pointed out small board companies exhibit more favourable financial ratios value and stronger CEO performance. Elsayed (2007) found that board size has no significant impact on corporate performance. The finding is in line with consistent with Parker, Peters and Turetsky (2002) and Lamberto and Rath (2008) which revealed that board size have no significant effect on survival. During an investigation on life insurance company in Thailand, Connelly and Limpaphayom (2004) also confirmed that board size is not significantly related to firm performance.

2. Board Independence

In view of the fact that there has been a general acknowledgement on board independence, in relation to 'independence' still has no common consensus (Brennan & McDermott, 2004; Kang et al., 2007). In previous studies, the word outside directors has been used rather than 'independence' to describe directors who are independent of the management (Ajinkya et al., 2005). It is considered in some existing literatures that the difference between 'executive' and 'non-executive' directors in three aspects (Kang et al., 2007; Lamberto & Rath, 2008).

Based on agency perspective, Fama and Jensen (1983) argued that if the most of the board of directors are independent directors, it is less likely that the CEO and inside directors exercise behaviours that are self-serving on the shareholders cost. Consistently, Pass (2004) opined that since non-executive directors can pass independent judgment, the shareholders interest will be protected by the presence of independent directors. Furthermore, the company could gain from non-executive directors since valuable expertise of external business can be contributed to the company. They can often see the company's risk and opportunities, which might have been disregarded by the company's executive directors who are typically engrossed in the day-to-day running of the business.

Existing literature result in relation to the effects of proportion of non-executive directors on corporate performance and survival are mixed. Some literature discovered evidence to support expectation that the higher the proportion of non-executive directors in the board, the better the corporate performance, thereby leading to higher probability of corporate survival. e.g. Rosenstein and Wyatt (1990), Daily and Dalton (1994) and Beasley (1996) as cited by Brennan and McDermott(2004). In contrast, Hermalin and Weisbach (1991), Yermack (1996) and Klein (1998) as cited by Pass (2004) found a negative relationship between the proportion of outside directors and corporate performance. Furthermore, Bhagat and Black (2001) and Balatbat, Taylor and Walter (2004) found that there is no relationship between the proportion of non-executive directors and corporate performance. Sukcharoensin (2003), in Thai's context, is of the opinion that an independent board member of Thai listed firms is a significant factor to explaining corporate performance. Also, Connelly and Limpaphayom (2004) also found a positive relationship between board composition (measured by the number of outside directors divided by the total number of board members) and insurance firm performance. The study also adopted the

same measurement of independent directors to examine the effect of independent directors on IPOs survival.

Secondly, the leadership of the board is the responsibility of the chairman, for the efficient conduct and organization of the board's function and to brief all directors in relation to arising issues at board meetings (Weir & Laing, 2001). This means that non-executive chairman enhance the survival likelihood and corporate performance. In contrary, the executive chairman is expected to have a greater knowledge of the firm and its industry and have huge commitment to the organization than an outside or non-executive chairman (Pass, 2004).

This argument therefore expects a negative relationship between a non-executive chairman and firm performance and survival. It could be seen that there is the presence of conflicting argument about the effect of non-executive chairman on corporate performance and survival. It therefore remains an open question to whether oil and gas companies is more likely to survive with the presence of a non-executive chairman.

Finally, board independence measurement is the use of independent leadership structure. When the same person is a firm's CEO and board of directors' chairman, it is known as CEO duality leadership structure while independent leadership structure can be described as a situation where different individuals serve in these positions.

Conflicting opinions exists about the cost and benefits and costs of using these leadership structures. Proponents of the independent structure posit that CEO duality structure may cause a definite conflict of interest and systematically reduce the ability of the board to fulfil its governance function (Weir & Laing, 2001). Given that one of the board's major functions is to monitor the top management performance, allowing the CEO performs both roles may lead to

affecting the desired system of check and balance (Bhagat & Black, 2001). The inappropriate governance structures may influence firm crisis and eventual bankrupt (Pass, 2004). CEO duality structure advocates, argue that CEO duality provides a clear focus for operations and objectives (Weir & Laing, 2001). Also, the independent leadership structure may cause potential rivalry between the chairperson and the CEO, thereby making it difficult to pinpoint blame for poor performance (Pass, 2004).

However, studies found out that CEO duality does not have any impact on corporate failure (Connelly & Limpaphayom, 2004) and corporate performance (Elsayed, 2007). A dummy variable is used for the measurement of independent leadership structure. Specifically, if the CEO and chairman are different people, then a value of 1 is recorded, 0 otherwise. The third aspect that the mechanisms of corporate governance examined in this study is the concentration of ownership. Corporate governance literature has given particular attention to ownership concentration as a factor to more effective corporate governance and shareholders' value maximization.

3. Ownership Concentration

Agency theory relates to the set of governance rules that will lead to efficiency enhancement and wealth maximization (Connelly & Limpaphayom, 2004). The main concern is whether managers pursue their own interests rather than maximize value of shareholders.

Based on the agency theory of monitoring and convergence of interest hypothesis, in a case where shareholders are too loose to monitor managers, managers can use corporate assets as benefits rather than shareholders wealth maximization (Elsayed, 2007). In addition, it is argued that a company is more likely to survive if ownership concentration is high, this is because

shareholders are likely to influence management's decisions and also like to expend cost monitoring as they have a relatively high stake in the firm (Bhagat & Black, 2001).

Based on information asymmetry theory, when stockholdings are concentrated, there is a low information asymmetries, stockholder's ability to remove a management team is high and managers are more likely to pursue strategies that are in stockholder's interests. In contrast, when stockholding are diffused, the significant information asymmetries are likely to exist and management is more likely to be in pursuit of strategies not in the interest of stockholders (Bhagat & Black, 2001).

The subject of many theoretical and empirical researches has been the effect of ownership concentration on corporate performance. However, the empirical results of the effect of ownership concentration on firm performance are mixed. For instance, Claessens and Djankov (2009) suggested that the higher profitability and labour productivity, the more concentrated the ownership. Consistently, Bai et al. (2004) posit that there is positive relationship between corporate values and ownership concentration.

Some studies in contrast, suggested that ownership concentration is negatively related to corporate survival e.g. Kang, Cheng & Gray (2007). Furthermore, Demsetz and Lehn (2005) revealed that corporate ownership concentration does not relate to the company's rates of accounting profit of a company. In line with Hovey, Li and Naughton (2003), it was indicated that ownership concentration does not explain firm performance.

Having consistent focus on firms analysis in finance industry, Dhnadirek and Tang (2003) also revealed that Thai system lacks diversity in governance mechanisms and is ineffective in concentration.

However, Suehiro (2001) found that family owned firms are positive in relation to corporate performance measured by ROA and ROE. In addition, Wiwattanakantang (2001) also confirmed the position that family-controlled firms are related to higher performance. Evidence also found in Yammesri, Lodh and Herath (2006) that there is positive relationship between concentrated ownership and non-financial firms performance.

2.2.11 Corporate Financial Distress Management: Turnaround Strategies

Whitaker (2009) distinguish financial distress into categories; distress as a result of economic decline (common factors) and distress due to poor management (firm specific distress). There are various strategies for corporate financial distress turnaround, these include;

Managerial Restructuring

One of the main conditions argued are changes in top management for successful turnarounds as they are a signal to creditors that steps are being taken by the distressed firm (Richardson, 2004). The cause of financial distress may be due to incompetent managers through ineffective planning or inefficient decision making. This is defined as firm-specific distress. Managers need to be replaced with managerial teams who canvass the distress source accurately and implement necessary strategies for successful turnaround (Stead & Smallman, 2000). Perez (2006) also emphasize significance of management in turning distressed firms around. He argues that any management team in lack of the skills necessary to respond efficiently and in a timely manner will result to continuous decline and then eventual failure of the firm.

Sudarsanam and Lai (2001) suggest that financial support will be solely given by creditors if reassured that management will be able to manage distress. Taliani(2010) found that 36% of

thesampled firms experience managerial turnover in top executives following decline in performance.

Managerial restructuring involves the replacement of senior management and/or the Chief Executive Officer (Beheran& Palmer, 2004). Overall, managerial restructuring may be a crucial determinant in the turnaround process of a distressed firm.

Operational Restructuring

Operational restructuring is defined as the efficiency or operating turnaround stage. The turnaround stage aims at restoring profitability by controlling costs and overhead reduction through the sale of surplus fixed resources such as equipment, offices and land (Agarwal & Taffler, 2008). By minimizing input and maximizing output firms can generate cash flow (at least in the short term) thereby increasing efficiency. When distress becomes recognized by firms, usually, operational restructuring is the first strategy implemented. However, although important, operational restructuring is basically a short term fix for generating quick cash flow. Sudarsanam and Lai (2001) argue that, operational restructuring when used as a stand-alone strategy, may not be enough to recover from distress. Past literature reveals that, operational restructuring in form of purchases are less likely than sales. Nevertheless, if productivity can be increased significantly, new plants, equipment or investments in more advanced technology may be built by distressed firms.

Asset Restructuring

Firms in distress may sell off their unprofitable lines of business at the essential operations of the company, such firm is said to be engaging in asset restructuring. The purpose of this form of restructuring is to adjust the effort of the firm by decreasing unrelated diversification and

strategizing the business portfolio around core competencies (Adeyemi, 2011). Chiritou (2002) posit that poor performing firms will be inspired to divest lines of business which do not create competitive advantage. Asset restructuring permits a firm to re-evaluate its operations and rearrange its business units into more efficient groups. This form of restructuring is very necessary if agency costs have caused over diversification by management.

Though, in distress companies, one of the leading form of corporate asset restructuring has been found to be contraction policies (Engelman, Hayden & Tasche, 2003). It could also be referred to as actions increasing the firm size such as joint ventures, investments, licensing agreements and strategic alliances (Sudarsanam & Lai, 2001). For instance, through economies of scale, acquisition of similar businesses that fit core competencies could help to maximize the competitive advantage of distressed firms. As they involve capital expenditure from firms already facing low cash flows, these restructuring strategies becomes risky. Small firms will basically have lower cash reserves, this form of restructuring may not be appropriate or possible.

Financial Restructuring

Financial restructuring commonly refers to variations in the capital structure of the firm's with reference to leverage. It seek to decrease pressure of payment through debt-based and equity-based strategies. Debt-based strategies involve the adjustment of interest, maturity, or debt/equity ratio, equity-based strategies involve dividend cuts or issuance of shares as a way to hold or generate funds. Dong and Su(2010) found that large firms are expected to respond to distress with quick and aggressive dividend deductions. Retained funds are then able to be used to pay debt obligations. Issue of shares is another way in which distressed firms can make funds to support continued operations.

Restructuring Effectiveness

Researches in the past have examined determinants that affects the completion certain restructuring strategy success. Sipika and Smith (2002) found that the size of a firm controls all other variables in predicting successful conclusion of the reorganization process. Big firms with assets variability are more likely to restructure successfully as they are better able to have several businesses to serve as the fundamental, survive significant losses, and have enough assets which can be sold to provide cash to continue operations. Sudarsanam and Lai (2001) in their study found that firms that recovered are more likely to be involved in acquisitions and investments in their restructuring decisions. This means that, distress recovered firms are more forward looking, expansionary, and have an external market perspective. Unrecovered firms are found to be more focused internally and get involved in short term fire-fighting techniques of financial and operational restructuring.

Stein (2005) also argued that fruitful turnaround is dependent on the ability of the firm to change its structure, strategy, and ideology instead of cost-cutting tactics or short-term efficiency restructuring basis. They found that effective restructuring is as a result of shifting the strategic change to well suit the demands of the market and the competitive environment in which a firm operates. Layoffs and cost-cutting are found to be ineffectual strategies by Taliani (2010) who posit that operating performance improvements are mostly attributed to asset restructuring.

2.2.12 Classification of Corporate Bankruptcy Prediction Models

2.2.12.1 Statistical Models

Statistical models, in line with Aziz and Dar (2004), can be categorized into five major form of analysis: these are linear probability, probit models, univariate analysis, logit model and

multivariate analysis. Multivariate analysis is frequently been used in many studies by using multiple discriminant analysis.

The development of statistical models in the banking sector to predict a bank's performance has been dominant since the early 1990s (Sahajwala & Van den Bergh,2000). According to Sahajwala and Van den Bergh (2000), the major aim of the statistical models in the banking system is directed towards the uncovering of risks likely to cause adverse future conditions. Statistical models attempt to recognize banks with high-risks of distress or failure in advance. In some cases, more innovative quantitative techniques are used to examine casual economic relationships between explanatory variables and their outcomes such as distress, bank fragility, survival or failure.

2.2.12.1.1 Univariate analysis

Univariate analysis is a traditional technique used to interpret financial statements using the firms' financial ratios. These ratios are used as bankruptcy predictors or explanatory variables, likely to exhibit important differences across failing and non-failing firms. Emphasis is placed on individual failure signs in a failure prediction model. Furthermore, variables are observed and examined one after the other (Aziz & Dar, 2004). To classify if a firm is failing or not, each ratio is analysed and measured separately in accordance to the optimal cut-off point. Generally, a firm is categorized as fail if its ratio value is below the cut-off point and vice versa (Patrick & Ooghe, 2004).

Financial accounting information has been widely used to explain corporate financial failure possibility. Amongst the most cited instances are the work of Beaver in 1966; Altman in 1968

and Ohlson in 1980 (Chancharat, 2008). Beaver being the pioneer for using financial ratios adopting univariate model in constructing a corporate failure prediction model, is called the “univariate discriminant analysis model”.

2.2.12.1.2. Multiple Discriminant Analysis (MDA)

Multiple Discriminant Analysis is a form of multivariate method that gives room for distinguishing between two or more object groups with respect to several variables concurrently. MDA is used to categorize an observation into one of the several priori groupings (the bankrupt and non-bankrupt) depending on the observation’s individual features (Aziz & Dar, 2004).

The study by Altman in 1968 first distinguished the statistical multivariate analysis method into a model developed and called the “Z-score model” and the failure prediction model. Multiple discriminant analysis as defined by him is “a statistical technique used to classify an observation into one of several priori groups depending upon the observation’s of individual characteristics which attempts to derive linear [or quadratic] combination of these characteristics which are ‘best’ discriminates between the groups” (Okebalama, 2014).

Therefore, MDA is defined as the classification of distinct sets of observations which tries to find the combination of variables that predicts the group to which an observation fits. Linear discriminant function is the combination of predictor variables and can be shown as follows:

$$D = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots \dots \dots \beta_n X_n$$

where:

D is a discriminant score

β_0 is an estimated constant

β_n are the estimated coefficients, and

X_n are the variables

An observation is categorized into the suitable group based on the discriminant function score. The specialized discriminant model estimation procedure is followed by which discriminant coefficients are obtained (Eljelly, 2004). The model is a combination of different variables into a single discriminant score. At a particular cut-off point, the firm is then categorized into the failed or non-failed group. When the discriminant score (Z-score) is less than the cut-off point, the firm is said to be a failing firm. Otherwise, if the score is more than or equal to the cut-off point, the firm is said to be a non-failing firm (Ayeeni, 2012).

The organization of accuracy of the MDA model is measured on the basis of the type I and Type II error rates. As a matter of fact, researchers applying MDA, will try to minimise the error rates as much as possible. This is because the cost of wrongly categorizing a failing firm (type I error) is often larger than the costs of wrongly categorizing a non-failing firm (Type II error). A Type I error is categorizing a failing firm as non-failing firm, and a Type II error is categorizing a non-failing firm as a failing firm (Balcaen & Ooghe, 2006).

The best instance for the multiple discriminant models is the Altman developed model known as the Altman Z-score model. It is a ratio linear combination as follows: working capital/total assets, retained earnings/total assets, earnings before interest and taxes/total assets, market capitalization/total debts, and sales/total assets (Altman, 2006). Altman (2006), posit that apparently insignificant variables on a univariate analysis will offer significant information in a multivariate context.

2.2.12.1.3. Logit Model

Logit analysis has been used to determine the relationship between ordinal or binary response probability and explanatory variables. Preferably, this technique fits with a linear regression model for ordinal or binary response data by using the method of maximum likelihood. Therefore, to find the explanatory motive behind a certain event, logit models are employed (Gujarati, 2002). The dependent variable is constructed as a binary variable. The variable will take the value of 1 if the company has failed and the 0 if the company has not failed within the defined period.

Each of the independent variables using this model will be weighted and allotted a score in failure probability form for each company in a sample. Similarly, the probability of distress is obtained by substituting into the cumulative probability function. Any company is classified as distress if the calculated probability from the logit model is more than 0.5, otherwise it would be non-distress (Bejamin, 2002).

Ohlson in his study in 1980 was among the first users of logit analysis in the context of financial distress. This bankruptcy prediction model has been very helpful with various parties such as auditors, analysts and investors (Perez, 2006). This model however, owing to some restrictions, is an incomplete solution to risk measurement. Hence, it is just one of the tools used to evaluate management effectiveness and the risk associated with an investment opportunity.

2.2.12.1.4. Probit Model

Zmijewski in his study in 1984 is amongst the users of this model. He established the Zmijewski model by applying probit analysis. Three financial measures are only used in this model; financial leverage, liquidity and return on assets (Aziz & Dar, 2006). In this model, two steps are

applied. First, each parameter and the constant of the model must be multiplied by 1.8138 and then multiplied by the financial measure. After the financial measure is multiplied by the adjusted parameter, the products are accumulated to a quantity referred to as an Adjusted Score. The Adjusted Score is then translated into a measure of probability by the following formula:

$$\text{Probability Bankruptcy} = 1 / 1 + [\exp (-\text{Adjusted Score})]$$

Adjusted Score Probability:

$$1 / 1 + (1 + \exp - (-0.000085)) = .50$$

$\geq .5$ is classified as Bankrupt

$< .5$ classified as Not Bankrupt

The above formula score can be translated into a probability that lies between 0 and 1 and is interpretable likelihood terms (Charfield & Collins, 2000). The use of the 50 percent cut-off implies that when failure is more likely than not, it can be deduced that the company is distressed. Therefore, if the probability lies at or above 50 percent, it is signified as a distressed condition (Wallace, 2004).

2.2.12.1.5. Other Statistical Methods

Among other statistical methods used in previous studies is survival analysis and this method has been applied in the area of financial distress in accounting research. Many several terms have been used to refer to survival analysis, such as failure time analysis, duration or transition analysis, reliability analysis and event history analysis (Chancharat, 2008). These several terms do not imply any real variation in techniques, though several discipline emphasises some-

what different approaches. Survival analysis is a form of statistical methods used to study the timing and occurrence of events (Benjamin, 2005).

An important function in survival analysis is the hazard function $h(t)$, because the hazard rate is modelled, which is the fundamental concept of survival analysis (Chancharat, 2008). The probability of failure is modelled by the hazard function in the next period given that the firm was active at the time t . Given that T is a random variable that defines the event time for a particular observation, then the hazard function is modelled as follows:

$$h(t) = \lim_{\Delta t \rightarrow 0} \frac{\Delta r[p(t < T + \Delta t / T \geq t)]}{\Delta t}$$

There are three different survival analysis methods used for constructing survival analysis models: parametric, non-parametric and semi-parametric method. The key issues in parametric models is the specification of probability distribution for the event time and is known as accelerated failure. Meanwhile, the non parametric models are the Kaplan-meier method and the Life-Table method. (Smith & Mitroff, 2005).

Lastly, semi-parametric models do not involve probability distribution specification of the hazard function over time and the Cox proportional hazard model is the widely used semi-parametric regression model for survival proposed by Cox (Chancharat, 2008). The Cox proportional hazards model is a well-known statistical model used in research for financial distress (DeLoof, 2003).

Cumulative sums (CUSUM) procedure is one of the most powerful tools for detecting a change from good quality distribution to bad quality distribution. They are a set of chronological procedures based on ratios of likelihood for detecting a shift in a process (Stead & Smallman,

2000). A CUSUM model calculate the starting point of the change thereby providing a signal of the deteriorating state of the company as early as possible after the change occurs.

Principally, an assessment of the overall performance is done by the cumulative time-series performance score of a company. The CUSUM score is set to zero indicating zero change in the financial condition of the company as long as the performance of the company's annual time-series scores are positive and more than the specified sensitivity parameter. A reverse movement in the scores shows the company's changed condition (Aziz & Dar, 2004).

Partial Adjustment Process is another technique. To explain this model's application in the prediction of bankruptcy, the best example is by using the cash management behaviour of the firms. The management of cash from the time it starts its movement into the company until it departs the company in terms of payment is known as Cash Management (Zwaig&Picketti, 2012). Lakshanand Wijekoon (2013), posit that any failure in terms of cash management can be defined as a disparity between cash inflows and outflows leading to failure. This failure is normally described as the company's inability to perform its financial obligations as they fall due.

Discriminant analysis is one of the most adopted statistical techniques for the performance prediction of business firms. Though, it has been among the oldest techniques for failure prediction of firms' performance. It is more preferable, besides univariate analysis, because the technique takes possible interrelationships among independent variables into consideration, which explains the variations in the groupings of the dependent variable. This technique include other variables besides financial problems that may affect the performance of the dependent variable (Smith & Mitroff, 2005).

2.2.13 Variables of the Study

The study categorized the independent variables adopted according to different set of ratios. They are profitability ratio, liquidity ratio and solvency ratio. Eight variables from the original list of ratios in the literature were chosen based on their popularity and potential relevance to the study (Altman, 2006).

(a) Profitability Ratios

Profitability ratios are the financial statement ratio that focuses on how healthy a business is performing in profit terms. It is imperative to note that decision making based on ratios should be taken with full understanding of the company and its business. When a company's ratio is greater than its previous period or than a competitor's ratio, it means the company is doing well. For this study, the ratios used will be as follows:

i. *Return on Assets (ROA)*: $\text{Net Income} / \text{Total Assets}$

This ratio are earnings generated from invested capital (assets). A company's assets include both debt and equity, normally used for the funding of a company's operations. ROA helps investors understand how the company is effectively converting its money into net income. The higher the ROA, the higher the company earns on a smaller investment.

ii. *Return on Equity (ROE)*: $\text{Net Income} / \text{Shareholder's Equity}$

The amount of profit earned by a company in comparison to its total shareholder equity in the balance sheet is disclosed by ROE. It is also a measurement of how much is earned by a company within a given period in relation to the amount invested in common stock. If the ROE is higher than the return on assets of a company, it may be a sign that management is using its

leverage to increase profits and profit margins. Generally, when the overtime performance of a firm is at least as good as the average return on equity of other firms in the same industry, it is considered a sign of good management.

(b) Liquidity Ratios

Liquidity ratios are financial ratio used to measure the ability of a business to meet its short term financial obligations within a period (Pandey, 2005). With cash and other easily sellable liquid assets, the composition and size of these assets can be used to cover short term debts, payables and other liabilities. Higher liquidity values are expected to provide a better buffer to insolvency and distress, as these ratios measure the coverage and cushion provided by the firm's more liquid assets. It therefore suggests an inverse relationship with distress (Pandey, 2005). For this study, the ratios used are as follows:

i. *Current Assets to Total Assets (CATA)*: Current Assets/Total Assets

This ratio is the measurement of the proportion of assets that can be easily sold or converted to cash. A higher value provides a larger coverage should an unexpected obligation surface.

ii. *Working Capital to Total Assets (WCTA)*: Working Capital/Total Assets

The Working Capital to Total Assets ratio measures the ability of a company to cover its short term financial obligations (Total Current Liabilities) by comparing its current assets to its total assets. This ratio provides an insight to the company's liquidity, since it can uncover the percentage of the remaining liquid assets (with Total Current Liabilities subtracted out) compared to the company's total assets.

Working capital is referred to the difference between current assets and current liabilities. An increasing working capital to total assets ratio is a positive sign, showing that the liquidity of the company is improving over time. A low or decreasing ratio indicates that the company has too many total current liabilities, thereby reducing the amount of working capital available. The characteristics of liquidity and size are considered explicit.

iii. *Cash to Current Liabilities (CCL)*: Cash/Current Liabilities

Cash to Current Liabilities is used to measure the ability of a company to cover current liabilities and to immediately meet short-term obligations. A value of 1 indicates that a company can cover its current liabilities with cash flow and as a "rule of thumb" a value of over 1 is desired. A higher ratio indicates greater ability.

iv. *Cash to Total Assets (CTA)*: Cash/Total Assets

This ratio is a measurement of the portion of a company's assets held in cash or marketable securities. A high ratio acts as a buffer to safety, while a ratio below 10% may cause for concern.

(c) Solvency Ratios

These ratios measure the ability of a company to meet long-term obligations. Solvency ratio measures the size of a company's after-tax income; excluding non-cash depreciation expenses, in comparison to the firm's total debt obligations. It provides a basis for measurement on how likely a company will continue to meet its debt obligations.

Acceptable solvency ratios vary from industry to industry, but as a general rule of thumb, a solvency ratio greater than 20% is considered financially healthy.

Generally, the greater the probability that a company will default on its debt obligations, the lower the company's solvency ratio. Fazilah (2000), as cited in Pandey(2005), stated that solvency ratios tend to take a long run point of view, unlike liquidity ratios which are concerned with the ability of the company to meet near term obligation. The measurement of long term debt for degree of financial leverage can identify future problems. The ratios to be used in this study are:

i. *Debt Ratio (DR):* Total Liabilities/Total Assets

This ratio measures the financial risk of the company by determining the amount of assets financed by debt. Debt ratio also provides the company's ability to secure additional financing for good investment opportunities and provides information on a company's insolvency. This is to ensure the protection of creditors. The lower the debt ratio, the less total liabilities the business has in comparison to its assets base. While businesses with high total debt ratios are in danger of becoming insolvent and going bankrupt.

ii. *Total Liabilities to Total Equity (TLTE):* Total Liabilities/Total Equity

This ratio is used to measure solvency and researching the company's capital structure. It shows how much leverage (debt) the company has by comparing what is owed to what is owned. In other words, it is the measurement of a company's ability to borrow and repay money.

This ratio is closely watched by the creditors and investors, because it discloses the extent to which the management of the company is willing to fund its operations with debt, rather than equity. Lenders such as banks are particularly sensitive about this ratio, because an excessively high ratio of debt to equity will put their loans at risk of not repaid.

2.3 Theoretical Review

Financial distress predictions are not based on the statistical models alone but also on theoretical approaches. The underlying principles behind these theories were based on the firms' financial health status and changes observed in the activities of the organisations' overtime. The most widely examined financial distress theories were; entropy, cash management, credit risk, gambler's ruin and bankruptcy and reorganisation theory.

2.3.1 Entropy Theory

The entropy theory also known as Statement of financial position Decomposition theory emphasis that the means or way of identifying financial distress in an organisation is through close examination of changes in firms' statement of financial position.

The entropy theory used Multiple Discriminant Analysis (MDA) and Univariate analysis to evaluate the structural changes in the statement of financial position. The theory makes use of accounting ratios as indicator of financial distress measurement (Natalia, 2007). The market based and financial ratios extracted from the statement of financial position were compared at one time or the other to observe if differences exist. The results of the observations served as a basis for classification of firms as either healthy or distress through single ratio (Monti & Moriano, 2010).

Multivariate discriminant analysis (MDA) is statistical analyses that incorporate the use of more than one variable for analysis at a time. The goal of MDA is set to correct the flaws observed in the usage of univariate analysis because the single ratio used for analysis is not sufficient to capture the changes in time variation common in financial ratios. The implication of this is that,

the predictive ability of accounting ratios occurs at a time, which seems impossible for analysis .i.e. the rate at which ratios changes over time. Besides, single ratio has the probability of given different and inconsistent outcomes in a situation of applying different ratio for the same firm in the same classification. However, the correlation of many accounting variables makes the interpretation of single accounting ratio not reliable and most times, incorrect because the multidimensional interrelation cannot be captured in the single ratio for firm. Therefore, the cut off score in the population parameters are generally not the same with the sample population cut off score, then, it implies that they cannot be used interchangeably. Hence, the probability of failure for the two differs (Natalia, 2007). With this, a significant changes in asset and liabilities composition of firms in the statement of financial position implies that such firm is not capable of sustaining an equilibrium state and if the observed changes have the probability of becoming uncontrollable in the future, then, the likelihood of financial distress is predictable (Aziz & Dar, 2006).

2.3.2 Credit Risk Theory

The supply of goods and service with the promise of making payment at the future date remains the bedrock of credit. It is an agreement within two parties spelling out the payment period on agreed basis usually between persons or business entities. It can be with or without interest. However, being an agreement between both parties does not guarantee compliance and unforeseen circumstances and factors beyond control lead to default or inability to pay. In a situation when the borrower fail to pay as at stipulated date expose the lender to risk which is mostly refers to as credit risk . Risk of default, that is, not paying back as at when due put pressure on the creditor. Risk of default (credit risk) is an investor's risk of loss either financial

or otherwise emanated from debtors' inability to fulfill the agreed payment term stipulated in contractual agreement (Natalia, 2007). In an event of too many defaults from customers or debtors, a firm is exposed to credit risk which leads to financial distress. This theory is in line with Basel I and II as fondly referred to by the financial firms. The Basel II framework is based on the assumptions of capital requirement benchmark; continuous review of supervisory firms' internal assessment to ensure capital adequacy; and proper disclosure of public market discipline to complement supervisory efforts. All these assumptions were necessitated to reduce credit risks of firms.

Whitaker (2000), noted that the risk of borrower defaulting in payment as at when due posed credit risk to firm. This notwithstanding the reason(s) for default it mounts pressure on the firm and affects their ability to meet up their financial obligations as at when required. This may lead to financial distress. With Basel II guidelines, several attempts have been made in the last few years in ensuring a strong internal assessment to checkmate credit risks such as Morgan's Credit metrics, McKinsey's credit Portfolio, Moody's KMV model and the likes with variations in applicability and success rate depending on the nature, size and firms' operations.

2.3.3 Cash Management Theory

The management of the inflow and outflow of cash in an organisation is the basis of cash management theory. Cash is needed at every point in time by the firm to meet everyday challenges as they arise and inability to meet up the daily challenge puts firms under pressure. Management of short-term funds appear to be the priority of every business enterprise because the prediction of cash flows appears to be more difficult especially the inflow of cash as there is variance between cash inflows and outflows (Aziz & Dar, 2006).

In a situation where the cash outflows out run the cash inflows, it leads to financial distress. The moment the payment lists build up such as taxes, dividends and other exigencies without the corresponding cash inflows to pay off, it shows imbalances between the inflow and outflow of cash (Pandey, 2005). The imbalance scenario of cash flows is regarded as firms' cash management functions failure. The continuous and persistent cash flows imbalance leads to financial distress and consequently business failure (Aziz & Dar, 2006).

2.3.4 Gambler's Ruin Theory

Feller W in 1968 developed a theory that he called gambler ruin theory anchored on the probability theory, which was based on the likelihood of chance i.e. a gambler might wins or loses money as the game progresses. The probability of winning is p (success) while the likelihood of losing is $1 - p$ (failure). In either way, the gambler commit fund to the game and start playing with the chances of winning or losing the game, which is probabilistic. Gamblers continue the game hoping on chance until he has no money to play again (Natalia, 2007). The business enterprise is likening to a gambler playing a game with the probability of either win or lose till firms net worth becomes zero or the firm go bankrupt. However, relating the concept to financial distress, it implies that firms would continue to exist, operate and engage its tangible asset and capital in its business activities until it net worth is zero or go bankrupt. The assumption of this theory is that, firm has capital which is inform of cash that were injected in to the business and as the business progress, the cash keep exiting and entering until the value becomes zero depending on the nature of firms' operation. The belief is that at any point in time, the firm will experience negative or positive flow of cash until the firm declared bankrupt. The solvency of the firm is determine by the value of its net worth which is calculated from

stockholder's equity of liquidation value (Aziz & Dar, 2006). The major shortcoming of this theoretical approach is that it assumes firm must start with an amount of money which in reality is not so. In applying this theory to predict bankruptcy, the main difficulties rest on the fact that firms has no access to securities market as their share can not be thrown open and that cash flows are not affected by the managerial decision or actions (Perez, 2006).

2.3.5 Bankruptcy and Reorganization Theory

Altman (2006) propounded a failure theory with the view that entrance and exit of business enterprises is normal in a natural components. The failure of corporate entities comes with cost either directly or indirectly on the society. This necessitates the provisions of laws and procedures to guide corporate collapse such as provision of law to protect contractual rights of stakeholders; provision of orderly liquidation of unproductive assets; and if necessary, provision of a moratorium on definite claims to give the debtors' time for rejuvenation to encourage firms' survival and continuity. There are always two options when faced with financial distress; the firm may seek reorganisation with the view to survive and continue in providing the needed service and obligations to the society or opt for liquidation. The option to follows depends on the economic or intrinsic value (asset) of the organisation. In a situation where the intrinsic value of the firm is greater than the firm's liquidation value, then, the public policy as well as the ownership entity point of view suggested that such firms should reorganise and continue their business operation. Thus, in a case where the firm's liquidation value is greater than the firm's intrinsic value then, liquidation will be preferable (Altman, 2006).

Reorganisation theory of bankruptcy is justified on the ground of social and economic benefits. This is a process that enables the financially distress firms to continue operations while using all the available resources in its capacity to remedy the situation towards rebound rather than liquidating all its asset to repay creditors. This is important because it is assumed that firm's continuity has the probability of rejuvenation rather than disposing of asset in the market place in favour of creditors. Though, there is need to put into consideration the time value of money possibly through the discounted cash flow since rehabilitation process takes time. However, the

contribution of economically productive asset cannot over emphasised as its produce the needed goods and services to the society, offer employment opportunities to the employees, payment of taxes to the government on the revenue generated and offers revenues opportunities to suppliers. All these benefits outweighed the cost bankruptcy to the society and even the firm.

Altman (2003), opined that the essence of the reorganisation approach is to realign the firms' capital structure to prevent the reoccurrence of financial distress in the later future date.

2.3.6 Theoretical Overview

Aziz and Dar (2006) are of the opinion that, theoretical approaches were another form of classifying the health status of firms. Statistical approach and artificial expert intelligence system approach to bankruptcy aimed at identifying distress signals while the cause of failure or distress i.e. the factors responsible for bankruptcy were the main focus of the theoretical approach. In the literature, five theoretical approaches were reviewed; Entropy, Bankruptcy and reorganisation, Cash management, Gambler's ruin and credit risk theory.

The changes in the firm's financial position are the key pointer in the entropy theory. It is expected that firm's financial statement should be stable and sustain a state of equilibrium as a noticeable changes in the asset and liabilities composition put the organisation in a state of survival dilemma. This implies that such organisation is in a state of financial distress. The gambler's ruin theory view the firms' financial distress as a gamblers' who gamble or dabble in to a particular activities with win or lose outcome. The gambler continue the game as long as the resources to play the game still exist and opt out of the game the moment the resources is exhausted. In applying this theory, the probability that firm may experience a negative cash flow will lead them to bankruptcy. With this, a firms' net worth greater than zero implies that such

firm will continue to survive until its experience a negative or downward cash flow less than zero.

However, theory of cash management emphasis the shortage of cash inflows and outflows needed to meet the firms' day-to-day need as a measure of financial distress. A continuous changes or persistent imbalance of firms' cash inflows in relation to cash outflows implies a cash management failure that resulted in financial distress. Besides, credit risk theory classified a firm as being financially distress in a situation when the firm's debtor decline in the payment of their debt which affect the payment of creditors. In a situation when the rate of default is high, it exposed the firm to credit risk, which may lead to financial distress. Bankruptcy and reorganizational theory deals with intrinsic and extrinsic values in the organisation i.e. if the firm can continue and still provide it operational function, then, liquidation is not an option and if the firm asset is worth dead than being alive, liquidation should be embraced.

In this study, due to the nature of the study area, that is, Nigerian quoted oil and gas companies, Gambler's ruin theory cannot be adopted because companies involved are structured corporate firms with no room for gambling. Entropy theory might not be appropriate because changes in statement of financial position are not sufficient to classify a firm as being distressed. Likewise, cash management theory, though related but it emphasised the management of short-term cash inflows and outflows imbalances as a main concern for every firm in financial distress. Credit risk theory emphasis a situation where debtors are not paying or cannot pay back as the reason for distress is very rare in the corporate organisations. Bankruptcy and reorganisation theory was adopted because of its applicability to the study. The goal of the study is to predict financial distress in quoted Nigerian's oil and gas firms through the evaluation of key financial ratios to

revealed their asset strength and weakness towards bankruptcy or reorganization, remediation and rejuvenation.

2.4 Empirical Review

2.4.1 Empirical review on corporate financial distress

Since late 1960s, bankruptcy prediction has been a great interest to the researchers and organizational psychologist owing to the fact that the colossal implications of the failed business not only affect the firms, employees, shareholders, creditors but also has a significant effect on the economy of any nation. The history of bankruptcy prediction is traceable to Beaver's study carried out in 1966. His study paves way for the popular Altman's bankruptcy prediction model in 1968, which developed Multivariate Discriminant Analysis (MDA) through multivariate techniques. Altman uses a balance of 33 bankruptcy firms and 33 non-bankruptcy firms to developed a solvency prediction model gathering data from 1946 to 1964. He identified five financial ratios that are paramount in failure prediction such as working capital, retain earning, earning before interest and tax and turnover are all measured against total asset while market value of equity was measured against total liability to developed a cutting score which later served as yardstick for firm classification as healthy or bankruptcy. A Z score greater than 2.99 was classified as healthy while less than 1.81 as bankruptcy while a score that fall within 1.81 and less than 2.99 are said to be in a zone of ignorance or grey. The findings revealed a 95% level of accuracy.

Altman's effort was further developed by Ohlson (1980) who used logit analysis which is in contrast with the MDA assumptions formulated by Altman. Ohlson's study made use of unbalance sample of 105 bankruptcy firms and 2058 non bankruptcy firms in a period of seven

years (i.e. from 1970 to 1976). The result of the findings shows that firm size, current liquidity, performance and financial structure were the key measurement in bankruptcy prediction. Though, the logit technique used was considered inappropriate as it is a model that only focus on single period i.e. for distressed and non distressed firms, only one year of observation is measured.

Shumway (2001) further developed a hazard model for bankruptcy prediction, which he beleieves was superior to Altman's MDA, and logit model of Ohlson. The hazard model was an advance logit model because it takes into account a multiple period, as the probability functions of the two models are identical. The peculiarities of hazard model is that it put into consideration time varying covariates which are present in binary as dependent variable as against the company specific variables as independent variables. With hazard baseline function, classifications were made on the solvency status of the firms. However, changes in the covariates can be directly estimated with variables in the macroeconomics to reflect significant changes in environment.

Atiya (2001) build on the hazard model of Shumway by adding the traditional financial ratios to the hazard model and observed an improvement in the accuracy level of prediction as against the use of financial ratio alone or the use of hazard ratio alone. The findings revealed a model accuracy of 81.46% to 85.5%, which was higher than the use of financial ratio alone for a 3 years forecast.

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 a possibility of corporate bankruptcy prediction with 70% accuracy in a three years ahead of actual occurrence using stability discriminant model.

In another study, Robbins and Pearce, (2005) did a methodological comparison of 3 techniques of predicting financial distress in Malaysia. He compared MDA, hazard and logit model in a balance sample of 52 bankruptcy and non-bankruptcy firms with twenty holdout sample firms. The findings revealed that hazard model gave a higher accuracy level of prediction to 94.9% in sampled studied, which appears better than the other prediction techniques. However, the introduction of holdout sample in the prediction, Altman MDA gave an accuracy level of 85%. Besides, the result of the analysis show that debt to asset ratio appear to be the most significant variable in predicting financial distress irrespective of the techniques adopted for the prediction. Thus, net income growth was significant in MDA while return on asset was significant in logit model.

Nganga (2006) examined the possible imminent indicator of bankruptcy among firms in insurance sector of Kenya. The study used information from cash flow and multivariate discriminant analysis model. The overall accuracy level based on the findings was 85% giving 12 months before actual bankruptcy materializes. The study concluded that cash flow is a good variable in predicting the financial health of firms.

Benjamin and Kamalavali (2006) examined the influence of financial ratios on firms profitability which was proxy by return on investment. The findings revealed a negative influence on the financial ratios measured while a positive influenced was observed on debt to sales ratio, quick ratio and current asset to total ratio, which were used to measured growth rate.

Bwisa (2007) applied Altman's prediction model on the local firms in India. The result shows a 60% prediction accuracy as six out of ten failed firms were correctly classified.

Taliani (2010) also evaluate the Altman's model on corporate financial distress prediction in Kenya with specific interest on Commercial banks. The findings revealed that turnover and

activity ratios were germane in financial distress prediction in banks in Kenya. The techniques maintained an accuracy level of 70% to 100% in year one and three respectively.

2.4.2 Empirical review on Corporate financial distress in Nigeria

Olaniyi (2007) evaluates the likelihood of failure in Nigerian banks. The study utilise a balance sample of healthy bank (First bank) and bankrupt bank (Trade Bank) with the use of Altman Multivariate analysis of Z score for classification. The information obtained from the annual report of these banks was used between 1998 to 2003 to predict the likelihood of failure. The findings revealed that the adopted model is suitable to predict the failure probability in Nigerian banks. Though, the study make us of just one sample in each case of healthy and unhealthy bank. This sample seems too small and inadequate in generalising the prediction pattern and model for Nigerian banks.

Bello (2010) examined the efficacy of Altman MDA model in Nigerian Banks. The author adopted Expo Factor design for the study while the difference in classification status of banks was evaluated with the use of pair sample t test. The study concluded that MDA lack predictive capacity in differentiating healthy and distress Nigerian banks. The yardstick used in measuring the difference between the two classification were not properly spelt out and the Expo factor design lacks adequate justification in the peculiarity of sampled observed.

Ebiringa (2011) evaluate the application of Altman MDA in Nigerian Banks. An unbalanced sample of ratio 2:1 was used for non-bankrupt banks (Bank PHP and Union Bank) and bankrupt bank (Intercontinental Bank) to evaluate distress banks. A sample period of four years financial ratios was used in each case before distress to developed a Z score value for cutting score. The study concluded that Altman's MDA is appropriate in predicting the financial health status of the

Nigerian banks at 99% confidence interval. Thus, the accuracy level of prediction was not given in the study and the study does not take into consideration time vary analysis of the sampled observations.

Uchenna and Okelue (2012) assess the predictive ability of Altman's MDA in Nigerian Banking industry. The study also utilise unbalanced sample of three failed banks and seven healthy banks for a period of five years. Applying the Altman's MDA model, the results shows that, the model is appropriate in evaluating the financial status of Nigerian Banks. The study concluded that, MDA with the use of financial ratios has the predictive ability of Nigerian banks failure. It was also revealed that MDA does not only predict failure but shows that the distress signals are becoming obvious 12 to 24 months before the actual bankruptcy materialises. However, this study does not take into cognisance the time to event study of the sampled observations and financial ratios was the only predictive variables used in the study leaving out the company specific variables such as age and size.

Maishanu (2013) advocate failure early warning signals in Nigerian banks with the hope that prompt, but appropriate as well as effective strategies could be put in place in order to resolve crises in banks before they precipitate into failure. Data were collected from thirty-two commercial banks using their 1996 and 1997 financial reports. The banks were divided into two groups: distressed and healthy. The study relied on a variety of accounting ratios in developing a discriminant model that distinguishes distressed and healthy banks. The study shows that distressed banks differ significantly from healthy banks with respect to capader3, capader5, asequal1, and ownership performance variables. Study concludes that an early warning model developed in the study could be used by various stakeholders to monitor distress-proneness,

direct attention to laggard areas for remedial action, and adjust their relationships where necessary.

Hur-Yagba, Okeji and Bello (2015) examine the relevance of multivariate discriminant model to determine the financial status of manufacturing firms in Nigeria. The study aimed at analyzing the influence of financial ratios on manufacturing firms' solvency. The information gathered were generated from the selected firms annual reports and account. Data were analysed using financial ratios analysis, t test, correlation and Altman's multivariate analysis to predict bankruptcy. The finding of the study revealed that the model is appropriate to in predicting failing and non-failing firms. The study recommended the use of Altman MDA to all manufacturing firms in detecting early failure signals before actual failure occurs.

Adeyeye and Migiyo (2015) extends the frontier of their study by pooling 3 statistical models such as MDA, probit and logit technique in developing the health status in Nigerian Banks. The findings indicated that, the 3 techniques were plausible to determine banks health status in Nigeria. Capital adequacy, profitability, credit risk and liquidity were the significant key performance variables in the Nigerian Banks. The study concluded that identified early warning covariates determined based on the three techniques are effective to maintain and supervise sound and safe banks operations. Otherwise, a neglect of these covariate exposed Nigerian banks to financial distress. However, the period for this study appears too short and times vary analysis not considered.

2.4.3 Empirical Review on Corporate financial distress and Corporate Survival

Chancharat, Davy, McCrae and Tian (2007) examine the likelihood of corporate survival in quoted public Australian firms. The influence of financial ratios, firms specific variables (such as

size and age) and market based variables on financial distress was examined. The study includes a sample of 1,117 listed public Australian firms within a period of 16 years i.e. from 1989 to 2005. Survival analysis through Cox proportional hazard was used to analyse the data collected and the findings revealed that financially distressed firms were characterised by low profitability, low excess return, high leverage and large size in contrast to healthy firms. Thus, age of the firm is not significant in predicting financial distress. However, only the early warning covariates were identified, corporate governance attributes were not considered in corporate survival prediction.

Lamberto (2010) uses the Cox proportional hazard analysis to estimate the survival probability of Initial Public Offerings (IPOs) in Australia. The available information when listing the firms were tested to determine the probability of failure or survival of IPO companies. The findings revealed that firm size and risk factors are not significantly related to corporate survival while probability of survival was related to factors such as industry type as firms in the natural resources and finance tend to survive than firms in other industry. Thus, the technique of available information is not justified.

Lee (2014) predicts the variables that explain the solvency status of business in Taiwan. Financial ratios and market-based data were used as variables to predict the likelihood of failure using time to event study through Cox proportional analysis. Twelve financial ratios were used as predictive variables of business failure and the findings revealed that not many variables were needed to forecast the potential business failure. Thus, variables such as valuation, profitability, leverage and efficiency ratios were the predicted failure variables. The level of accuracy of the model for classification was given as 87.93% adequacy. However, the study failed to show the

directional relationship of variables in terms of hazard ratio or estimates while Kaplan survival time was not given based on the health status of the sampled firms.

Kim and Partington (2015) investigate the use of dynamic likelihood forecasts for Australian companies. The study adopted survival analysis that take into account time varying event probability through Cox proportional model. The authors emphasis the study as a ground breaking research as not much has been conducted using dynamic analysis to predict business failure. Brier score and receiver operating attributes were used to measure the forecast accuracy. The findings revealed that dynamic likelihood model of business failure prediction are superior to Logit and Cox model. However, the basis or yardstick of comparism were not known as the techniques used have different assumptions in practice and application.

Babajide, Olokoyo and Adeboye (2015) predict banks failure in Nigeria using survival analysis technique. Data gathered within the period of 2003 to 2011 from the annual reports of the sampled banks were analyzed. Financial distress early warning variables were predicted with the use of Cox proportional hazard techniques and the findings revealed that, banks survival in Nigeria are predicted by twelve variables that are essential for survival to prevent failure. Besides, the study shows that, banks on high operating expense and high non performing loan have a high probability of failure. However, the study rely only on financial variables for failure prediction not putting into consideration variables such as size, age and corporate governance attributes in business failure prediction.

2.4.4 Empirical review on Turnaround Strategies and Financial Distress

Sudi and Lai (2001) empirically analyse the influence of corporate financial distress on turnaround strategies in UK companies. Sampled of 166 distressed firms were observed for 8

years i.e. from 1985 to 1993 and the turnaround strategies adopted in ameliorating distressed towards recovery were critically analyse for 3 years after the distress year. The findings revealed that failed firms and rejuvenated firms adopted the same strategies in curbing distress. Though, it was observed that failed firm restructure intensively, lack adequate strategy implementation, while rejuvenated firms focused on external market and growth oriented strategy in revival efforts. However, timing specific, effectiveness of strategies and challenges faced in turnaround strategies were not evaluated in the study.

Padilla and Raquejo (2000), developed a model to evaluate the implications of restructuring on operational attributes of post distress in the banking industry. The study captured the prediction of banks financial distress, the attempted restructuring and employees' layoff as the main concepts of the study. The findings revealed that employees layoff as operational actions has a link to debt restructuring. Thus, the study only focus on businesses with capital structure that are simple as one bank can provide the external funds required by the firm.

Besides, Waweru, Mbogo and Shano (2013) in their study on turnaround of distressed firms in the public sector concluded that privatization of publicly owned enterprises revealed mixed results and reaction in returns after privatization.

2.5 Research Gaps in the Literature Reviewed

The empirical review above shows that majority of these studies focused on one area of the conceptual issues related to financial distress, turnaround and corporate survival. Hence, the present study explores the concepts of corporate financial distress prediction, turnaround strategies and the effect of corporate governance attributes on the corporate survival with particular emphasis on quoted Nigerian oil and gas companies. It is not enough to predict distress

but the strategic actions to remedies and rejuvenate financially distressed firms towards continuity and survival in curbing the consequences of failed business.

On the other hand, past researches on this conceptual issue utilized basic models like Altman's MDA and Z – score for measuring the solvency status of businesses around the world. Logit, probit, neural networks and the likes were some the techniques adopted, but none of these studies explore the difference between healthy and distress companies with statistical analysis as this help to revealed the true financial state of the firm, thereby, aid quick and prompt decision to prevent the aftermath consequences of distress.

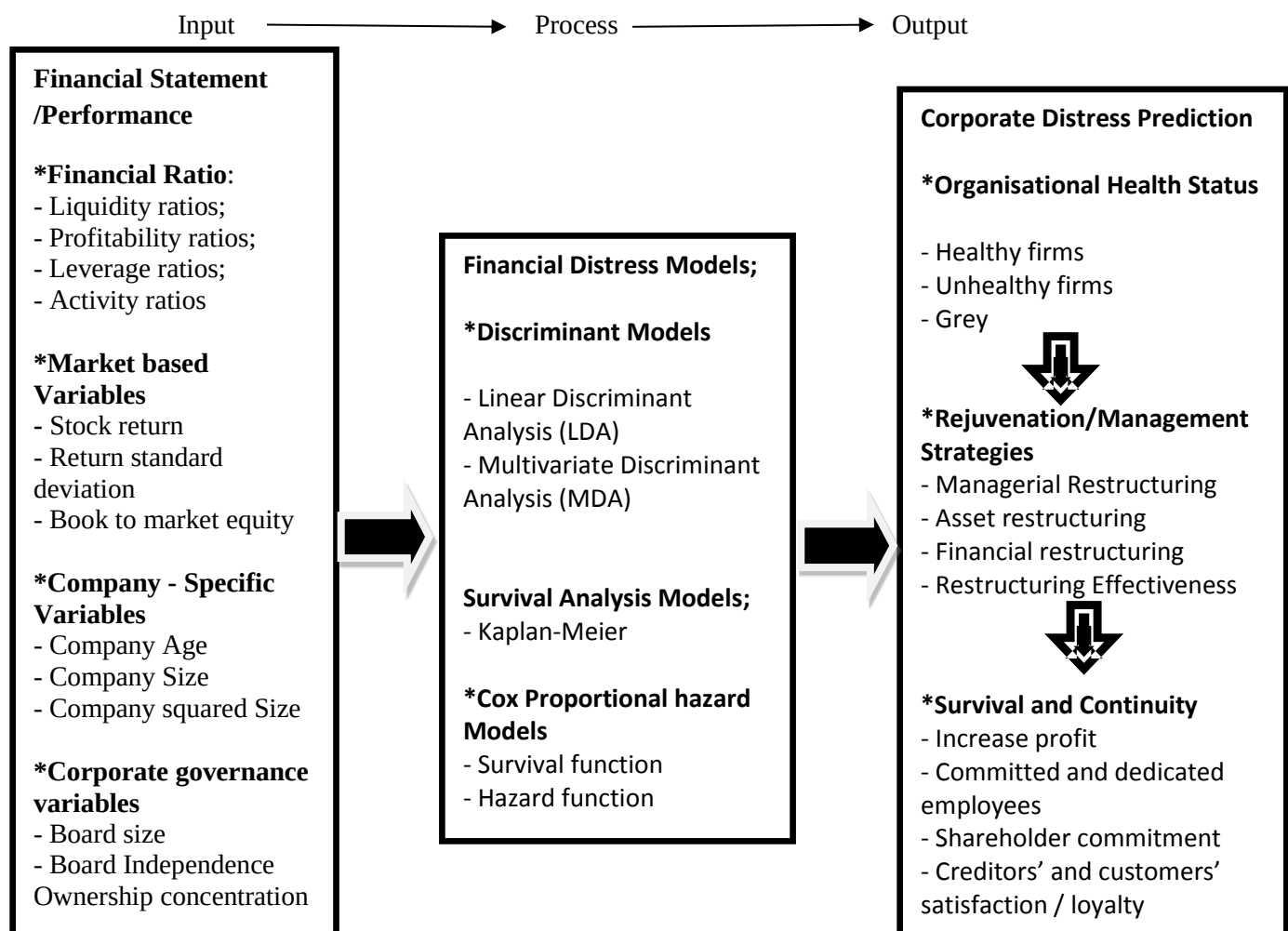
Majority of the earlier studies conducted in Nigeria on this conceptual issues focused on private sector companies (i.e. non- quoted companies) rather than the listed companies on the floor of Nigeria Stock Exchange. Besides, most scholars conducted their research outside Nigeria. Many of which were conducted on corporate distress in the Banking industry, few on the manufacturing industry and very scanty on other sectors such as oil and gas sector and the likes. It is suffice to say that, corporate failure is not limited to the banking industry, but other sector of the Nigeria economy had experienced a more drastic situation than the banking industry as more oil and gas firms, textile companies and the likes had experienced distress more than the financial institutions.

The study will also fill the vacuum supposedly created as most previous studies employed convenient sampling method; this study will employ multi- stage sampling method that will combine stratified, judgmental, availability, purposive and simple random sampling techniques. Therefore, the outcome of this research work will be an eye opener and highly beneficial to the stakeholders in the Nigerian oil and gas sector to boost the economy.

However, in spite of the abundant literature to support Multivariate Discriminant analysis in

predicting corporate financial distress, there seems to be some gaps on the turnaround strategies to rejuvenate the ailing companies and besides, effects of corporate governance on the business survival and continuity in Nigeria. As a result of the dearth of literature in the identified field of distress and survival of firms, the gaps so identified form the crux on which this research work is anchored and it will be filled through the conceptual model and theories adopted for the study with the application of research models and methodology. This study examines the financial strength / distress of Nigeria companies with particular reference to oil and gas firms that are quoted on the Nigeria Stock Exchange using Altman Zscore model and survival analytical technique within the study period from 2000 to 2015.

2.6: Conceptual Framework



Source: Researcher's conceptual framework, 2015

The figure above - the conceptual framework shows the input – output model of the study. The input column stand for the variables of interest which are: Financial Statement/ Performance indicators (i.e. Profitability ratio, Leverage ratio, Activity ratio and Liquidity ratio,); Market based variables (i.e. Stock return, Return standard deviation and Book to market equity); Corporate governance variables (i.e. board independence, board size, and ownership concentration) and Company specific variables (i.e. Firm size, firm age and firm squared size). These variables were process using discriminant models (such as linear discriminant analysis, multivariate discriminant analysis, and survival analysis models (i.e. Cox proportional hazard models such as survival function and hazard function). These models were used to manipulate the identified variables in predicting corporate financial distress and classified the organisations into healthy, grey and unhealthy firms.

The major objective of corporate financial distress prediction is early identification of ailing companies with the view of rejuvenation or introduction of turnaround strategies to ameliorate the situation and avoid the consequences and colossal cost implications of liquidation. The strategies identified include; managerial restructuring, asset restructuring, financial restructuring and restructuring effectiveness. The turnaround strategies are aimed at specific output such as organisational continuity and survival, which is possible through increase in profit, committed and dedicated employees, shareholders' commitment, creditors' and customers' satisfaction and loyalty.

CHAPTER THREE

METHODOLOGY

3.1 Preamble

This chapter describes the various procedures and techniques used in collecting and analysing the study's data. This chapter highlights the research design, research population, sampling techniques, procedures for collecting the data and methods of analysing the collected data.

3.2 Research Design

In view of various research strategies available, this study adopted cross sectional design. This design was adopted because different homogenous elements were surveyed. In addition, the study also benefit from hypothesis testing (i.e. Analytical and predictive) to enhanced understanding of the relationship that exist among variables which is done using both qualitative and quantitative i.e. Corporate financial distress variables. This design was applied by Atiya, (2001); Kogi, (2003); Adeyemi, (2011); Adeyeye and Migiro, (2015) in their studies on prediction of financial distress amongst different companies.

The study adopted Altman's Multivariate Discriminant Analysis model for distress prediction and Survival analysis which were surveyed over a period of time through testing, time to event studying, and cause and effect to predict corporate financial distress in some selected companies.

3.3 Population of the study

The population for this study focused on the entire oil and gas sector of Nigerian economy, which covers the downstream, upstream and midstream companies in the sector. Though, the companies classified under this sector are homogenous in activities (i.e. operation) but

heterogeneous in size, capital structure, organisational structure and financial capacity. To achieve the research objectives, therefore, the study focus on oil and gas companies quoted on the Nigeria Stock Exchange (NSE) because of the availability of needed financial historical data for cause, effect and prediction. Researcher's attention was purposely on oil and gas sector of Nigeria economy, which is informed by the mono-economy nature of Nigeria (i.e. Dependence on oil as a major source of income). This implies that an unfavourable state or shaking in oil and gas sector has a negative effect on Nigerian economy at large.

3.4 Sampling Techniques and Sample size

The quoted companies on the floor of the Nigeria Stock Exchange were classified into twelve (12) sectors as at August, 2015. (NSE Fact book, 2015) ranging from Agriculture to Unspecified sectors comprises of about 138 companies. Hence, the oil and gas related companies quoted on NSE are eighteen out of which only seventeen has traceable data needed to achieved the stated objectives of this study within the sampled period. Thus, the sample size for this study was seventeen companies.

Purposive sampling technique, which focuses on the firms in Nigerian oil and gas sector was used to select the quoted companies on the list of NSE fact books while Judgmental sampling technique was applied to the selected firms as companies with incomplete data were truncated (deleted) to focus on the firms with available data. The selected samples were seventeen oil and gas companies listed on the floor of the Nigeria Stock Exchange (NSE), which comprises of three failed firms and fourteen active firms (non-failed firms). The failed firms were companies that are delisted from the list of NSE within the sampled period. The active firms were those companies that are continuously appearing on the list of NSE throughout the period of the study. The sample periods spans from 2000 to 2015. These periods were considered long enough to

provide sufficient data to assist in determining a trend in predicting corporate financial distress. Also, Nigeria Stock Exchange Fact books which was the major source of data collection for this study was first published in 1997 and four years gap was given for the publication to be stable in order to avoid window dressing data and 2015 was the available publication to the researcher as at the time of this study.

To evaluate the turnaround strategies used in Nigerian oil and gas sector, the companies that had experienced distressed at one point or the other based on Altman's Zscore model prediction cutting scores and recovered between the sampled periods were selected to evaluate the appropriate turnaround strategies that enhanced rejuvenation.

The selected companies are: JAUPAUL Oil, Afroil Plc., Beco Petroluem, Conoil Plc., Oando Plc., Eterna Plc., Mobil Oil Plc., Forte Oil Plc., MRS oil Nigeria Plc., African Petroleum Plc., Total Nigeria, Agip, National Oil, Unipetrol, Texaco, Chevron and Union venture and Petroleum Plc. The Multivariate technique i.e. Multiple Discriminant Analysis (MDA) was applied to a sample of fourteen healthy and three unhealthy companies within the sampled period. The unbalanced samples used was justified by past researchers such as Atiya, (2001); Kogi, (2003); Adeyemi, (2011); Adeyeye and Migiro, (2015) who used unbalanced samples for distress prediction. Failed companies were assumed by the study as those companies that have been delisted within the sampled periods.

3.5 Sources of Data Collection

Secondary sources of data collection were used to elicit the required information needed for this study. The database compiled by the Nigeria Stock Exchange (NSE) Fact book and Annual financial report of the selected companies formed the secondary data used for this research. The

data extracted include financial ratio (i.e. Profitability ratio, liquidity ratio, leverage ratio and activity ratio); market based variable (such as stock return, return standard deviation and book to market equity); and company specific variables (i.e. Company size, company age and company squared size). The data generated from annual financial reports and books of accounts, library, and firm's records such as journal, in-house magazines, companies' publications, official website and other resourceful information were used for the selected companies from 2000 to 2015.

Besides, structured questionnaire checklist i.e. primary data was used to solicit relevant information on turnaround strategies effective for Nigerian oil and gas firms' rejuvenation. The sampled firms comprises of those companies that had experienced distress at one time or the other and recovered within the sampled periods using Altman's Z-score model.

3.6 Procedures for data collection

The data used for this study were obtained from the financial statement. Statutory reports was used in developing Multivariate Discriminant Analysis (MDA) model in order to explain the causes of distress; whether any difference exists between distressed and healthy firms; corporate survival and corporate governance. Data was collected for this purpose from seventeen (17) companies between years 2000 and 2015. Any incomplete observations was deleted, and therefore excluded from the analysis. The selection of the period was justified on the grounds that it provides the opportunity to comfortably identify the two groups since discriminant analysis can only be applied when two discernible groups can be identified; distressed and healthy and survival analysis which focus on time to event study.

The financial distress sample were identifies from the quoted companies listed on the NSE fact books based on the previous established criteria. Since MDA uses matched pair, the two-group

classification of firms to non-failed and failed group were matched by size and year to obtained a cutting scores.

As for the definition of ‘failure’, it refers to the inability of a firm to pay its financial obligations as they mature. In the context of this study, a failed firm are those companies that has been delisted or suspended from the list on NSE fact books while non failed firms were all entities listed in the NSE since the year 2000 - 2015. For a firm to be included in this category, such organisations must not have been delisted/suspended within the sampled period.

The Z-score is a five linear common business ratio that were objectively weighted by coefficients which was later summed together to arrive at a total score used in classifying firms into groups such as distressed, grey and healthy.

Also, structured questionnaire checklist was sent out to the companies that had experienced distress at one time or the other and recovered. The electronic 7-item question check list on turnaround strategies was sent to the affected companies after establishing a good relationship with the key contact person in each of the selected companies and follow-up telephone conversation was developed to facilitate quick response.

3.7 Method of Data Analysis

Data were organized and systematically arranged to enhance effective analysis. Data analysis follows an array of sequence such as preparation, collation, coding and cleaning of data for processing using Statistical Packages for Social Science Software now known as Statistical Product and Service Solution (SPSS) version 20. SPSS covers a wide range of statistical techniques needed to achieve the stated objectives of this study in terms of rigour, appropriateness and orderly presentation of figures and charts required for proper inferences.

Due to the nature of this research, multi-level analysis was used where financial ratios were computed and the results were further processed using Multiple Discriminant Analysis (MDA) and Survival analysis to predict financial distress in the selected sector.

Friedman test is a non-parametric statistics used to evaluate the change or otherwise in the variable of interest. Turnaround strategies adopted by the financially distressed firms were subjected to this analysis to determine their effectiveness in rejuvenating distressed firms in the sampled firms. However, aside from corporate financial distress prediction through the identified models, the formulated hypotheses were tested using descriptive statistics, t- test, Kruskal Wallis test, Kaplan-Meier, Cox proportional hazard regression and Pearson correlation coefficient.

3.8 Model Specification

The Z-score which is a five linear combinations of weighted with coefficients for classifications by discriminant function for classification as distress, grey and healthy. The model is presented in an equation given as;

$$Z = W_1X_1 + W_2X_2 + W_3X_3 \dots\dots\dots W_nX_n$$

Z = *Discriminant Score*

W_i = *Discriminant weight for variable i*

X_i = *Independent variable i*

The Altman's Discriminant Z score model adopted is stated below;

$$Z' = 0.012X_1 + 0.014 X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5$$

X_1 = Working capital / Total Assets

$$X_2 = \text{Retained Earnings} / \text{Total Assets}$$

$$X_3 = \text{Earnings before Interest and Taxes} / \text{Total Assets}$$

$$X_4 = \text{Book Value of Equity} / \text{Total Liabilities}$$

$$X_5 = \text{Sales} / \text{Total Assets}$$

The Altman's Z score model has been used in other sectors such as manufacturing, banking and the likes, the effectiveness and accuracy level in these sectors prompted the application in oil and gas sectors as both are service sector.

Zones of Discrimination:

$$Z' < 1.80 - \text{"Distress" Zone}$$

$$1.80 < Z' < 3.0 - \text{"Grey" Zone}$$

$$Z' > 3.0 - \text{"Safe" Zone}$$

Survival analysis, which study the occurrence and time to event study i.e. changes situated in time that varies with covariates and censored observations, was used. The time varying covariate used in this study include financial ratios, company specific variables and market-based data as their values changes with time. It is normal that, the signs of financial distress become obvious by deterioration of financial ratios and the consequence of identified ratios on corporate failure is not constant over time.

The model for survival is given;

$$\log h_i(t) = \alpha(t) + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_{in} \quad (4)$$

This is later denoted by the covariates code given the table above

$$\log h_i(t) = \alpha(t) + \beta_1 EBM(t) + \beta_2 ROE(t) + \beta_3 ROA(t) + \beta_4 CUR(t) + \beta_5 QUR(t) + \beta_6 WCA(t) + \beta_7 DET(t) + \beta_8 CPT(t) + \beta_9 TAT(t) + \beta_{10} SIZE(t) + \beta_{11} SIZE2(t) + \beta_{12} AGE(t) + \beta_{13} EXR(t)$$

3.9. Ethical Consideration

This study was undertaken and aimed at informing government and concerned stakeholders about achieving sound operations, survival and continuity of corporate organisations and sustainable development without causing harm to people. Besides, this study was carried out in conformity with approved guidelines and regulations of social and management sciences. However, there is room for improvement in the quality and adequacy of the technical and social-economic data used in the assessment of the study.

Hence, an ethical clearance to conduct the study was obtained from the University of Ilorin Ethical Review Committee. The results and conclusion of this study shall be disseminated to the public through publications, both local and internationally recognized journals.

Table 1: Relationship Matrix of Objectives, Research questions, Hypotheses and Analytical Techniques

S/N	Research Questions	Objectives of the study	Research Hypotheses	Method of Analysis
1	Is there any susceptibility to corporate financial distress in Nigerian quoted oil and gas firms?	evaluate the susceptibility to corporate financial distress of quoted oil and gas companies in Nigeria;	there is no susceptibility to corporate financial distress in Nigerian quoted oil and gas companies	Altman's Z-score model and t-test
2	How effective are the turnaround strategies employed by the financially distressed companies towards rejuvenation?	evaluate the effectiveness of turnaround strategies in financially distressed companies towards rejuvenation;	there are no effective turnaround strategies to rejuvenate financially distressed companies	Descriptive statistics and Friedman test
3	What is the effect of solvency metrics on the corporate survival of Nigerian oil and gas firms?	examine the effect of solvency metrics on corporate survival of Nigeria quoted oil and gas sector; and	solvency metrics has no significant effect on corporate survival of Nigerian quoted oil and gas sector	Kaplan-Meier, Cox Proportional Hazard Model and correlation Analysis
4	To what extent does corporate governance attributes influence the survival likelihood of quoted Nigerian oil and gas companies?	determine the influence of corporate governance attributes on the survival likelihood of quoted Nigerian oil and gas companies.	Corporate governance attributes have no significant influence on the survival likelihood of quoted Nigerian oil and gas companies.	Descriptive statistics, Kruskal Wallis and Cox proportional model

Source: Researcher's Relationship Matrix, 2017

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Preamble

This chapter focused on the data presentation collected, analysis and interpretation with the view of making inferences. Secondary sources of data remain the major source of data collection for this study. The data extracted from the Nigerian Stock Exchange Fact books, annual reports of accounts of the sampled organisations and information obtained from the Security Exchange Commission. Besides, primary data was also obtained to complement the result obtained through the secondary data especially in the area of turnaround strategy because most of the variables considered under the turnaround strategies may not be adequately explained by the secondary observations. The data gathered were arranged, coded and subjected to multi – level analysis in terms of ratio analysis before applying the results to the Multivariate Discriminant Analysis and Survival analysis models.

This chapter is divided into four different sections based on the research questions, research objectives and research hypotheses earlier formulated to guide the conduct of this research.

4.2 Corporate Financial Distress prediction in Nigeria quoted oil and gas companies

The Multivariate technique i.e. Multiple Discriminant Analysis (MDA) was applied to sample of fourteen healthy and three unhealthy companies within the sampled period. The last seven years financial statements, except otherwise were employed to generate the data used because Altman (2000) suggested that distress signs are obvious 18 months before actual failure. The financial performances of oil and gas companies in Nigeria were assessed using the Altman's discriminant analysis using financial ratios. The following financial ratios used were;

$$X_1 = \text{Working Capital/Total Assets.}$$

$$X_2 = \text{Retained Earning/Total Assets.}$$

$$X_3 = \text{Earnings Before Interest and Tax/Total Assets.}$$

X_4 = Market Value of Equity/Total Liabilities.

X_5 = Gross Earning (Sales) /Total Assets.

Z= Overall Index.

The Altman's Z score model was used in many sectors (such as banks and manufacturing) in developed and some developing countries with a proven track of objectivity and applicability. Since it has been tested and proved to be effective, this study adopted the model for distress prediction in Nigeria's oil and gas companies as given below;

$$Z \text{ score} = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.999X_5$$

The sampled unit were discriminate in three (3) in groups; $Z \text{ score}_{\text{value}} < 1.80$ is categorize under Bankruptcy zone or Weak performance; $1.80 < Z < 3.0$ is classified as Grey and $Z \text{ score}_{\text{value}} > 3.0$ is regarded as being Healthy. The formulated hypotheses were tested using Altman's Multiple Discriminant Analysis and T-test.

The collated data were presented using the formula stated above and the results were shown in the appendixes II and III.

4.2.1 Test of Hypothesis One

H_{01} : there is no susceptibility to failure in Nigerian quoted oil and gas companies.

The corresponding objective states that to predict the susceptibility to corporate financial distress of quoted Nigerian oil and gas firms. In testing this hypothesis, Altman prediction model was adopted to determine the average Zscore as shown in the appendixes II and III and the results was compared to the cutting score already established under the methodology

Table 4.2.1: Summary of Financial Status using Altman's Z score model

S/N	COMPANY	YEAR 1 Zscore	YEAR 2 Zscore	YEAR 3 Zscore	YEAR 4 Zscore	YEAR 5 Zscore	YEAR 6 Zscore
1.	JAUPAUL OIL	1.04876523	0.9424451	2.99980136	5.7526635	7.2927035	7.4454439
2.	OANDO PLC	3.00438581	2.9321423	2.96290561	2.8519027	3.53707484	4.609488
3.	AFROIL PLC	1.8761218	2.2729310	0.75682172	0.06129416	0.48927024	0.21644737
4.	BECO PETROLEUM	1.44263141	1.0080982	3.33810588	4.91762876	4.01852651	8.35483392
5.	CONOIL PLC	2.9903121	3.0103120	9.17160723	15.9322333	11.2568176	8.17968729
6.	ETERNA PLC	2.8091230	0.53757274	0.5512617	3.82932325	8.54127760	4.5512617
7.	FORTE OIL PLC	2.80123540	1.9004321	1.448765	4.56991388	-	-
8.	MOBIL OIL PLC	5.7321674	5.6731980	6.57167848	5.91251429	6.58449622	7.31265273

9.	MRS OIL NIGERIA	-	-	6.44063645	5.2293965	8.20178933	20.9283386	15.42179671	11.2444
10.	TOTAL NIGERIA	3.7846529	4.111321	3.38331841	3.53513861	11.1335819	13.763607	15.9867199	11.2444
11.	AFRICAN PET. PLC	16.5031873	12.3509305	5.02836711	3.2354611	1.000421	1.0680250	3.74590363	6.183185
12.	AGIP	6.1326450	3.90114561	4.05349425	4.22788421	3.81356788	2.99980136	4.7650073	4.270507
13.	NATIONAL OIL	1.8096743	1.0342178	0.945141	1.0208098	0.65981349	0.8230338	1.02950208	1.111056*
14.	UNIPETROL	2.00145132	1.9910379	1.14426314	0.78136051	1.09120447	1.61177309	1.02950208	1.378656
15.	TEXACO	2.9667057	1.94907162	3.21773592	1.32891896	1.32003989	-	-	2.156494**
16.	CHEVRON	4.91432567	4.0173891	4.51912398	4.30104663	4.53024682	4.4550227	3.12118729	4.265477
17.	UNION VEN. & PET. PLC	2.1122435	1.7234156	0.9723579	0.85500369	1.25705833	0.658279381	0.5254893	1.300549*

*Distress

**Grey

Source: Researcher's computation, 2017

The summary of the analysis in the table 1 above revealed the financial status of quoted Nigeria's oil and gas companies using Altman's Multiple Discriminant Analysis model. From the appendixes 2 and 3, each solvency ratio was computed against the predetermined Altman's weighted score to give the Z score values. Since the study takes into account seven years financial statement, the average yearly captured scores shows that Afroil Plc, National oil, Unipetrol and Union Petroleum Plc reported a mean score less than 1.80 (i.e. 1.095712, 1.111056, 1.378656, 1.300549 respectively) that is, it can be classified under the weak zone while Texaco reported a mean score of 2.156494 above 1.80 but below 2.9 (i.e. grey). This implies that it is heading to

bankruptcy. This might have necessitated the merger in 2003. Forte oil gives a mean score of 3.030087 dangling on the border line between a grey and healthy financial performance firms. Other listed companies reported an average score greater than 3.0 cut score and they were regarded as healthy financial companies.

With the discriminant cutting scores as advised by Altman (2000) i.e. z ≤ 1.80 and $1.80 < z < 3.00$ and above 3.00 as weak performance, healthy performance (grey) and very strong performance respectively. The results show that 4 companies (23.5%) were financially unhealthy with probability of failing if no rejuvenation is attempted. Only 2 (11.8%) is classified as grey and 11 companies (64.7%) are on healthy financial status. With 23.5% failure prediction, the null hypothesis was rejected while alternative hypothesis, which states that there is susceptibility to failure in Nigerian quoted oil and gas companies, is accepted. The colossal consequences of distress is far reaching as failure will lead to loss of job, direct and indirect cost, reduction in Gross Domestic Product (GDP) to mention but few that Nigeria is experiencing today. The trend analysis revealed that, distress signs are becoming obvious

even before the seventh year. It is suffice to say that, MDA does not only predicts firms failure, but also revealed most importantly, that the signs of an imminent danger or failure became manifested few years before the sampled companies failed.

To further test the susceptibility to failure of quoted Nigerian oil and gas sector, the difference between distressed and healthy firms was conducted through t – test analysis. To achieve this, the Zscore for each year were imputed against the cutting score as the test value. The test value of 2.40 was obtained by finding the average between weak score and very healthy score (i.e. $1.80 + 3.00/2$)

Table 4.2.2: T- test showing the Financial Health of Nigerian quoted oil and gas

COMPANY	MEAN Z SCORE	df	Test Value = 1.80		Test Value = 2.40		Test Value = 3.0		Remark
			t-value	Sig. (2-tailed)	t-value	Sig. (2-tailed)	t-value	Sig. (2-tailed)	
JAUPAUL	5.099912	6	2.966	.041	2.574	.026	2.181	.045	VS
OANDO	4.265517	6	2.242	.038	1.791	.014	1.341	.002	VS
AFROIL	1.095712	6	-3.182	.330*	**	**	**	**	VS
BECO	4.253653	6	4.001	.016	3.346	.029	2.691	.035	VS
CONOIL	8.483886	6	6.292	.003	5.867	.004	5.442	.006	VS
ETERNA	3.859342	6	1.264	.025	1.061	.034	.857	.044	VS
FORTE OIL	3.030087	4	.775	.045	.390	.763**	**	**	HP
MOBIL	6.318322	6	21.304	.000	18.621	.000	15.938	.000	VS
MRS OIL	11.2444	4	3.150	.035	2.950	.042	2.750	.031	VS

TOTAL	7.956906	6	2.977	.041	2.747	.041	2.517	.026
AFRICAN	6.133185	6	1.557	.019	1.375	.040	1.192	.009
AGIP	4.270507	6	7.514	.002	5.438	.006	3.362	.028
NATIONAL	1.111056	6	-5.865	.074*	**	**	**	**
UNIPETROL	1.378656	6	-4.945	.089*	**	**	**	**
TEXACO	2.156494	4	.890	.044	-.608	.576**	**	**
CHEVRON	4.265477	6	8.862	.001	6.633	.003	4.404	.012
UNION	1.300549	6	-4.888	.088*	**	**	**	**

Key: WP – Weak Performance (*) HP – Healthy Performance (**) VS –

Very Healthy

Source: Researcher's computation, 2017

Table 4.2.2 above revealed the t-value of the financial health status of sampled companies. With a test value of 1.80, Afroil Plc, National oil, Unipetrol and Union petroleum Plc returns a p-value > 0.05. Thus, the study fail to reject the null hypothesis ($H_0: \mu < 1.80$) while concluded

that the mean Z'-score lie below 1.80. Therefore, the four (4) companies classified as bankruptcy/ weak performance. In a category of 2.40 test value, Texaco and Forte oil have a p-value>0.05. With this, null hypothesis is rejected ($H_0: \mu < 2.40$) and conclude that the mean Z'-score is below 2.40. Thus, these two companies classified as Grey. This might have have been responsible for the merger of Texaco company in 2003. Other quoted sample firms have a p-value greater than 0.05 at 3.0

test value. The null hypothesis is rejected ($H_0: \mu \leq 3.00$) and conclude that mean Z'-score lies above 3.00. On this basis, there is significant difference between distress and healthy oil and gas companies in Nigeria i.e. using the financial ratios identified, the performance of the weak and healthy companies were not the same. Furthermore, the results indicated that, only 2 (11.8%) companies were wrongly classified using Altman's Z score model and 88.2% accurate. This implies that, Altman Multiple Discriminant Analysis Model can be applied in forecasting bankruptcy in Nigerian quoted oil and gas companies.

4.3 Corporate Turnaround Strategies for distressed firms in Nigerian oil and gas sector

The corporate turnaround strategies available to corporate organisations as reviewed in this work are debt restructuring, Sales of asset, employee layoff, asset acquisitions, top management change, equity issue and dividend cut or omissions. Most of the information needed for these variables cannot be adequately obtained through the analysis of secondary data. Hence, the need to collect primary data became

essential through administration of check list questionnaire. A 8-item electronic copy question was sent to the executive officers in the sampled firms to prevent response ambiguity and to obtain reliable information. The total sampled firms were not considered here as only the organisations that have experienced distress at any point in time based on the previous classification with Altman's Z score analysis conducted in table 4.2.1 and recovered from such situation were included in this sample. Past researchers such as Mbogo and Waweru (2014); Saudi and Lai (2001) evaluate the turnaround strategies from the Altman's classified Z score MDA model using this same method.

The list of the firms under this category were shown below;

Table 4.3.1 Recovered distressed firms during the study period with Altman's Zscore

S/N	COMPANY	YEAR 1 Zscore	YEAR 2 Zscore	YEAR 3 Zscore	YEAR 4 Zscore	YEAR 5 Zscore	YEAR 6 Zscore
1.	JAUPAUL OIL	1.04876523	0.9424451	2.99980136	5.7526635	7.2927035	7.4454439
2.	BECO PETROLEUM	1.44263141	1.0080982	3.33810588	4.91762876	4.01852651	8.35483392
3.	ETERNA PLC	2.8091230	0.53757274	0.5512617	3.82932325	8.54127760	4.5512617
4.	FORTE OIL PLC	2.80123540	1.9004321	1.448765	4.56991388	-	-
5.	AFRICAN PET. PLC	16.5031873	12.3509305	5.02836711	3.2354611	1.000421	1.0680250

Source: Extracted from the researcher's health status computation,

2017

The Z-score analysis revealed that five companies were found to have experienced distress at any point in time during the study period. The attention is on the companies that had recovered from distressed while companies that had not experienced distress were not included. 80% response rate was obtained. The breakdown of the structured checklist and turnaround strategies based on the sampled responses were summarised in table 4.3.2;

	Responses	F	No. of Coys	%
How long the company has been listed	1 – 15years	2	4	50
	16 – 30 years	2	4	50
	31years & above	-	-	-
Ownership structure of the organization	Foreign	-	-	-
	Local	1	4	25
	Foreign & Local	3	4	75
Method used to determined the organizational poor performance	Financial Ratio	4	4	100
	MDA	-	-	-
	Others	-	-	-
Management Ownership of firms	0 - 5% share	3	4	75
	6 – 10%	1	4	25
	10% & above	-	-	-

Source: Researcher's fieldwork, 2017

The analysis from the table 4.3.2 revealed 50% of the companies had been listed between 1 and 15years and the remaining sampled distressed firms had been listed between 16 and 30 years. With this, age of the companies has nothing to do with the organisations being bankruptcy. Besides, 25% of the sampled companies are locally owned while 75% are jointly owned local and foreign investors. The implication of this is that, the ownership structure has no direct impact on the financial health status of any organisations in relation to being financially distress.

Table 4.3.2: Responses from Turnaround Checklist for financially distressed firms

The responses on the method used in determining poor performance by the sampled responses shows that 100% of the sampled companies depend mostly on the ratio analysis for their financial statement analysis. None of the companies uses Zscore. With this, despite the Altman's Zscore introduction since 1968, quoted Nigeria's oil and gas companies has not really maximize the use of this techniques in the analysis of their financial health status to predict financial distress. This study may be an eye opener as the accurate prediction for the sector stand at 88.2%. The responses from the companies sampled revealed that 1 - 5% of their shares are held by management (75%) while 6 – 10% shares are held by 25% of the sampled companies.

Table 4.3.3: Issues related to Turnaround strategies for financially distressed firms

		Responses	F	%	Rank	No. of Coy.
Strategic Actions by the financially distressed companies.	Mgt. Change		2	25	6	4
	Employee layoff		3	75	1	4
	Debt restructuring		1	25	6	4
	Equity Issue		2	50	3	4
	Sales of asset		2	50	3	4
	Dividends Cut		2	50	3	4
	Asset Acquisition		1	25	6	4
		DY	DY+1	DY+2	No. of Coy.	
Timing specific restructuring	Mgt. Change	-	100%	-	1	
	Employee	100%	50%	50%	2	

strategies in response to financial distress	layoff				
	Debt restructuring	-	-	100%	4
	Equity Issue	-	-	-	-
	Sales of asset	100%	50%	50%	2
	Dividends Cut	100%	75%	25%	4
	Asset Acquisition	100%	50%	50%	4
		1	2	3	Total
Effect of turnaround strategies taken on performance	Mgt. Change	25%	50%	25%	4
	Employee layoff	25%	25%	50%	4
	Debt restructuring	0%	25%	75%	4
	Equity Issue	25%	25%	50%	4
	Sales of asset	50%	25%	25%	4
	Dividends Cut	75%	25%	0%	4
	Asset Acquisition	25%	50%	25%	4

Source: Researcher's Computation, 2017

4.3.1 Strategic Actions by the financially distressed companies

The result in table 4.3.3 revealed the responses on the issues related to turnaround strategies. The findings revealed that the most common actions taken in distress were; employee layoff (75%), asset restructuring (50%), Dividend cut or omissions (50%), equity issue (50%), debt restructuring (25%), asset acquisition (25%) and Management change (25%). All the sampled

financially distressed firms understudy were able to recover from their distress state after taking one or more of these turnaround strategies. The implication is that, employee's layoff is the most utilized turnaround strategies to reduce costs and improve efficiency. This is evidence by the reaction of multiple staff layoff in a situation of distress or economy downturn. Even, outside the study area, employees' layoff is mostly adopted in an unpalatable situation in Nigeria and in most developing countries. Thus, the implication of layoff because of financial downturn announcement (announcement effect) is that it sends a negative sign to investors, which in turn affect performance i.e. affect their reputation (Palmon et al, 1997; Wambua, 2003).

Based on the findings, the second most used strategy in distress are; Sales of Asset, equity issue and dividend cut at 50% each. Sales of asset might be necessary to trade off unprofitable asset to reduce cash drain and at times, a profitable asset were disposed off to raise cash in meeting immediate needs in distress.

Dividend cut or omissions were adopted by 25% of the sampled firms. Two of the companies practice dividends omission for minimum of a year, one firm reduced dividends to survive hard time. De Angelo and

Skinner (2002) in their study were of the opinion that a year loss is not a yardstick for cut or omission in dividends because this might affect the firms long run share performance.

Even in the distress year, 50% of the sampled firms issued new shares for the period observed. This is so possible because the distress syndrome in the oil and gas is not as pronounced like that of banking industry. The essence of this measures is to raised fund in case where every other means of raising fund failed to meet the companies exigencies but this only feasible when such firms has gained or accumulate goodwill overtime. For any firms to do this, such firm must have been listed for more than 10 years to build investors confidence.

The most rarely used turnaround around strategies is asset acquisition, management change and debt restructuring with 25% each. The idea behind asset acquisition is prompted mainly improve productivity or acquiring of businesses that may improve firms earning capacity in the nearest future. Likewise, management change may be essential to allow for injection of new blood and new idea while debt restructuring is not popular because most times, creditors are not willing to negotiate on debt. This might have been responsible for having just only firm that

used this strategy. With this, it implies that the strategies are effective in terms of frequency of used as all the firms use one or combinations of these strategies in their distressed period.

4.3.2 Financial distress and timing restructuring specific strategies

Responses on the timing specific restructuring strategies of financial distressed firms revealed that firm's turnaround requires rapid managerial attention to rejuvenate the financially distressed firm. The attitude and action of manager most times leads to the success or failure of business firms as turnaround strategies does not give perfect assurance of recovery. Thus, adopted turnaround strategies need to be competently and timely utilized for optimum results. The results shows that most strategies applied started yielding positive results from the distress year to the second year.

The results in the table 4.3.3 revealed that, the most applied strategies in the distress year were; employee layoff, asset acquisitions, Sales of asset, and Dividend cut or omissions.. These strategies were 100% carried out by the sampled firms. By first and second year of distress,

50% of the firms lay off employees while 50% embarked on asset restructuring rejuvenating strategy. Debt restructuring strategy was applied at the end of second year of distress. This may be as a result of the fact that negotiation with the key stakeholders (Creditors and the likes) usually take time before it materialize. Only 25% of the firms applied Top management change strategy and it was applied after the first year of distress. The reason for this may not be far fetch from the fact that, shareholders and creditors always agitate for experience and turnaround experts to ameliorate distress firms from collapsing. Thus, distress most time can be linked to incompetent management.

The findings from the result in the table 4.3.3 revealed that, most turnaround strategies were mostly applied in the distress year while the trend became less intensified as the year pass by. The application of turnaround strategies is more rampant and effective in the distress year and less intensive in application in subsequent years.

4.3.3 Effect of turnaround strategies taken on performance

A 3 point Likert scale (1- negative, 2- no effect, 3-positive) was developed to measure the effect of identified turnaround strategies on

firms' financial performance. Findings from table 4.3.3 revealed that, rating the performance of the identified strategies, debt restructuring is appeared to the most enhanced performance friendly strategy as supported by 75% of the sampled firms. This may be as a result of the fact that debt cancellation or restructuring ease the business tension and foster application better application of long term strategies while 50% of the sampled respondents were of the view that employees lay off also contribute to firm performance during distress. This may be due to the fact that, in the distress year the firms' ability to pay all its due is drastically reduced while paying staff salary become burdensome. Lay off may reduce the tension on the firme short run but in the long run the effect may be devastating.

75% of the sampled firms were of the opinion that dividend omission or cut has no positive influence on the performance while 25% of the sampled firms submit that asset acquisition during distress year has a negative influence on the firms' performance. The effects of the turnaround strategies are positive on performance. With 75%, 50% and 25% respectively, this implies that there are effective turnaround

strategies to improve performance and rejuvenate financially distressed companies in Nigeria's oil and gas sector.

4.3.4 Turnaround strategies implementation problems

In the structured check list, the sampled firms were to indicate the challenges and problems they faced in turnaround strategies implementation. The common problems as indicated by the respondents were insufficient resources to implement the strategies, less managerial support and interest as required, court injunction and fear of failure or being blamed on the part of implementing officers by the stakeholders.

4.3.5 Test of Hypothesis Two

H_{02} : there are no effective turnaround strategies to rejuvenate financially distressed companies

The corresponding objective states that to evaluate the effectiveness of turnaround strategies in financially distressed companies towards rejuvenation. The evaluation of the turnaround strategies of the sampled financially distressed firms anchored on the frequency of strategic actions used, timing of response to distress and effect of

strategic actions taken on performance. Since turnaround strategies were measured on the same scale to check if changes occur in performance from the distressed year to two years after, Friedman test was used. There is repeated measure of the strategic actions within the subjects to check or analysis the variance. The result output is given as;

Table 4.3.4: Friedman Test Rank and Test Statistics

	Mean Rank
Management Change	4.17
Employees' Layoff	4.67
Debt Restructuring	3.67
Equity Issue	3.83
Sales of asset	3.83
Dividends Cut	3.67
Asset Acquisition	4.17
N	3
Chi-Square	16.613
df	6
Asymp. Sig.	0.010

a. Friedman Test

Source: Researcher's Computation, 2017

The results of the analysis revealed that, the means of the observations are all above average (i.e. 3.5) which implies that all the turnaround

strategies were all effective in improving the performance of the financially distressed companies as the performance tends to increase or decrease as the case may be based on the frequency of usage and the timing of application. Comparing the ranks for the strategic actions taken, it appears that there was a steady fluctuation in the performance of the turnaround strategies. The findings revealed that is significant differences in the turnaround strategies as it improve performance throughout the sampled periods as it was earlier revealed in the table 4.3.3 above and appendix 10. This is indicated by a p-value < 0.05. With this, the frequency of usage, timing of usage and effect on performance of the turnaround strategies show that the seven strategic actions were all effective in rejuvenating financially distressed companies. This result is in line with the submission of Mbogo and Waweru (2014) whose research revealed that there are always a way out of financial distress by distressed companies if appropriate strategies were put in place.

4.4 Corporate Survival prediction in Nigeria's oil and gas companies

Survival analysis, which studies the occurrence and timing of events i.e. time to event study, was used. The time changing covariate used in this study include financial ratios, company specific variables and market-based data as their values were not constant but changes with time. It is expected that, decrease or observable abnormality in the financial ratio has an effect on the healthy financial status of any organisation. Thus, this effect changes with time (Chancharat, Davy & Tian, 2007; Pereira, 2014; Lee, 2014). Censored observations do not experienced distress throughout the sampled period. This refers in this study as an active firms as they have not experience distress. With survival analysis, information from these active firms provide consistent parameter estimate using partial likelihood technique as against the primitive tools (traditional method) that failed to utilize information from censored elements or observations. (Chancharat, Davy & Tian, 2007).

The two key Survival analysis functions are; survivor and hazard function. contains two key functions called the survivor function and

hazard function. The survival function, denoted by $S(t)$, provide the likelihood that the firm will continue to exist as long as they have not experience the event (T). This makes the event greater than a given time (t). With an assumption that T is a random variable, the survival function given as;

$$S(t) = Pr(T > t) \quad (1)$$

Alternatively, this can be broken down to;

$$S_i(t) = S_0(t)^{\exp(X_i \beta_i)} \quad (2)$$

Thus, $S_0(t)$ is an random (arbitrary) unspecified base line survival function. X denote vector of descriptive (explanatory) variables and β connote coefficient, which needs estimation.

On the other hand, hazard function, which is also referred to as hazard rate, implies that an event (distress) will occur at a certain time (t) if the firm survival till that time. The Hazard function given as;

$$h(t) = \lim_{\Delta t \rightarrow 0} \frac{Pr(t \leq T < t + \Delta t | T \geq t)}{\Delta t} \quad (3)$$

Time to event or survival time in this study refers to the base year of observation to the year the subject experience the event (distress) and the case of active firms to the last year of observation. In this study, the start year is the first year when data are available. However, in survival analysis, the dependent variable is time to event, which implies the time firms entering into financial distress.

Solvency metrics was proxy by company specific variables, financial ratios and market data variables as covariates. The covariates were summarized as;

Table 4.4.1: Solvency metrics

No.	Variables	Covariate	Code	Operational definition
1.	Profitability	EBIT margin	EBM	EBIT/Operating revenue
2.		Return on Equity	ROE	NPAT before interaction between (Shareholders equity – outside equity interest)
3		Return on Assets	ROA	Earnings before interest/(total assets – outside equity interest)
4.	Liquidity	Current Ratio	CUR	Current assets/current liabilities
5.		Quick Ratio	QUR	(Current assets – current inventory)/current liabilities
6		Working capital/ Total assets	WCA	Working capital/ total assets
7.	Leverage	Debt ratio	DET	Total debts/total assets
8.	Activity	Capital turnover	CPT	Operating revenue/operating invested capital before goodwill
9.		Total asset turnover	TAT	Operating revenues/total assets
10.	Company Specific	Size of company	SIZE	Log of total assets

11.		Squared size	SIZE2	The square of log of
12.		Age of company	AGE	The number of registration
13.	Market based variable	Excess Returns (year t)	EXR	A company's stock t-1 minus index ret

Note: The selection of the independent variables was based on their popularity and usage in previous studies. (Chancharat, Davy, McCrae & Tian, 2007; Kim & Partington, 2015)

Source: Researchers compilation, 2016

The study adopts multi-level analysis of financial ratios in form of panel data and formulated hypotheses were tested using Kaplan- Meier non parametric statistics and Cox regression analysis with the aid of

SPSS. Cox proportional hazards was employed to assess the interaction between explanatory variables to survival time and to evaluate the corporate survival probability in a given time frame in this study is shown as;

$$\log h_i(t) = \alpha(t) + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_{in} \quad (4)$$

This was later denoted by the covariates code given in the table above

$$\log h_i(t) = \alpha(t) + \beta_1 EBM(t) + \beta_2 ROE(t) + \beta_3 ROA(t) + \beta_4 CUR(t) + \beta_5 QUR(t) + \beta_6 WCA(t) + \beta_7 DET(t) + \beta_8 CPT(t) + \beta_9 TAT(t) + \beta_{10} SIZE(t) + \beta_{11} SIZE2(t) + \beta_{12} AGE(t) + \beta_{13} EXR(t) \quad (5)$$

where $h_i(t)$ represent hazard of firm i entering into financial distress at time t. Here, hazard function at time t relies on value of the covariates at time t. $\alpha(t) = \log h_0(t)$; where $h_0(t)$ is the hazard for firm that has a value of 0 for the individual covariates.

4.4.1 Solvency Metrics Data and Analysis

The data generated from NSE Fact Book and annual reports of the quoted Nigeria's oil and gas companies within the study periods were collated and analysed to achieve the study objectives. Since the study involved multi-level analysis, some preliminary analyses were carried out which some of the output were shown in the appendix.

4.4.2 Hypothesis Three

H₀₃: solvency metrics does not have effect on corporate survival of Nigerian quoted oil and gas sector.

The corresponding objective states that to examine the effect of solvency metrics on corporate survival of Nigerian quoted oil and gas sector. In testing this hypothesis, Kaplan Meier as a non parametric statistics was used. The classification of the state of firms was based on Altman Multiple Discriminant Analysis cutting score as presented in Appendix VII.

Kaplan-Meier shows chart of survival likelihood i.e. the cumulative probability of distress firms after the point of origin.

Table 4.4.2: Means and Medians for Survival Time

Company State	Mean ^a				Median		
	Estimate	Std. Error	95% Confidence Interval		Estimate	Std. Error	95% Confidence Interval
			Lower Bound	Upper Bound			
Distressed	66.100	1.024	655	667	68.412	.000	094
Grey	50.001	1.750	070	930	38.000	1.003	.
Healthy	93.021	.386	174	686	90.231	.248	.
Overall	19.101	.512	188	195	20.000	.000	.
Log Rank (Mantel-Cox)		Chi-Square	34.321				
		Sig.	.000				

Source: Researcher's Computation, 2017

The table 4.4.2 revealed the findings of survival probability using Kaplan-Meier survival probability, which compare the survival time of

different financial states of firms. The result obtained shows that the estimated mean time until failure is 66.1 years average survival time for distressed firms, 50 years for grey state and 93.0 years for healthy firms. Total sample survival time is 19.1 years, which has a strong wave of association with changes in macroeconomics. The average survival time of 19 years based on sampled selected and study period. Log rank test at 5% significant was used to test the estimate.

The hypothesis earlier formulated on the differences in survival time of firms' states was tested with log-rank test. This analytical tool compares the observed events with expected number of events for each states using similar test statistic as the Chi square test. However, expected frequencies computations were different. The underlying proportional hazards assumptions for the test was that there is a continuous survival time and that risk ratio of event occur in state 1 in contrast to risk state 2 which remain constant. This is also confirmed with the figure 1 and 2 in appendix VIII.

A log rank test was run to determine if there were differences in the survival distribution states. The survival distributions for the three

states were statistically significantly different, $\chi^2 = 34.321$, $p < .05$. that there is likelihood of corporate survival of Nigerian oil and gas firms in a given financial health states and that survival time is different at each state.

In order to evaluate the effect of solvency metric (i.e. financial ratios, company-specific variables and market based data) as the predictors of corporate financial distress, nine (9) financial ratios, three (3) company specific variables and a market based variable are entered into the Cox proportional hazards model. The Proportional Hazard (PH) assumption was tested to ensure that the covariates residual used in the study were not related to failure time. The Schoenfeld Fisher's Z residuals results show $P_{value} > 0.05$ (as shown in appendix VI) for all covariates which implies that PH assumption is satisfied.

The covariates used are time dependent variables covering 2000 to 2015. Survival time is the dependent variable i.e. from the year of observation to distress year and to last observable year for active firms. In this study, the start year is the first year when data are available. Applying Cox proportional hazards model to solvency metrics, the

results revealed β , hazard estimate and the probability value as shown

in the table 4.4.3;

Sig.	.000
------	------

****Significant at 0.05**

Source: Researcher's Computation, 2017

Table 4.4.3: Cox Proportional Hazards Models

Covariates	β	Sig.	Exp(β)
EMB	180.866	.079	3.541
ROE	-.017	.033**	.983
ROA	-.576	.045**	.562
CUR	.001	.701	.999
QUR	.163	.487	.850
WCA	9.232	.000**	10.221
DET	-1.290	.023**	.275
CPT	6.700	.090	1.001
TAT	-.382	.008**	.682
SIZE	1.470	.034**	4.351
SIZE2	-.281	.042**	.755
AGE	.123	.373	.885
EXR	-1.340	.045**	.262
Overall Score			
-2Log Likelihood	94.943		
Chi Square (Overall)	68.446		
Chi Square (Change)	80.518		
df	13		

The extracted Cox's regression shown in the table 4.4.3 above presents the coefficient estimation, p-value and the hazard ratio. Hazard estimates were obtained by computing e^{β} , here, β represent the directional coefficient in the proportional hazards model. In any case, an hazard estimate that is equal to 1 implies the variable has no effect on the firm survival while hazard ratio less than or greater than 1, implies slow or rapid hazard timing. The results in the table 4.4.3 depicts that the identified 13 solvency predictor covariates influenced the survival of Nigerian oil and gas firms.

Based on the results in the table above, at 5% significant level, eight (8) influential variables are ROE, ROA, WCA, DET, TAT, SIZE, SIZE2 And EXR which contribute significantly to firms survival in oil and gas company in Nigeria with p-value; .033, .045, .0001, .023, .008, .034, .042 and .045 respectively which are all less than 0.05. Thus, these are the early warning indicators for oil and gas firms. The coefficient signs for ROE, ROA, DET, TAT, SIZE2 and EXR were negative values,

which implies that a unit increase in the variables reduce the hazard probability of being financial distressed.

From the classifications of financial ratios; the results of the profitability ratios shows that, EBM is insignificant at 0.05 level of significant, that is, the variable does not posed a threat to company survival. The coefficient of ROE gives a negative value, which implies that a unit increase in the covariate reduces hazard estimates of financial distress. Hazard estimates coefficient for ROE is 0.983; this implies that one unit increase of ROE depicts 0.983 decreases in financial distress risk. This result indicates that an increase in firms' ability to generate return on equity (such as increase in net income and total equity) reduces probability of financial distress. Likewise, ROA shows the degree the at which firms utilise their asset to generate income. The hazard ratio of ROA ($e^{-0.576} = 0.562$) indicate that a unit increase in ROA implies 0.562 decreases in financial distress risk i.e. an increase in Earnings to Total assets minus outside equity interest will contract the hazard ratio by 43.8% (1- 0.562). This result is in agreement with the findings of Lee (2014). The economic interpretation

of these results is straightforward; the company with too fast growth compared to profitability will be forced to seek the fund from debt. The high indebtedness brings more financial obligations which must be paid. Poor firm's ability to generate earnings forces the company to take more and more debt to pay these obligations and consequently, the company will get involved in the bad circle and become ultimately failure.

The ability of the firms' to meet its immediate obligations as arises referred to as liquidity ratios. Liquidity ratios of CUR and QUR are statistically insignificant at 95% confidence interval. The coefficient of WCA has positive sign which means that a boost in working capital to total assets ratios increase the hazard of entering into financially distressed (i.e. $e^{9.232} = 10.221$). The implication of this is that, organisations facing steady operating losses will have contrasting current assets in relation to total assets.

Leverage ratio is concerned with the capital structure of firm which measure the paying ability of a firm's liabilities in the long term. The sign of parameter for DET is negative coefficient and hazard ratio of 0.275 (i.e. $e^{-1.290} = 0.275$) which implies that the company with low

DET has a low chance of being financially distressed. Hazard ratio estimates for DET is 0.275 which implies that an increase in value of DET, reduces financially distressed risk by 0.275.

The activity ratios determine the competence of a firm's assets utilization. It measures the capacity of a firm using assets to generate return or revenue. TAT coefficient is negative with the hazard rate of 0.682 (i.e. $e^{-0.382} = 0.682$). This implies that as Operating revenues to total assets increases, the hazard rate will be shrink by 31.8%. This finding is in line with the study of Babajide, Olokoyo and Adeboye (2015).

Company specific variables proxy by age, size and squared size were also examined in relation to firms' survival. AGE is statistically insignificant at 5% level of significant. This implies that age of the firm has no effect on firms' survival. For SIZE, the coefficient estimate is 1.470 which is positive and it indicates that the higher the size of the firm the higher the probability of such firms being financially distress. The implication of this is that, large firm might be rigid in their approach and have difficulty in monitoring and effective control of their scattered managers and employees. Besides, most large branches firms

lack proper and efficient communication (Rommer, 2004; Chancharat, Davy & Tian, 2013). The estimated coefficient for square size (SIZE2) is -0.281. Based on the results here, the curve of the influence of firm size on financial distress appears to be bell shaped which is sometimes refer to as inverted U shaped. Thus, the findings negate the discussion in the study of Rommer (2004) which suggest that a strong relationship exist between firm size and the chances of financial distress. This divergence may be as a result of the sample d firms in this study which are all quoted Nigeria's oil and gas firms excluding non-publicly listed companies.

Market based data was employed in the analysis to evaluate the influence market returns on the likelihood of financial distress. The coefficient sign of EXR is negative which implies that a unit increase in the covariate reduces the likelihood of entering into financial distress. Hazard estimate ratio of EXR is 0.262 indicates a unit increase in EXR means 0.262 decrease in financial distress risk. The result indicated that downward past excess returns or market adjusted returns as the tendency of increasing financial distress. The result shows the potential usefulness of market data for corporate financial distress prediction,

which is consistent with the results of Chancharat, Davy and Tian (2007).

The results of the analysis based on the sampled period revealed that financially distressed firms profitability is low, leverage is high, past excess return is low and large size in contrast to active firms.

The basic aim of this aspect of the study is to examine the effect of solvency metrics proxy by firms' specific variables, market data and financial ratios in predicting the survival likelihood of quoted Nigerian oil and gas firms. Eight (8) out of the identified 13 covariates for solvency metrics were significant in estimating the survival likelihood in Nigerian oil and gas sector. Log likelihood overall statistics is given as 94.943 which indicate a high and positive significant at 5% level (critical chi square of 22.362). Thus, null hypothesis is rejected while alternative hypothesis is accepted which implies that factors responsible for financial distress in Nigeria oil and gas firms can be predicted i.e. the identified solvency metrics affect corporate survival in the sampled area (quoted Nigerian oil and gas firms).

4.4.3 Early warning signals correlation

Survival analysis through Cox regression analysis estimates the correlation analysis as a supporting analysis to examine the relationship between/among the covariates used to predict success or failure of Nigeria's oil and gas sector. The eight early warning signals or variables identified (i.e. ROE, ROA, WCA, DET, TAT, SIZE, SIZE2 and EXR) were cross-examined.

Table: 4.4.4 Correlation Matrix of Regression Coefficients

	ROE	ROA	WCA	DET	TAT	SIZE	SIZE2
ROA	-.410						
WCA	.179	-.242					
DET	-.079	.238	-.331				
TAT	-.163	-.010	-.701	.429			
SIZE	.189	.180	.178	-.101	-.117		
SIZE2	-.101	-.207	-.179	.098	.120	-.953	
EXR	-.285	-.136	-.090	-.153	-.011	-.867	.7

Source: Researcher's Computation, 2017

The table 4.4.4 shows Pearson Product-Moment Correlations analysis of the influential covariates at 10% level of significant (two-sided test). The identified eight early warning signals in Nigerian oil and gas companies are; ROE (i.e. firm profit after tax to shareholders equity minus outside equity interest); ROA (earnings before interest to total asset minus outside equity interest); WCA (firms' working capital to

total assets); DET (firms' liabilities to total assets); TAT (firms' operating net cash flow to total asset); SIZE (firms' relative numbers measured as logarithm of total asset); SIZE2 (logarithm of total asset square); and EXR (firm excess annual return in terms of value weighted minus the year t).

The correlation (r) shows both positive and negative relationship among the identified variables. Based on the results, the relationship observed in financial ratios variables are weak, that is, less than ± 0.5 with other covariates while the company specific variables and market based variables have low relationship with financial ratio variables but a high relationship with one another. The implication is that, market based data is a variable to watch for the possibility of financial distress. With this, there is significant relationship among the identified variables influencing corporate survival or failure of Nigeria's oil and gas companies.

4.5 Corporate Survival and Corporate Governance Attribute

The previous study on corporate governance indicated that it influence performance which is supported by agency theory. Thus, it is expected that since corporate governance affect performance, then, it will affect

firms' survival. Chancharat and Chancharat (2013) also shared this view. The corporate governance characteristics used in this study are board size, ownership concentration and board independence, while companies' characteristics such as company age and company size are included as control variables. The selection of these variables is based on the most common variables used in the past researches (Chancharat & Chancharat, 2013; Lee & Yeh, 2004).

Table 4.5.1: Corporate governance variables

Variable	No.	Code	Operational definition
Board Size	1.	BDSZ	No. of directors including chairman
Board Independence			
% of independent Directors	2	BIND	No. of non-executive directors: No. of
Dual leadership	3.	DULD	Different chairman 1 and otherwise 0
Non Executive Chairman	4.	NEXC	Non executive director 1 and otherwise
Ownership concentration			
Top 20 shareholder	5.	TP20	Proportion common stock held shareholder
Company Specific			
Company Age	6.	CAGE	No. of years since registration
Company Size	7.	CSZE	Log of total assets

Source: Researcher's compiled corporate governance variable based on the study of Lee and Yeh, (2004); Chancharat and Chancharat, (2013)

4.5.1 Hypothesis four

H₀₄: corporate governance attributes does not influence survival likelihood of quoted Nigerian oil and gas firms.

The corresponding objective states that to determine the effect of corporate governance attributes on survival likelihood of quoted Nigerian oil and gas companies. To test this hypothesis, corporate governance structure data such as board size, board independence, ownership structure and company specific variables were obtained from the data source i.e. NSE fact books and annual report of the sampled quoted oil and gas companies in Nigeria. The relationship effect was tested using semi-parametric model of Cox Proportional hazard model which is a subset of survival analysis techniques.

Table 4.5.2: Descriptive statistics

	BDS Z	BIND	DUL D	NEX C	TP20	CAG E	CSZE
Survival							
Coys	5.0012	49.816	0.7321	0.4661	55.4128	4.4512	6.8423
(n=13)	5.0001	3	1.0000	1.0000	65.0000	3.0581	6.7721
Mean	3.0000	55.000	0.0000	0.0000	11.4114	0.0030	5.2000
Median	11.000	0	1.0000	1.0000	76.0014	30.4123	6.0011
Min	1.8420	0.0000	0.3425	0.3241	13.7012	6.8532	0.9923
Max	0.5131	64.000	-2.0023	-0.4012	-0.6834	1.8712	0.1717
Std Dev.	0.9712	0	2.0932	-1.1034	0.0252	4.4389	0.2123
Skewnes		16.815					
s		8					

Kurtosis		-0.7129 -0.2853					
Non-Survival	4.9900	50.181	0.7113	0.5321	64.6571	5.8734	6.0909
Coys	5.0001	8	1.0000	1.0000	71.2000	3.9902	6.0001
(n=4)	3.0000	58.000	0.0000	0.0000	14.2020	0.0061	5.2000
Mean	9.000	0	1.0000	1.0000	79.4712	16.5813	6.0011
Median	1.4020	0.0000	0.2381	0.3421	11.9623	4.9901	0.3612
Min	0.7230	68.000	-1.5432	-0.5823	-0.5834	0.4612	0.4321
Max	1.2497	0	1.5312	-1.0021	0.2254	-0.7478	0.8164
Std Dev.		19.588					
Skewnes		1					
s		-0.6101					
Kurtosis		0.3712					
Kruskal-Wallis Test	0.0753 0.0557	1.4742 0.1081	0.6502 0.3218	0.1159 0.6326	6.5134* *	0.1681 0.6007	2.3163* *
p-value					0.0037		0.0370

****Significant at 0.05**

Source: Researcher's Computation, 2017

The nature of the data revealed that numbers of extreme values, which may influence or affect the statistical outcomes. However, data was truncated at thresholds, that is, all observations with variables values higher than 99% were set to that value while lower variables value were truncated. This process was in agreement with the studies of Chancarat (2007) and Shumway (2001).

The table 4.5.2 presents the result of the descriptive statistics. It revealed the mean, median, maximum, minimum, standard deviations, kurtosis and skewness for each stratified status. The dummy variable or

binary number used for some variables such as NEXC and DALD results are presented in percentages.

The mean BSZE (5.0, 5.0) of survival and non-survival companies shows that numbers of directors are not less than five. This might flow in line with the suggested and recommended number in the sector by the NSE and SEC for good governance. Company size and ownership structure has statistical significant difference at 5 percent level of significance.

The outputs from the findings also revealed that, the mean of ownership management T20 (55.4, 64.7) implies that majority of the shares are retained by the management. This brings control and reduces unnecessary soliciting approval before a decision is taking. The percentage of non executive directors shows that independent directors dominant the board of directors and the high percentage of non executive chairman has the title CEO and chairperson by different people. This also buttresses the independency of the directors. The mean CSZE of survival and non survival companies is 6.1, 6.4 implies the coverage of the company which enhances their survival as wide

spread increased market share which in turn improve profitability and reduce the failure possibility.

Kruskal-Wallis test revealed the significant difference between the group mean while TP20 and CSZE show significance difference with a p-value less than 0.05. The implication of this is that ownership structure and company size of the sampled firms are key major corporate governance structure that contribute significantly to corporate survival in Nigerian oil and gas companies.

4.5.3: Cox Proportional hazard model estimation

Variable	Coefficient	Standard Error	X ² Statistics	p-value	Hazard Ratio
BDSZ	0.0002	0.0001	2.1212	0.0863	0.0432
BIND	0.4123**	0.3301	4.2835	0.0021	2.5012
DULD	1.0479	0.6712	4.8031	0.0911	0.3820
NEXC	0.7213	0.4723	2.8132	0.0773	3.0001
TP20	0.0218**	0.0012	6.0203	0.020	1.0330
CAGE	0.4194	0.0119	4.9077	0.6739	0.0895
CSZE	0.6221**	0.2225	5.0034	0.0002	2.0071

***Significant at 0.05*

Source: Researcher's Computation, 2017

The Cox proportional model estimation results presented in the table 4.5.3 revealed the influence of corporate governance attributes and control variables on the likelihood of survival in quoted Nigerian oil

and gas firms. The coefficients of each observed variables, their probability contribution, estimate standard error, the Wald chi-square tests with relative p-values for testing the formulated hypothesis and the hazard ratios which were obtained by e^{β} where β implies coefficient of the proportional hazard model. A variable has no significant influence on firm survival if the hazard ratio is equal to 1 while ratio of less/greater than 1 implies slower/rapid hazard timing.

The result in the table above revealed that BIND, TP20 and CSZE have estimated coefficient as 0.4123, 0.0218 and 0.6221 respectively and are all statistically significant with p-values 0.0021, 0.020 and 0.0002 respectively i.e. the p-value <0.05 . The estimated BDSZ coefficient is positive, which implies positive influence of numbers of directors and failure risk. Estimated hazard ratio of 0.0432 is less than 1 which implies slower hazard timing. The implication of this is that board size has a less probability in failure risks of the sampled companies. Likewise, DULD and CAGE revealed a weak probability to failure in the sampled companies' i.e. dual leadership which is represented by having different chairman or not and the year since the companies

registration or quoted on the floor of NSE pose a less threat to survival or failure.

Variables such as BIND, NEXC, TP20 and CSZE returned a positive coefficient, which implies significant relationship between the identified variables and the probability of failure by the sampled firms. Besides, the estimated hazard ratios for all these variables were more than 1 which implies a rapid risk to failure. Board independence, non executive chairman, ownership concentration and company size hazard ratios of 2.5012, 3.0001, 1.0330 and 2.0071 respectively imply that a unit increase in each of these variables will definitely leads to a corresponding risk of failure for 50.12percent, 30.0percent, 3.30percent and 0.7percent for BIND, NEXC, TP20 and CSZE respectively. This result agrees with the view of Rommer (2004), Lamberto (2008); and Chancarant (2013). A logical explanation for this is that independent directors and different chairman or non executive chairman may lead to taking decision that might not be of the interest of the organisation as they were not directly involved with the company's activities. Also, when ownership is too concentrated can cover up for weak performance

which might not be exposed on time for proper and timely action. Besides, large companies might have inflexible structure, monitoring problem and inefficient communication which might make them susceptible to the risk of failure. Ordinary, one will expect that variables such as board independence, ownership concentration and company size could have reduced the probability of failure in the sampled companies but the statistical analysis revealed that it contributes to risk failure.

With this all the estimated coefficients gave a positive value, it implies that there is significant relationship between corporate governance attributes with company specific variables on corporate survival in Nigerian oil and gas companies. This finding is supported by the Kruskal-Wallis test which revealed significant difference between the group mean for TP20 and CSZE with $p\text{-value} < 0.05$. It implies that ownership structure and company size of the sampled firms are key major corporate governance structure that contribute significantly to the corporate survival in Nigerian oil and gas companies.

4. 6 Discussion of findings

Findings from objective one examined the susceptibility to corporate financial distress prediction of Nigerian oil and gas firms. The results of the analysis revealed that four (4) firms (23.5%) are financially unhealthy/weak performance and are likely to experienced bankruptcy if no rejuvenation is attempted. Only two (11.8%) is classified as grey and 11 companies (64.7%) are on healthy financial status. With 23.5% failure prediction, alternative hypothesis is accepted, which states that there is susceptibility to failure in Nigerian quoted oil and gas companies while null hypothesis is rejected. The colossal consequences of distress is far reaching as failure will lead to loss of job, direct and indirect cost, reduction in Gross Domestic Product (GDP) and the likes that Nigeria is experiencing today. The trend analysis revealed that, distress signs are becoming obvious even before the seventh year. However, MDA does not only predict business failure, but also show that the failure signals became obvious few years before the actual failure materializes. This result is in line with the study of Uchenna and Okelue (2012) who was of the opinion that, MDA not only forecast business failure, but also revealed that, the failure signals of impending danger became manifested months before actual failure. Also, there is

significant difference between distress and healthy oil and gas companies in Nigeria i.e. using the financial ratios identified, the performance of the weak and healthy companies were not the same. This result confirmed the submission of Maishanu (2013); Enyi (2013); Olaniyi (2007); and Bello (2010) whose studies affirmed the practicability of Altman's Z score prediction model in Nigerian Banking and Manufacturing sectors respectively.

The research objective two measured the effectiveness of turnaround strategies of financially distressed firms. The evaluation of the turnaround strategies of the financially distressed firms anchored on the frequency of strategic actions used, timing of response to distress and effect of strategic actions taken on performance. The findings revealed that the sequence of response actions taken by financially distressed firms were; employees layoff (75%), asset restructuring (50%), Dividend omission/cut (50%), equity issue (50%), debt restructuring (25%), asset acquisition (25%) and Management change (25%). The Friedman test ($X^2 = 16.6$) show p-value < 0.05 which implies that there are effective turnaround strategies to rejuvenate financially distressed

firms in the sampled companies. The sampled financially distressed firms recovered from their weak states after taken one or combinations of any of the identified turnaround strategies. This finding is in line with the previous studies conducted by Mbogo and Waweru (2014); Saudi and Lai (2001); Wambua (2003) who used combinations of these turnaround strategies in their research in different countries.

Objective three examined the effect of solvency metrics on corporate survival of Nigerian quoted oil and gas firms. The results show that at 5% significant level, eight (8) influential variables are ROE, ROA, WCA, DET, TAT, SIZE, SIZE2 and EXR which contribute significantly to survival in oil and gas in Nigeria with p-values; .033, .045, .0001, .023, .008, .034, .042 and .045 respectively which are all less than 0.05. Thus, these are the early warning indicators for oil and gas. The coefficient signs for ROE, ROA, DET, TAT, SIZE2 and EXR have negative values showing that an increase in each covariate reduces hazard risks of financial distress. Results of the findings show that profitability is low, leverage is high, excess return is low and firm size is large in financially distressed firms in contrast to active firms. Therefore, the findings emphasis firms age as lacking merit in

explaining financial distress which is in agreement with the findings of Shumway (2001); Rommer (2004); and Chancharat, Davy and Tian (2007).

The objective four was to determine the effect of corporate governance attributes on the corporate survival likelihood of quoted Nigerian oil and gas firms. Kruskal-Wallis test revealed the significant difference between the group mean while TP20 and CSZE show significance difference with a p-value less than 0.05. The implication of this is that ownership structure and company size of the sampled firms are key major corporate governance structure that contribute significantly to the corporate survival in Nigerian oil and gas companies. The estimated hazard ratios for all these variables were more than 1 which implies a rapid risk to failure. Board independence, non executive chairman, ownership concentration and company size hazard ratios of 2.5012, 3.0001, 1.0330 and 2.0071 respectively implies that a unit increase in each of these variables will definitely leads to a corresponding risk of failure for 50.12 percent, 30.0 percent, 3.30 percent and 0.7 percent for BIND, NEXC, TP20 and CSZE respectively. This findings agrees with the view of Rommer (2004), Lamberto (2008); Chancarant (2013). The

implication of this is that ownership structure and company size of the sampled firms are key major corporate governance structure that contribute significantly to the corporate survival in Nigerian oil and gas companies.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Preamble

This chapter gives an overview of the study. It deals with summary of major findings as relate to the study, the conclusion of the study, recommendations based on findings of the study, recommendations for further study and contributions to knowledge.

5.2 Summary of findings

This study examine the corporate financial distress prediction and turnaround strategies in Nigerian oil and gas sector with emphasis on the quoted companies on the floor of Nigeria Stock Exchange. The study was purposely conducted on oil and gas sectors due to the fact that, oil remain the corner stone of Nigerian economy and her major revenue is being derived from oil. Now, prices are falling and portend fall in the nearest future, government unstable policies, vandalization of pipelines, under utilization capacity of most oil and gas companies, exchange rate problem among other reasons that makes most oil and gas companies to be financially distress. The possibilities of turnaround

strategies available for the distressed firms were also evaluated. Besides, the study focused on the oil and gas companies that were quoted on NSE because of the availability of data. This research is a specialized study that put into considerations historical data to predict the probability of event in the nearest future. The observations of the trend, behaviour and reaction of event can help in predicting the probability of failure and survival.

The time to event study of data behaviour was observed anytime from year 2000 to 2015. Seventeen (17) quoted oil and gas firms formed the sampled firms based on the data availability data as firms without the required data were right truncated. The sampled companies were JAUPAUL Oil, Oando Plc., Conoil Plc., Afroil Plc., Beco Petroluem, , Eterna Plc., MRS oil Nigeria Plc, Forte Oil Plc., Mobil Oil Plc., Total Nigeria, African Petroleum Plc., Agip, National Oil, Unipetrol, Texaco, Chevron and Union venture and Petroleum Plc. Seventeen (17) companies were quoted as at 2015 (NSE Fact book, 2015).

Altman's discriminant Z-score model was used to predict the financial health status of the oil and gas companies in Nigeria. The cutting scores

developed by Altman (2000) was used to classified the companies into three categories based on the prediction from the Zscore model (i.e. $Zscore < 1.80$ is distress, $1.80 < 3.0$ is grey and 3.0 and above is healthy). The result of the analysis revealed that eleven (11) companies which form about 64.7% of the total companies sampled were financially healthy, two (2) which form about 11.8% of the total companies sampled were classified as grey that is operating on the probability tending towards distress or take some step to improve performance and be classified as healthy and four (4) companies which form about 23.5% of the sampled companies were categorized as being distress. Besides, difference exists among the sampled firms on the basis of firms' financial health status. Altman's Zscore model accuracy level in the sector is 88.2%.

Turnaround strategies were evaluated on the companies that had experienced financial distress during the sampled period and have recovered. The Altman's Zscore prediction model was used to identify five companies that felled in to this category. Seven (7) strategic actions popularly used in the literature by past researchers were

evaluated to identify the most common and frequently used by the companies aiming resurgence. Variables such as employee's layoff, asset restructuring, asset acquisition, equity issue, dividend omission/cut, debt restructuring and management change were evaluated. It was observed from the findings that most of the sampled companies only rely on the financial ratio analysis to evaluate poor performance rather than using a more robust model of Multiple Discriminant Analysis (MDA). This may be as a result of awareness or insufficient knowledge on the application of the model. The ranking of the evaluation of the strategic action were rated in ascending order ranges from employees' layoff, management change, asset restructuring, dividend omission/cut, debt restructuring, equity issue, and asset acquisition respectively. Though, employees layoff mostly used have it disadvantage has it scared investors away from the sectors that layoff its employees often. The turnaround actions were taken at different times, some implemented their strategic action ranging from the distress year running to two years after the distress year. The steps taken yielded result gradually based on the applicability of the strategies in the particular situation. Strategy like debt restructuring are

less effective in the first year but later picked up while employees' layoff yielded a positive result in the first year but later decline in the subsequent years. The challenges of turnaround strategies as suggested by the sampled companies are; management support at the required time, inadequate or insufficient resources e.g. to lay off staff, resources are needed to pay them off which might not be available.

Survival analysis through Kaplan-Meier and Cox proportional hazard model estimates was used to evaluate the effect of solvency metrics on the likelihood of corporate survival based on the financial health of the sampled companies. Five classes of covariates were used namely; Profitability ratio (proxy by as EBIT margin, Return on Equity, Return on Asset); Liquidity ratio (proxy by quick ratio, current ratio, working capital to total asset); Leverage ratio (proxy by Debt ratio); Activity ratios (proxy by capital turnover, total asset turnover); Company specifics as control variable (proxy by size of company, age of the company and company squared size,); and Market based variable (proxy by excess returns). The analysis through Kaplan-Meier revealed that there exist a survival time which is anchored on firms' financial

health status and that the overall survival time based on the data observed was 19years. The result of the Cox proportional hazard model revealed that survival of oil and gas companies in Nigeria is evaluated by 13 predictors out of which only 8 influential variables contribute significantly to firms' survival in the sector. The early warning signals or indicators are; ROE, ROA, WCA, DET, TAT, SIZE, SIZE2 and EXR with estimated coefficients of .033, .045, .0001, .023, .008, .034, .042 and .045 respectively. Six covariates (ROE, ROA, DET, TAT, SIZE2 and EXR) reports negative estimated coefficients which implies a unit increase in the each covariate reduces firms' hazard rate of financial distress while other covariates with positive estimated coefficients leads to increase in the likelihood of entering into financial distress.

The overall profitability ratio indicated that an increase in firms' ability to generate return on equity (i.e. Net income to Total equity) reduces the probability of financial distress. Likewise, Return on asset indicates the extent to which firm is utilise their asset to generate revenue.

The economic interpretation of these results is straightforward; the company with too fast growth compared to profitability will be forced to seek the fund from debt. The high indebtedness brings more financial obligations which must be paid. Poor firm's ability to generate earnings forces the company to take more and more debt to pay these obligations and consequently, the company will get involved in the bad circle and eventually failed.

Liquidity ratios result revealed that firms experiencing persistent operating losses faced reduced current assets to total assets. Leverage ratio result implies that firms having low DET might likely not experienced financial distress while the activity ratios shows that as Operating revenues to total assets increases, the hazard rate will be shrink by 31.8%.

Company specific variables covariate revealed that company age is not significant to corporate survival. Company size revealed that the larger the size, the more rapid is the likelihood of entering in to financial distress. Also, the result revealed that the past excess return shows the potential usefulness of market data to prediction of firms financial distress. With the log likelihood of 94.943, it implies positive and high

influence at 5% level of significant. The critical Chi square value at 5% level of significant is 22.362, the implication of this is that factors responsible for quoted Nigerian oil and gas firms' failure are predictable. It is suffice to say that identified solvency metrics affect the likelihood of corporate survival. The early warning signals are correlated with $p\text{-value} < 0.05$.

The relationship between corporate governance and corporate survival was also examined using Cox proportional hazard model. The corporate governance structures used in the study are; board size, board independence (proxy by board independence, dual leadership and non executive director) and ownership concentration with the company specific variables i.e. company age and size as control variables. Descriptive statistics was used to measure the mean, standard deviation, skewness, kurtosis among others. Kruskal Wallis test was conducted which revealed that ownership concentration and company size are significant at 5% significant level. It means that the two variables were statistically difference between the group mean i.e. ownership structure and company size of the sampled firms are key major corporate governance structure that contribute significantly to the corporate

survival in Nigerian oil and gas companies. The estimated coefficient revealed that all the corporate governance structures variables measure were positive i.e. they all contribute to the corporate survival in the sampled companies. The Wald chi-square test revealed that the probability of corporate survival is only significant with three variables such as board independence, ownership concentration and company size at 5% significant level. The hazard ratios for three variables such as BSZE, DULD and CAGE were less than 1 which implies less susceptibility to failure i.e. a unit increase in the covariates reduce the hazard risk. The other variables estimated hazard ratios are more than 1 which implies rapid probability to failure, variables such as BIND, NEXC, TP20 and CSZE return a positive coefficient i.e. which depicts a positive influence between the corporate governance variables and the likelihood of failure by the sampled firms. Besides, the estimated hazard ratios for all these variables were more than 1 which implies a rapid risk to failure. Board independence, non executive chairman, ownership concentration and company size hazard ratios of 2.5012, 3.0001, 1.0330 and 2.0071 respectively implies that a unit increase in each of these variables will definitely leads to a corresponding risk of

failure for 50.12percent, 30.0percent, 3.30percent and 0.7% for BIND, NEXC, TP20 and CSZE respectively.

A logical explanation for this is that, independent directors and different chairman or non executive chairman may lead to taking decision that might be to the interest of the organisation as they were not directly involved with the company's activities. Also, when ownership is too concentrated can cover up for weak performance which might not be exposed on time for proper and timely action. Besides, large companies might have inflexible structure, monitoring problem and inefficient communication which might make them susceptible to the risk of failure. Ordinarily, one will expect that variables such as board independence, ownership concentration and company size could have reduce the probability of failure in the sampled companies but the statistical analysis revealed that it contribute to risk failure.

5.3 Conclusion

To ensure sustainable economic growth, it is crucial to control the number of businesses that failed. Corporate solvency must be controlled in the most effective manner as to warranty the sustained growth, continuity and survival of that organization. This necessitate the need for corporate financial distress studies by business analysts to curb and prevent direct and indirect cost associated to financially distressed companies tending towards bankruptcy. Thus, the need for a model that can provide early warning signs of possible failure is paramount.

The Altman's Z-score model is effective and practical model to predict the insolvency of companies as well as maintaining and monitoring of oil and gas firms risks in Nigeria with 88.2% accuracy. The study concluded that, Nigerian oil and gas companies are susceptible to failure with 23.5% financially weak companies and 11.8% grey. There is a clear performance difference between distressed and healthy companies. Besides, solvency ratios contribute significantly (especially the sales to total asset) to the financial health of sampled companies. However, the distress signs are obvious even before the seventh year and that financial ratio are good instrument to predict financial health status of quoted Nigeria's oil and gas companies.

Turnaround strategic actions taken by distressed firms differ in an attempt to ameliorate the situation. The results obtained revealed that the identified turnaround strategies implemented were intensive in the distressed year while the intensity reduced as the distress passed out. It was interesting to note that, some sampled firms did increase dividends as against dividend omission/cut mostly rampant during distressed year. Timing of implementations of most of these strategies differs as asset restructuring, employees layoff and dividends omission/cut take precedence in distress year while other strategies were employed after the distressed year. The reason(s) for this is due to the fact that other strategies involve several consultations before implementation. The study concluded that the identified turnaround strategies were effective towards the remediation and rejuvenation of the distressed firms.

Using survival analysis, the study concluded that; there is probability of corporate survival of quoted Nigeria oil and gas firms and that survival time is different at each financial distressed state. Also, factors responsible for oil and gas companies' failure can be predicted in Nigeria and that solvency metrics affect corporate survival of the

sampled firms. Besides, covariates such as return on equity, return on asset, debt ratio, working capital to total asset, total asset turnover, size of company, squared size and excess returns are the early warning signals or variables of corporate financial distress in Nigeria's oil and gas companies. The findings revealed that the identified early warning covariates are correlated. It is concluded that financially distressed companies profitability is low, has high leverage, excess return is low and has large size in contrast to active firms. Thus, firms' age has no merit in the likelihood of financial distress.

In estimating the effect of corporate governance on corporate survival, all the corporate governance covariates gives positive estimated coefficient value, it is concluded that corporate governance with company specific variables influence corporate survival in quoted Nigerian oil and gas companies. The result from Kruskal-Wallis test revealed that ownership structure and company size of the sampled firms are key major corporate governance structure that contribute significantly to the corporate survival in Nigerian oil and gas sectors.

5.4 Recommendations

In line with the findings and conclusion drawn above, the following recommendations were made to the policy makers and stakeholders:

- i. The findings revealed that most companies only used traditional financial ratios for evaluation of poor performance despite the applicability and robustness of Multiple Discriminant analysis, it recommended that quoted oil and gas companies should embrace the use of this model for early prediction of corporate financial distress while providing adequate training on the use of this model for their designated staff.
- ii. The sign of potential danger is evident months before actual failure materializes, efforts should be put in place by oil and gas companies for periodic cross sectional performance evaluation, prediction and early detection of financial distress warning signs to prevent bankruptcy.
- iii. The findings revealed that employee's layoff top the strategic action taken by financially distressed firms. This send a bad signal to foreign investors, negate the citizens empowerment program of the government and posed security risk to any

nations. Therefore, it is recommended that, other strategic actions such as asset restructuring, dividend cut/omission among others should be used first in surviving the hard times while considering employee's layoff as the last resort in distressed situation. Contingency approach (situation analysis) should be considered in adopting appropriate turnaround strategies for distressed firms.

- iv. Management needs to carefully consider the financial structure of the company to prevent financial difficulties. It is expedient that effort should be put in place to improve the profitability of sampled companies as most variables measures anchor on return and assets. Besides, market based data should be closely monitor as valuable information for detecting the possibility of financial distress. It is therefore, paramount to use market data by stakeholders in addition to financial ratios in examining corporate financial distress to obtain better and favourable survival decisions.
- v. In corporate governance structures, close attention should be on ownership concentration and company size as they contribute

significantly to companies' failure which is a complete divergence from what was expected before the study.

5.5 Areas for further study

This study examine the corporate financial distress and turnaround strategies in Nigeria's oil and gas sector with emphasis on quoted companies in the sector. Further research can look into the oil and gas companies that are not quoted most of which are owned and managed by Nigerians. Also, subsequent research can explore the relevance of Multiple Discriminant Analysis model to other sectors not excluding the Small and Medium Scale Enterprises which are mostly regarded as the largest employers of labour in developing nations as their failure rate are high and detrimental to the expected growth and development of a nation.

Covariates used in corporate governance structures in measuring the corporate survival can be increased to include composition of board and frequency of board meeting to see if the trend will still be the same with what was observed in the study or their will be a paradigm shift.

5.6 Contributions to Knowledge

The findings from the study shows that most sampled companies used financial ratios for performance evaluation measurement, this study has simplified and introduced the application of Multiple Discriminant Analysis model which seems to be more robust than the traditional financial ratios in evaluation of corporate performance (financial health) with 88.2% level of accuracy in the study area (i.e. Nigerian oil and gas sector). This implies, corporate failure can be predetermined if appropriate model and measures were put in place by all organisations to prevent the consequences of failure.

It is not sufficient to predict corporate distress of any company but it is expedient suggests ways or measures to turnaround the predicted ailing companies. This study propounded the turnaround strategic actions for the financially distressed firms, when to use them and their effectiveness to resurgence at the distress year and subsequent years towards rejuvenation.

The information and data obtained in quoted oil and gas companies were used in this study to proposed early warning signals of corporate

financial distress in Nigeria. These warning signals or indicators can improve or enhanced corporate survival which are; ROE, ROA, WCA, DET, TAT, SIZE, SIZE2 and EXR with estimated coefficients of .033, .045, 0001, .023, .008, .034, .042 and .045 respectively. These provide a guide to corporate evaluation to prevent the chances of corporate financial distress.

Corporate governance structures, that is, board independence, non executive chairman, ownership concentration and company size influencing corporate survival were also predicted in the study. While ownership concentration and company size formed the key major corporate governance structures that contribute significantly to the corporate survival in reducing the risks of entering into financial distress state which can lead to bankruptcy or eventual failure in Nigerian quoted oil and gas companies if not properly monitored.

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APPENDIX I

QUESTIONNAIRE

Department of
Business
Administration,
Faculty of
Management
Sciences,
University of
Ilorin,
Ilorin,
Nigeria.

Dear Respondent,

I am OMOLEKAN, Olushola, a Ph.D. student of the University of Ilorin, Department of Business Administration, presently conducting a study on “Corporate Financial Distress Prediction and Turnaround Strategies in Nigeria’s oil and gas sector” and your organisation is one of the companies selected for data collection.

The questions are aimed at eliciting information on the issues of Corporate Financial Distress, Turnaround strategies and corporate governance as it affect continuity and survival of business organisation. Your cooperation is needed in filling out this questionnaire as honest as possible. You are hereby assured that the research is primarily for academic purpose and shall be used solely for that. Any information provided shall be treated with utmost confidentiality.

Your prompt and timely response is anticipated.

Many thanks and God bless

Yours sincerely,

Signed

OMOLEKAN, O. J.

Researcher

QUESTIONNAIRE CHECKLIST

Turnaround Strategies issues

S/N.	Issues	Responses	Check (√) as appropriate
1.	How long the company has been quoted on the	1 – 15years	
		16 – 30 years	

	Nigerian Stock Exchange?	31years & above	
2.	Ownership structure of the organization	Foreign	
		Local	
		Foreign & Local	
3.	Method used to determined the organizational poor performance	Financial Ratio	
		MDA	
		Others	
4.	Management Ownership of firms	0 - 5% share	
		6 – 10%	
		10% & above	
5.	Strategic Turnaround Actions taken to curb distress by affected companies in the distress year	Mgt. Change	
		Employee layoff	
		Debt restructuring	
		Equity Issue	
		Sales of asset	
		Dividends Cut	
		Asset Acquisition	

	specific restructuring strategies in response to financial distress	Employee layoff			
		Debt restructuring			
		Equity Issue			
		Sales of asset			
		Dividends Cut			
		Asset Acquisition			
7.	Effect of turnaround strategies taken on performance	Mgt. Change			
		Employee layoff			
		Debt restructuring			
		Equity Issue			
		Sales of asset			
		Dividends Cut			
		Asset Acquisition			

Issues related to Strategic turnaround actions

	Issues	Responses	Year of Distress	Year of Distress +1	Year of Distress +2
6.	Timing	Mgt. Change			

Table 1: Extracted data from the Financial Statement to Compute Solvency Ratios

	Year	Working Capital	Total Asset	X1	Retained Earning	X2	EBIT	X3	Market Value of Equity	X4	Sales	X5	Total Liability	
OAN JAUPAUL DO-OUT &	2012	-1021867	32661034	-0.0312870	-2488526	-0.076192	520773	0.015945	17083504	1.09668	12281714	0.376035676	15577530	
	2011	1614911	27274499	0.059209557	2987783	0.109544927	1375404	0.050428	22559783	8.31018	10247768	0.375727085	2714716	
	2010	1914940	25018768	0.07654014	2007315	0.080232368	1071684	0.042835	21579345	11.1034	7133370	0.285120754	1943486	
	2009	2686851	21178935	0.126864311	1552.1	7.32851E-05	1025705	0.04843	21287608	11.5221	4659246	0.219994348	1847538	
	2008	21971231	16456986	1.335070164	1238.877	7.52797E-05	1011670	0.061474	20995094	13.6187	3971028	0.241297404	1541639	
OAN JAUPAUL DO-OUT &	2010	-53731012	176319992	-0.30473579	26022475	0.147586639	24318845	0.137924	95192266	0.8629	378925430	2.149078081	110317031	
	2009	1553812	155682820	0.009980626	14908560	0.095762397	13512155	0.086793	52811742	0.42614	336859678	2.163756271	123929559	

8. What are the challenges of implementing turnaround strategies?

.....

APPENDIX II

	2008	-20445058	112253702	-0.182132595	7343127	0.065415455	10742611	0.095699	44878733	0.54092	339420435	3.023690346	82966908	
	2007	4007566	62783385	0.063831633	6321140	0.100681733	6813727	0.108528	47416277	1.78824	185892083	2.960848368	26515554	
	2006	12256707	28910554	0.423952685	3853399	0.13328693	3794091	0.131235	24369270	2.66729	209078938	7.2319243	9136326	
AFROIL PLC	2007	18159	322734	0.056266151	436	0.001350958	-22219	-0.06885	144586	1.17157	68310	0.211660377		
	2006	-33257	256678	-0.129567006	-48534	-0.189085157	-10325	-0.04023	23541	0.65559	25230	0.098294361	35908	
	2005	3853	35909	0.107299006	-35392	-0.985602495	-5620	-0.15651	35909	0.7448	29855	0.831407168		
	2004	8847	41743	0.211939726	-29558	-0.70809477	-5585	-0.13379	41743	0.83468	19255	0.461274944		
	2003	13824	47560	0.290664424	23741	0.499179983	-5106	-0.10736	47560	0.96862	34365	0.722560976	49101	
	2010	223881	3725427	0.060095393	183858	0.049352195	248951	0.066825	2935614	3.71685	2780168	0.74626828	789813	
	2009	398249	3852452	0.103375461	183858	0.047724929	216718	0.056255	3289231	5.84004	3995384	1.037101565	563221	
BECO DETROIT LEU	2008	119364	2720754	0.043871662	183858	0.06757612	261293	0.096037	2158922	3.84265	3397579	1.248763762	561832	
	2007	51776	425854	0.121581575	46715	0.10969722	49534	0.116317	275954	1.84092	2796567	6.566961917	149900	
	2006	16103	429909	0.037456764	46715	0.108662531	43272	0.100654	234497	1.20001	2341500	5.446501469	195412	
	2010	8850145	17369428	0.509524263	8518484	0.490429737	4020931	0.231495	4171746	1.9778	102878494	5.922963842	2109286	
CONOIL DLC	2009	6808242	8902675	0.764741159	6769435	0.760382132	3784963	0.425149	4171746	1.8438	101853173	11.44073809	2262582	
	2008	4780134	13811280	0.34610362	5151020	0.372957467	3282281	0.237652	1002341	0.88931	124322434	9.001514269	1127099	
	2007	4280687	15128885	0.28294795	5238337	0.346247394	3759266	0.248483	4171746	1.32483	86847548	5.74051214	3148890	
	2006	2416133	14199078	0.17016126	4553229	0.320670751	4113124	0.289675	4171746	1.43646	90523366	6.375298875	2904191	
	2011	5031272	6311828	0.797118046	130295	0.02064299	1789885	0.283576	6448125	13.5224	41068644	6.506616467	476849	
ETERN A PLC	2010	-1948514	6572335	-0.296472106	130295	0.019824765	1159730	0.176456	4623820	2.373	14138607	2.151230423	1948514	
	2009	-3382571	7284886	-0.464327239	130295	0.017885661	-1962168	-0.26935	3902315	1.15365	9225442	1.266381107	3382571	
	2008	-6093415	6871696	-0.886741061	130295	0.018961112	-495181	-0.07206	778281	0.12772	12025273	1.749971623	6093415	
FORTE OIL DLC	2007	-695201	714587	-0.972871043	130295	0.182336091	-169458	-0.23714	1184916	1.70442	4907540	6.867659221	695201	
	2010	14684759	26697788	0.550036542	-39191899	-1.467983003	-2843845	-0.10652	24677139	18.7089	132690558	4.970095575	1319008	
	2009	20617075	36265922	0.568497197	16581139	0.457209912	-8921636	-0.24601	24677139	7.75247	159858809	4.407962081	3183133	
	2008													
	2007	-4711697	8974879	-0.524987245	2113769	0.235520613	1764645	0.19662		0	54541943	6.077178645	5119205	
	2006													
	2011	2635947	15849989	0.16630592	6663968	0.420439913	5524321	0.348538	164829	1.19228	62099515	3.917953192		
MOBIL OIL DLC	2010	-1823476	14100383	-0.129321026	5794053	0.410914583	5721728	0.405785	164629	0.02606	58343069	4.137693919	6318225	
	2009	-2396786	11908486	-0.201267063	4011916	0.336895555	4066153	0.34145	164629	0.03086	62032058	5.209063352	5335155	
	2008	-2828005	10352025	-0.273183749	2672433	0.258155578	2543611	0.245711	164629	0.03512	66740879	6.447132711	4686958	
	2007	-4711697	8974879	-0.524987245	2113769	0.235520613	1764645	0.19662	134579	0.02629	54541943	6.077178645	5119205	
	2012	-3344298	22154128	-0.150955975	18927016	0.854333603	378755	0.017096	19054010	2.9509	79727349	3.598758164	6457015	
MRS OIL NIGERIA	2011	-4710566	23335609	-0.201861713	18861691	0.808279355	1413242	0.060562	18988685	1.79433	71490715	3.063588998		
	2010	2910676	21439422	0.135762802	4393032	0.204904405	2887683	0.13469	18528746	6.36579	74781925	3.488056954	2910676	
	2009	1405158	4371083	0.321466785	2838931	0.649480003	1721283	0.393789	2965925	2.11074	74603050	17.06740641	1405158	
	2008	1275494	3561248	0.358159275	1788021	0.502077081	-305726	-0.08585	1915015	1.50139	48687821	13.67156149	1275494	
	2012	-6215093	76067065	-0.08170544	11132153	0.146346556	7098172	0.093315	11301914	0.17451	217843731	2.863837733	64765151	
TOTAL NIGERIA	2011	-5627615	58719810	-0.09583844	9856454	0.167855686	5858613	0.099772	10026215	0.2059	173948954	2.962355532	48693595	
	2010	-3859371	16784746	-0.229933238	263436	0.015694965	5783464	0.344567	8929188	1.13667	160604104	9.568456025	7855558	
	2009	-2573246	14829572	-0.173521259	263436	0.017764235	6163359	0.415613	6982835	0.8899	178570273	12.04149877	7846737	
	2008	-1319630	12984668	-0.101629861	263436	0.020288235	6508186	0.501221	7268984	1.27176	177411946	13.66318692	5715684	
	2008	-1958802	10356739	-0.189133085	-17502101	-1.689923923	7147752	0.690155	6962801	1.86507	162595515	15.69948948	3733270	
AFRIC AN	2007	-1410577	9444394	-0.14935601	-17084836	-1.808992297	7077080	0.749342	7380066	2.97845	102026373	10.80285014	2477823	
	2006	-5924836	10732175	-0.552062932	-22009672	-2.050811881	2437632	0.227133	2455230	0.29663	81934351	7.634459091	8276945	

	2005	-7465227	10276197	-0.726458144	-24171202	-2.352154401	-3369651	-0.32791	293700	0.02942	42761163	4.161185602	9982497	
	2004	-14749854	10049963	-1.467652567	-20602030	-2.049960781	1026812	0.102171	7568785	0.42959	58110054	5.782116213	17618748	
AGIP	2001	75578	5393883	0.014011798	688511	0.127646632	1735633	0.321778	903693	0.20126	14430534	2.67535169	4490190	
	2000	-184298	4809772	-0.038317409	607317	0.126267316	1467843	0.305179	3111258	0.7803	12610360	2.621820743	3987273	
	1999	-360803	3715517	-0.097107078	639431	0.17209745	814730	0.219278	854613	0.29872	10352585	2.786310761	2860904	
	1998	-238747	2811527	-0.0849172	388643	0.138232	341940	0.121621	603825	0.27351	6586631	2.342723723	2207702	
	1997	-237446	2729807	-0.086982706	290233	0.106319971	127327	0.046643	505415	0.22721	5641570	2.066655262	2224392	
	2001	-381260	2971514	-0.128304965	2095262	0.705115978	1236231	0.416027	2267008	3.21787	17259543	5.808333059	704506	
NATIONAL OIL **	2000	-1189990	2435115	-0.488679179	1073380	0.440792324	675473	0.277389	1245126	1.30483	20191569	8.291833856	954242	
	1999	-1716648	2337176	-0.734496675	614939	0.263111978	936354	0.400635	786685	0.69335	17376320	7.434750314	1134621	
	1998	-761152	1949158	-0.390502976	-134662	-0.069087267	-920699	-0.47236	37084	0.02475	11562972	5.932290763	1498604	
	1997	-223041	1833046	-0.121677798	462055	0.252069506	-1026156	-0.55981	636801	0.89546	12075941	6.587909414	711143	
UNIPETROL **	2001	1957847	6759604	0.289639304	16068	0.002377062	1385406	0.204954	4722983	2.31903	25183604	3.725603453	2036621	
	2000	645687	2223665	0.290370627	176584	0.079411242	1199127	0.539257	1577978	2.44387	20181688	9.075867093	645687	
	1999	431116	1809260	0.238283055	326319	0.180360479	725881	0.401203	1378144	3.19669	15036354	8.310775676	431116	
	1998	546568	1598393	0.341948444	162699	0.101789109	432042	0.270298	1378144	2.52145	10635831	6.654077564	546568	
TEXACO	1997	577463	1466589	0.393745623	20655	0.0140837	133827	0.091251	889126	1.53971	9257604	6.312336994	577463	
	2003	96991	12940344	0.007495241	1916353	0.148091349	450389	0.034805	2007063	0.18357	32679321	2.52538271	10933281	
	2002	-142187	9002492	-0.015794182	1465964	0.1628398	1553566	0.172571	26977451	3.62317	26977451	2.996664812	7445818	
	2001	-484147	8266097	-0.058570206	1033261	0.124999864	1143247	0.138306	1123971	0.16853	21123972	2.555495296	6669344	
	2000	-103046	5531411	-0.018629243	875349	0.15825058	1532311	0.27702	950941	0.20761	17097552	3.090992877	4580470	
CHEVRON	1999	-410352	5145696	-0.079746647	687026	0.133514689	1226392	0.238334	762618	0.1587	12077448	2.347097069	4805532	
	2008	-370738	11312023	-0.03277380	1788021	0.15806377	-305726	-0.02703	1915015	0.20379	48687821	4.304077264	9397008	
	2007	1425430	20936575	0.068083247	2013446	0.096168834	2994916	0.143047	4045355	0.23949	72628105	3.46895827	16891221	
	2006	426623	17176254	0.024837954	1959043	0.114055311	1852352	0.107844	3386459	0.24558	65914443	3.837533085	13789795	
	2005	542520	14272321	0.038012037	1946818	0.136405144	1779903	0.12471	3115166	0.27921	51942270	3.639370919	11157155	
UNION VENTURES	2004	-406920	16337447	-0.024907196	1942546	0.118901442	1314415	0.080454	2831506	0.20729	42391492	2.594743965	13659919	
	2005	6876	30322	0.226766044	8168	0.269375371	1488	0.049073	25622	5.45149	87639	2.890277686	4700	
	2004	4095	28813	0.142123347	7059	0.244993579	2167	0.075209	24513	5.7007	77013	2.672856002	4300	
	2003	3536	25209	0.140267365	5255	0.208457297	2043	0.081042	22709	9.0836	77626	3.079297076	2500	
	2002	214	24411	0.00876654	3457	0.141616484	995	0.04076	20911	5.97457	66648	2.730244562	3500	
	2001	979	22524	0.043464749	2570	0.114100515	991	0.043998	20024	8.0096	75740	3.362635411	2500	

APPENDIX III

Table 2: Computation of Discriminant Z score

	Year	1.2X1	1.4X2	3.3X3	0.6X4	1.0X5	Z-SCORE		2007	0.07659796	0.140954	0.358141	1.072946	2.960848	4.609487995
		2012	-0.037544445	-0.10667	0.052618	0.658006	0.376036		2006	0.508743222	0.186602	0.433077	1.600377	7.231924	9.960722937
JAUPAUL OIL & MARITIME SERVICE PLC	2011	0.071051468	0.153363	0.166413	4.986109	0.375727	5.752663495	BEC AFROIL O PLC PETROL FIRM	2007	0.067519381	0.001891	-0.22719	0.702943	0.21166	0.756821724
	2010	0.091848168	0.112325	0.141356	6.662053	0.285121	7.292703542		2006	-0.155480407	-0.26472	-0.13274	0.393355	0.098294	-0.061294164
	2009	0.152237173	0.000103	0.15982	6.913289	0.219994	7.445443912		2005	0.128758807	-1.37984	-0.51647	0.446879	0.831407	-0.489270239
	2008	1.602084197	0.000105	0.202863	8.17121	0.241297	10.21756009		2004	0.254327672	-0.99133	-0.44152	0.500806	0.461275	-0.216447369
	2010	-0.365682948	0.206621	0.455151	0.517738	2.149078	2.962905613		2003	0.348797309	0.698852	-0.35429	0.581169	0.722561	1.997094573
	2009	0.011976751	0.134067	0.286416	0.255686	2.163756	2.851902704		2010	0.072114472	0.069093	0.220522	2.230108	0.746268	3.33810588
	2008	-0.218559114	0.091582	0.315808	0.324554	3.02369	3.537074837		2009	0.124050553	0.066815	0.18564	3.504022	1.037102	4.917628764

CONOIL PLC	2008	0.052645994	0.094607	0.316922	2.305588	1.248764	4.018526509	AGIP	2007	-0.179227211	-2.53259	2.472828	1.787069	10.80285	12.35093049
	2007	0.14589789	0.153576	0.383846	1.104552	6.566962	8.35483392		2006	-0.662475519	-2.87114	0.749539	0.177981	7.634459	5.028367
	2006	0.044948117	0.152128	0.332158	0.720008	5.446501	6.695742848		2005	-0.871749773	-3.29302	-1.0821	0.017653	4.161186	-1.068025053
	2010	0.611429116	0.686602	0.763933	1.18668	5.922964	9.171607232		2004	-1.761183081	-2.86995	0.337163	0.257752	5.782116	1.745903626
	2009	0.917689391	1.064535	1.402992	1.106279	11.44074	15.93223332		2001	0.016814158	0.178705	1.061867	0.120756	2.675352	4.053494251
	2008	0.415324344	0.52214	0.784252	0.533586	9.001514	11.25681762		2000	-0.045980891	0.176774	1.007092	0.468178	2.621821	4.227884213
	2007	0.33953754	0.484746	0.819993	0.794898	5.740512	8.179687292		1999	-0.116528494	0.240936	0.179233	0.278631	3.813567875	
	2006	0.204193512	0.448939	0.955929	0.861874	6.375299	8.846234656		1998	-0.10190064	0.193525	0.401348	0.164105	2.342724	2.99980136
ETERN A PLC	2011	0.956541655	0.0289	0.935802	8.113417	6.506616	16.54127764	UNIPETROL NATIONAL OIL**	1997	-0.073853249	0.266951	0.692141	0.150398	3.72937	4.765007304
	2010	-0.355766527	0.027755	0.582306	1.423799	2.15123	3.829323253		2001	-0.153965958	0.987162	1.37289	1.930721	5.808333	9.945141004
	2009	-0.557192686	0.02504	-0.88885	0.692192	1.266381	0.537572737		2000	-0.586415015	0.617109	0.915382	0.7829	8.291834	10.0208098
FORTE OIL PLC	2008	-1.064089273	0.026546	-0.2378	0.076635	1.749972	0.551261702	**	1999	-0.88139601	0.368357	1.322095	0.416008	7.43475	8.659813494
	2007	-1.167445252	0.255271	-0.78257	1.022653	6.867659	6.195571928		1998	-0.468603571	-0.09672	-1.55878	0.014847	5.932291	3.823033363
	2010	0.660043851	-2.05518	-0.35152	11.22532	4.970096	14.448765		1997	-0.146013357	0.352897	-1.84737	0.537277	6.587909	5.484699783
	2009	0.682196636	0.640094	-0.81182	4.651481	4.407962	9.569913878		2001	0.347567165	0.003328	0.676347	1.391417	3.725603	6.144263141
	2008								2000	0.348444752	0.111176	1.779548	1.466325	9.075867	12.78136051
	2007								1999	0.285939666	0.252505	1.323971	1.918014	8.310776	12.09120447
MOBIL OIL PLC	2006							TEXACO	1998	0.410338133	0.142505	0.891983	1.51287	6.654078	9.611773088
	2011	0.199567104	0.588616	1.150175	0.715367	3.917953	6.571678483		1997	0.472494748	0.019717	0.301127	0.923826	6.312337	8.02950208
	2010	-0.155185231	0.57528	1.339091	0.015634	4.137694	5.912514286		2003	0.008994289	0.207328	0.114857	0.110144	2.525383	2.9667057
	2009	-0.241520475	0.471654	1.126785	0.018514	5.209063	6.584496218		2002	-0.018953019	0.227976	0.569483	2.173901	2.996665	5.949071617
	2008	-0.327820499	0.361418	0.810848	0.021075	6.447133	7.312652732		2001	-0.070284247	0.175	0.456408	0.101117	2.555495	3.217735919
MRS OIL NIGERIA PLC	2007	-0.629984694	0.329729	0.648848	0.015773	6.077179	6.441543812	CHEVRON	2000	-0.022355092	0.221551	0.914166	0.124565	3.090993	4.328918955
	2012	-0.18114717	1.196067	0.056418	1.77054	3.598758	6.440636446		1999	-0.095695976	0.186921	0.786501	0.095218	2.347097	3.320039888
	2011	-0.242234055	1.131591	0.199853	1.076597	3.063589	5.229396497		2008	-0.039328562	0.221289	-0.08919	0.122274	4.304077	4.519123979
	2010	0.162915362	0.286866	0.444478	3.819473	3.488057	8.201789326		2007	0.081699896	0.134636	0.472055	0.143697	3.468958	4.301046627
	2009	0.385760142	0.909272	1.299503	1.266445	17.06741	20.92838596		2006	0.029805544	0.159677	0.355884	0.147346	3.837533	4.530246818
A TOTAL F NIGERIA RIPLC	2008	0.429791129	0.702908	-0.2833	0.900835	13.67156	15.42179665	UNION VENTURES & PETROLEU M.D.C	2005	0.045614445	0.190967	0.411543	0.167525	3.639371	4.455020743
									2004	-0.029888636	0.166462	0.265499	0.124371	2.594744	3.121187385
									2005	0.272119253	0.377126	0.161942	3.270894	2.890278	6.9723579
									2004	0.170548017	0.342991	0.24819	3.420419	2.672856	6.855003688
									2003	0.168320838	0.29184	0.26744	5.45016	3.079297	9.25705833
									2002	0.010519848	0.198263	0.134509	3.584743	2.730245	6.658279378
A TOTAL F NIGERIA RIPLC								UNION VENTURES & PETROLEU M.D.C	2001	0.052157698	0.159741	0.145192	4.80576	3.362635	8.525485626
A TOTAL F NIGERIA RIPLC	Year	1.2X1	1.4X2	3.3X3	0.6X4	1.0X5	Z-SCORE	UNION VENTURES & PETROLEU M.D.C							
	2012	-0.098046528	0.204885	0.307938	0.104704	2.863838	3.383318409								
	2011	-0.115006128	0.234998	0.329249	0.123543	2.962356	3.535138606								
	2010	-0.275919886	0.021973	1.13707	0.682003	9.568456	11.13358193								
	2009	-0.20822551	0.02487	1.371522	0.533942	12.0415	13.76360703								
	2008	-0.121955833	0.028404	1.654029	0.763057	13.66319	15.98671994								
	2008	-0.226959702	-2.36589	2.27751	1.119041	15.69949	16.50318734								

	Year	1.2X1	1.4X2	3.3X3	0.6X4	1.0X5	Z-SCORE
JAJAPUL	2012	-			0.65800	0.37603	
		0.037544445	-0.10667	0.052618	6	6	0.942445125
	2011	0.071051468	0.153363	0.166413	4.98610	0.37572	5.752663495

					9	7	
	2010				6.66205	0.28512	
		0.091848168	0.112325	0.141356	3	1	7.292703542
	2009				6.91328	0.21999	
		0.152237173	0.000103	0.15982	9	4	7.445443912
	2008	1.602084197	0.000105	0.202863	8.17121	0.24129	10.21756009

						7	
OANDO PLC	2010	-			0.51773	2.14907	
		0.365682948	0.206621	0.455151	8	8	2.962905613
	2009				0.25568	2.16375	
		0.011976751	0.134067	0.286416	6	6	2.851902704
	2008	-			0.32455		
		0.218559114	0.091582	0.315808	4	3.02369	3.537074837
AFROIL PLC	2007				1.07294	2.96084	
		0.07659796	0.140954	0.358141	6	8	4.609487995
	2006				1.60037	7.23192	
		0.508743222	0.186602	0.433077	7	4	9.960722937
	2007				0.70294		
		0.067519381	0.001891	-0.22719	3	0.21166	0.756821724
BECO PETROLEUM	2006	-			0.39335	0.09829	-
		0.155480407	-0.26472	-0.13274	5	4	0.061294164
	2005				0.44687	0.83140	-
		0.128758807	-1.37984	-0.51647	9	7	0.489270239
	2004				0.50080	0.46127	-
CONOIL PLC		0.254327672	-0.99133	-0.44152	6	5	0.216447369
	2003				0.58116	0.72256	
		0.348797309	0.698852	-0.35429	9	1	1.997094573
	2010				2.23010	0.74626	
		0.072114472	0.069093	0.220522	8	8	3.33810588
ETERNA PLC	2009				3.50402	1.03710	
		0.124050553	0.066815	0.18564	2	2	4.917628764
	2008				2.30558	1.24876	
FOR		0.052645994	0.094607	0.316922			4.018526509

					8	4	
CONOIL PLC	2007				1.10455	6.56696	
		0.14589789	0.153576	0.383846	2	2	8.35483392
	2006				0.72000	5.44650	
ETERNA PLC		0.044948117	0.152128	0.332158	8	1	6.695742848
	2010					5.92296	
		0.611429116	0.686602	0.763933	1.18668	4	9.171607232
	2009				1.10627	11.4407	
		0.917689391	1.064535	1.402992	9	4	15.93223332
	2008				0.53358	9.00151	
FOR		0.415324344	0.52214	0.784252	6	4	11.25681762
	2007				0.79489	5.74051	
		0.33953754	0.484746	0.819993	8	2	8.179687292
	2006				0.86187	6.37529	
		0.204193512	0.448939	0.955929	4	9	8.846234656
ETERNA PLC	2011				8.11341	6.50661	
		0.956541655	0.0289	0.935802	7	6	16.54127764
	2010	-			1.42379		
		0.355766527	0.027755	0.582306	9	2.15123	3.829323253
FOR	2009	-			0.69219	1.26638	
		0.557192686	0.02504	-0.88885	2	1	0.537572737
	2008	-			0.07663	1.74997	
FOR		1.064089273	0.026546	-0.2378	5	2	0.551261702
	2007	-			1.02265	6.86765	
FOR		1.167445252	0.255271	-0.78257	3	9	6.195571928
	2010				11.2253	4.97009	14.448765

					2	6	
	2009				4.65148	4.40796	
		0.682196636	0.640094	-0.81182	1	2	9.569913878
	2008						
	2007						
	2006						
MOBIL OIL PLC	2011				0.71536	3.91795	
		0.199567104	0.588616	1.150175	7	3	6.571678483
	2010	-			0.01563	4.13769	
		0.155185231	0.57528	1.339091	4	4	5.912514286
	2009	-			0.01851	5.20906	
		0.241520475	0.471654	1.126785	4	3	6.584496218
MRS OIL NIGERIA PLC	2008	-			0.02107	6.44713	
		0.327820499	0.361418	0.810848	5	3	7.312652732
	2007	-			0.01577	6.07717	
		0.629984694	0.329729	0.648848	3	9	6.441543812
	2012					3.59875	
		-0.18114717	1.196067	0.056418	1.77054	8	6.440636446
	2011	-			1.07659	3.06358	
		0.242234055	1.131591	0.199853	7	9	5.229396497
	2010				3.81947	3.48805	
		0.162915362	0.286866	0.444478	3	7	8.201789326
	2009				1.26644	17.0674	
		0.385760142	0.909272	1.299503	5	1	20.92838596
	2008				0.90083	13.6715	
		0.429791129	0.702908	-0.2833	5	6	5

	Year	1.2X1	1.4X2	3.3X3	0.6X4	1.0X5	Z-SCORE
TOTAL NIGERIA PLC	2012	-			0.10470	2.86383	
		0.098046528	0.204885	0.307938	4	8	3.383318409
	2011	-			0.12354	2.96235	
		0.115006128	0.234998	0.329249	3	6	3.535138606
	2010	-			0.68200	9.56845	
		0.275919886	0.021973	1.13707	3	6	11.13358193
	2009				0.53394		
AFRICAN PETROLEUM PLC		-0.20822551	0.02487	1.371522	2	12.0415	13.76360703
	2008	-			0.76305	13.6631	
		0.121955833	0.028404	1.654029	7	9	15.98671994
	2008	-			1.11904	15.6994	
		0.226959702	-2.36589	2.27751	1	9	16.50318734
	2007	-			1.78706	10.8028	
		0.179227211	-2.53259	2.472828	9	5	12.35093049
AGIP	2006	-			0.17798	7.63445	
		0.662475519	-2.87114	0.749539	1	9	5.028367
	2005	-			0.01765	4.16118	-
		0.871749773	-3.29302	-1.0821	3	6	1.068025053
	2004	-			0.25775	5.78211	
		1.761183081	-2.86995	0.337163	2	6	1.745903626
	2001				0.12075	2.67535	
		0.016814158	0.178705	1.061867	6	2	4.053494251
	2000	-			0.46817	2.62182	
		0.045980891	0.176774	1.007092	8	1	4.227884213

	1999	-			0.17923	2.78631	
		0.116528494	0.240936	0.723616	3	1	3.813567875
	1998	-			0.16410	2.34272	
		-0.10190064	0.193525	0.401348	5	4	2.99980136
	1997	-			0.15039		
		0.073853249	0.266951	0.692141	8	3.72937	4.765007304
NATIONAL OIL**	2001	-			1.93072	5.80833	
		0.153965958	0.987162	1.37289	1	3	9.945141004
	2000	-				8.29183	
		0.586415015	0.617109	0.915382	0.7829	4	10.0208098
	1999	-			0.41600		
		-0.88139601	0.368357	1.322095	8	7.43475	8.659813494
UNIPETROL**	1998	-			0.01484	5.93229	
		0.468603571	-0.09672	-1.55878	7	1	3.823033363
	1997	-			0.53727	6.58790	
		0.146013357	0.352897	-1.84737	7	9	5.484699783
	2001				1.39141	3.72560	
		0.347567165	0.003328	0.676347	7	3	6.144263141
	2000				1.46632	9.07586	
		0.348444752	0.111176	1.779548	5	7	12.78136051
	1999				1.91801	8.31077	
		0.285939666	0.252505	1.323971	4	6	12.09120447
	1998					6.65407	
		0.410338133	0.142505	0.891983	1.51287	8	9.611773088
	1997				0.92382	6.31233	
		0.472494748	0.019717	0.301127	6	7	8.02950208

TEXACO	2003				0.11014	2.52538	
		0.008994289	0.207328	0.114857	4	3	2.9667057
	2002	-			2.17390	2.99666	
		0.018953019	0.227976	0.569483	1	5	5.949071617
	2001	-			0.10111	2.55549	
		0.070284247	0.175	0.456408	7	5	3.217735919
CHEVRON	2000	-			0.12456	3.09099	
		0.022355092	0.221551	0.914166	5	3	4.328918955
	1999	-			0.09521	2.34709	
		0.095695976	0.186921	0.786501	8	7	3.320039888
	2008	-			0.12227	4.30407	
		0.039328562	0.221289	-0.08919	4	7	4.519123979
	2007				0.14369	3.46895	
		0.081699896	0.134636	0.472055	7	8	4.301046627
UNION VENTURES &	2006				0.14734	3.83753	
		0.029805544	0.159677	0.355884	6	3	4.530246818
	2005				0.16752	3.63937	
		0.045614445	0.190967	0.411543	5	1	4.455020743
	2004	-			0.12437	2.59474	
		0.029888636	0.166462	0.265499	1	4	3.121187385
	2005				3.27089	2.89027	
		0.272119253	0.377126	0.161942	4	8	6.9723579
	2004				3.42041	2.67285	
		0.170548017	0.342991	0.24819	9	6	6.855003688
	2003					3.07929	
		0.168320838	0.29184	0.26744	5.45016	7	9.25705833

	2002	0.010519848	0.198263	0.134509	3.58474	2.73024	6.658279378
	2001	0.052157698	0.159741	0.145192	4.80576	3.36263	8.525485626

APPENDIX IV

Stepwise Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.310 ^a	.096	.085	4.43922
2	.310 ^b	.096	.073	4.46709
3	.535 ^c	.287	.259	3.99409
4	.536 ^d	.288	.251	4.01679
5	.764 ^e	.583	.556	3.09383

a. Predictors: (Constant), X1

b. Predictors: (Constant), X1, X2

c. Predictors: (Constant), X1, X2, X3

d. Predictors: (Constant), X1, X2, X3, X4

e. Predictors: (Constant), X1, X2, X3, X4, X5

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	167.940	1	167.940	8.522	.005 ^a
	Residual	1576.531	80	19.707		
	Total	1744.471	81			
2	Regression	168.037	2	84.019	4.210	.018 ^b
	Residual	1576.434	79	19.955		
	Total	1744.471	81			
3	Regression	500.158	3	166.719	10.451	.000 ^c
	Residual	1244.313	78	15.953		
	Total	1744.471	81			
4	Regression	502.105	4	125.526	7.780	.000 ^d
	Residual	1242.365	77	16.135		
	Total	1744.471	81			
5	Regression	1017.016	5	203.403	21.250	.000 ^e
	Residual	727.455	76	9.572		
	Total	1744.471	81			

a. Predictors: (Constant), X1

b. Predictors: (Constant), X1, X2

c. Predictors: (Constant), X1, X2, X3

d. Predictors: (Constant), X1, X2, X3, X4

e. Predictors: (Constant), X1, X2, X3, X4, X5

f. Dependent Variable: Zscore

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	5.053	.490		10.306	.000		
	X1	3.713	1.272	.310	2.919	.005	1.000	1.000
2	(Constant)	5.054	.494		10.239	.000		
	X1	3.745	1.357	.313	2.759	.007	.890	1.124
	X2	-.061	.870	-.008	-.070	.945	.890	1.124
3	(Constant)	3.846	.515		7.471	.000		
	X1	3.184	1.220	.266	2.611	.011	.881	1.136
	X2	-.019	.778	-.002	-.024	.981	.890	1.124
	X3	9.153	2.006	.439	4.563	.000	.989	1.011
4	(Constant)	3.692	.681		5.420	.000		
	X1	2.898	1.478	.242	1.960	.054	.606	1.649
	X2	.060	.815	.008	.073	.942	.821	1.218
	X3	9.279	2.050	.445	4.527	.000	.958	1.043
	X4	.052	.150	.041	.347	.729	.680	1.470
5	(Constant)	.448	.686		.653	.516		
	X1	2.408	1.140	.201	2.112	.038	.604	1.655
	X2	.661	.633	.086	1.045	.300	.807	1.239
	X3	2.878	1.804	.138	1.595	.115	.734	1.362
	X4	.169	.117	.131	1.444	.153	.668	1.498
	X5	.812	.111	.637	7.334	.000	.728	1.373

a. Dependent Variable: Zscore

Excluded Variables

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	X2	-.008 ^a	-.070	.945	-.008	.890	1.124	.890
	X3	.439 ^a	4.593	.000	.459	.989	1.011	.989
	X4	-.046 ^a	-.379	.706	-.043	.758	1.319	.758
	X5	.679 ^a	9.061	.000	.714	1.000	1.000	1.000
2	X3	.439 ^b	4.563	.000	.459	.989	1.011	.881
	X4	-.053 ^b	-.411	.683	-.046	.702	1.424	.627
	X5	.683 ^b	9.059	.000	.716	.992	1.008	.883
3	X4	.041 ^c	.347	.729	.040	.680	1.470	.606
	X5	.620 ^c	7.155	.000	.632	.742	1.348	.740
4	X5	.637 ^d	7.334	.000	.644	.728	1.373	.604

a. Predictors in the Model: (Constant), X1

b. Predictors in the Model: (Constant), X1, X2

c. Predictors in the Model: (Constant), X1, X2, X3

d. Predictors in the Model: (Constant), X1, X2, X3, X4

e. Dependent Variable: Zscore

Coefficient Correlations

Model		X1	X2	X3	X4	X5
1	Correlation: X1	1.000				
	Covariance: X1	1.618				
2	Correlation: X1	1.000	-.332			
	X2	-.332	1.000			
3	Correlation: X1	1.842	-.392			
	X2	-.392	.758			
4	Correlation: X1	1.000	-.332	-.101		
	X2	-.332	1.000	.012		
5	Correlation: X1	1.487	-.315	-.247		
	X2	-.315	.606	.018		
6	Correlation: X1	1.000	-.419	-.181	-.558	
	X2	-.419	1.000	.060	.277	
7	Correlation: X1	1.000	-.181	.060	1.000	.177
	X2	-.181	.060	.277	1.000	.177
8	Correlation: X1	2.185	-.505	-.548	-.124	
	X2	-.505	.664	.100	.034	
9	Correlation: X1	1.000	-.422	-.130	-.560	-.058
	X2	-.422	1.000	-.011	.290	.130
10	Correlation: X1	1.000	-.130	-.011	1.000	.087
	X2	-.130	-.011	.087	1.000	.136
11	Correlation: X1	1.000	-.290	.087	1.000	.136
	X2	-.290	.087	1.000	1.000	.007
12	Correlation: X1	1.300	-.305	-.267	-.075	-.007
	X2	-.305	.400	-.012	.021	.009
13	Correlation: X1	1.000	-.012	3.254	.018	-.097
	X2	-.012	.018	.014	.002	.002
14	Correlation: X1	1.000	-.009	-.097	.002	.012
	X2	-.009	.002	.012	.002	.012

a. Dependent Variable: Zscore

APPENDIX V

Summary of Financial Status using Altman's Z score model

S/N	COMPANY	YEAR 1 Zscore	YEAR 2 Zscore	YEAR 3 Zscore	YEAR 4 Zscore	YEAR 5 Zscore	YEAR 6 Zscore	YEAR 7 Zscore	MEAN SCORE
1.	JAUPAUL OIL	1.04876523	0.9424451	2.99980136	5.7526635	7.2927035	7.4454439	10.21756	5.099912
2.	OANDO PLC	3.00438581	2.9321423	2.96290561	2.8519027	3.53707484	4.609488	9.96072294	4.265517
3.	AFROIL PLC	1.8761218	2.2729310	0.75682172	0.06129416	0.48927024	0.21644737	1.99709457	1.095712
4.	BECO PETROLEUM	1.44263141	1.0080982	3.33810588	4.91762876	4.01852651	8.35483392	6.69574285	4.253653
5.	CONOIL PLC	2.9903121	3.0103120	9.17160723	15.9322333	11.2568176	8.17968729	8.84623466	8.483886
6.	ETERNA PLC	2.8091230	0.53757274	0.5512617	3.82932325	8.54127760	4.5512617	6.19557193	3.859342
7.	FORTE OIL PLC	2.80123540	1.9004321	1.448765	4.56991388	-	-	-	3.030087
8.	MOBIL OIL PLC	5.7321674	5.6731980	6.57167848	5.91251429	6.58449622	7.31265273	6.44154381	6.318322
9.	MRS OIL NIGERIA	-	-	6.44063645	5.2293965	8.20178933	20.928386	15.4217967	11.2444
10.	TOTAL NIGERIA	3.7846529	4.111321	3.38331841	3.53513861	11.1335819	13.763607	15.9867199	7.956906
11.	AFRICAN PET. PLC	16.5031873	12.3509305	5.02836711	3.2354611	1.000421	1.0680250	3.74590363	6.133185
12.	AGIP	6.1326450	3.90114561	4.05349425	4.22788421	3.81356788	2.99980136	4.7650073	4.270507
13.	NATIONAL OIL	1.8096743	1.0342178	0.945141	1.0208098	0.65981349	0.82303336	1.48469978	1.111056
14.	UNIPETROL	2.00145132	1.9910379	1.14426314	0.78136051	1.09120447	1.61177309	1.02950208	1.378656
15.	TEXACO	2.9667057	1.94907162	3.21773592	1.32891896	1.32003989	-	-	2.156494
16.	CHEVRON	4.91432567	4.0173891	4.51912398	4.30104663	4.53024682	4.45502074	3.12118739	4.265477
17.	UNION VEN. & PET. PLC	2.1122435	1.7234156	0.9723579	0.85500369	1.25705833	0.65827938	1.52548563	1.300549

Recovered distressed firms during the study period with Altman's Zscore

S/N	COMPANY	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	MEAN
-----	---------	--------	--------	--------	--------	--------	--------	--------	------

		Zscore	Zscore	Zscore	Zscore	Zscore	Zscore	Zscore	SCORE
1.	JAUPAUL OIL	1.04876523	0.9424451	2.99980136	5.7526635	7.2927035	7.4454439	10.21756	5.099912
2.	BECO PETROLEUM	1.44263141	1.0080982	3.33810588	4.91762876	4.01852651	8.35483392	6.69574285	4.253653
3.	ETERNA PLC	2.8091230	0.53757274	0.5512617	3.82932325	8.54127760	4.5512617	6.19557193	3.859342
4.	FORTE OIL PLC	2.80123540	1.9004321	1.448765	4.56991388	-	-	-	3.030087
5.	AFRICAN PET. PLC	16.5031873	12.3509305	5.02836711	3.2354611	1.000421	1.0680250	3.74590363	6.133185

Summary of Financial Status using Altman's Z score model for States

S/N	COMPANY	MEAN SCORE	
1.	JAUPAUL OIL	5.099912	Healthy
2.	OANDO PLC	4.265517	Healthy
3.	AFROIL PLC	1.095712	Distressed
4.	BECO PETROLEUM	4.253653	Healthy
5.	CONOIL PLC	8.483886	Healthy
6.	ETERNA PLC	3.859342	Healthy
7.	FORTE OIL PLC	3.030087	Grey
8.	MOBIL OIL PLC	6.318322	Healthy
9.	MRS OIL NIGERIA	11.2444	Healthy
10.	TOTAL NIGERIA	7.956906	Healthy

11.	AFRICAN PET. PLC	6.133185	Healthy
12.	AGIP	4.270507	Healthy
13.	NATIONAL OIL	1.111056	Distressed
14.	UNIPETROL	1.378656	Distressed
15.	TEXACO	2.156494	Grey
16.	CHEVRON	4.265477	Healthy
17.	UNION VEN. & PET. PLC	1.300549	Distressed

Appendix VI: Testing PH assumption

Covariate	Fisher's z	p-Value
EBT	-0.0227	0.8762
ROE	0.0796	0.5854

ROA	0.1246	0.3932
CUR	-0.0927	0.5250
QUK	-0.0925	0.5260
WCA	-0.0602	0.6799
DET	0.1197	0.4120
CPT	0.1753	0.2295

TAT	-0.1499	0.3041
SIZE	-0.0923	0.5270
SIZE2	-0.0662	0.6501
AGE	0.2639	0.0704
EXR	-0.0469	0.7481

*All the covariate p-value are greater 0.05

Appendix VII

Kaplan-Meier

[DataSet1] C:\Users\SHOLA\Desktop\Discriminant

Analysis\Seminar1 data.sav

Case Processing Summary

Company Sta	Total N	N of Events	Censored	
			N	Percent
Distressed	29	14	15	51.7%
Grey	4	2	2	50.0%
Healthy	50	7	43	86.0%
Overall	83	23	60	72.3%

Means and Medians for Survival Time

Company Sta	Mean ^a				Median			
	Estimate	Std. Error	95% Confidence Interval		Estimate	Std. Error	95% Confidence Interval	
Distressed	2005.661	1.024	2003.655	2007.667	2006.000	.972	2004.094	2007.906
Grey	2006.500	1.750	2003.070	2009.930	2003.000	.	.	.
Healthy	2010.930	.386	2010.174	2011.686	.	.	.	.
Overall	2009.191	.512	2008.188	2010.195	.	.	.	.

a. Estimation is limited to the largest survival time if it is censored.

Overall Comparisons

	Chi-Square	df	Sig.
Log Rank (Mantel-C)	23.661	2	.000

Test of equality of survival distributions for the different Company State.

Appendix VIII

: Fig. 1

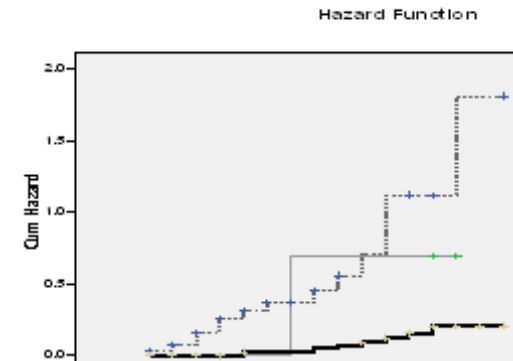
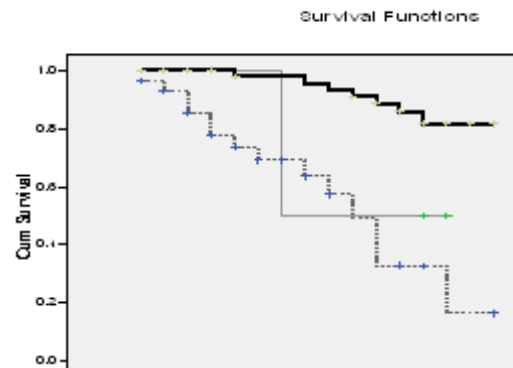


Fig. 2.

Appendix IX

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

-2 Log Likelihood	Overall (score)			Change From Previous Step			Change From Previous Block		
	Chi-square	df	Sig.	Chi-square	df	Sig.	Chi-square	df	Sig.
94.943	68.446	13	.000	80.518	13	.000	80.518	13	.000

a. Beginning Block Number 0, initial Log Likelihood function: -2 Log likelihood: 175.461

b. Beginning Block Number 1. Method = Enter

Variables in the Equation

	B	SE	Wald	df	Sig.	Exp(B)	95.0% CI for Exp(B)	
							Lower	Upper
EBM	180.866	103.054	3.080	1	.079	.5E+078	.000	.9E+166
ROE	-.017	.105	.027	1	.869	.983	.799	1.208
ROA	-.576	.908	.403	1	.526	.562	.095	3.331
CUR	-.001	.003	.147	1	.701	.999	.994	1.004
QUR	-.163	.235	.483	1	.487	.850	.536	1.346
WCA	9.232	2.594	12.663	1	.000	220.817	63.256	1651453
DET	-1.290	1.071	1.452	1	.228	.275	.034	2.244
CPT	-96.700	57.046	2.873	1	.090	.000	.000	3645380
TAT	-.382	.145	6.935	1	.008	.682	.513	.907
SIZE	1.470	1.531	.922	1	.337	4.351	.216	87.524
SIZE2	-.281	.198	2.021	1	.155	.755	.513	1.112
AGE	-.123	.137	.794	1	.373	.885	.676	1.158
EXR	-1.340	2.094	.409	1	.522	.262	.004	15.885

Correlation Matrix of Regression Coefficients

	EBM	ROE	ROA	CUR	QUR	WCA	DET	CPT	TAT	SIZE	SIZE2	AGE
ROE	-.013											
ROA	.129	-.906										
CUR	.381	.215	-.088									
QUR	.206	-.792	.854	.279								
WCA	-.194	.044	-.203	-.201	-.175							
DET	.265	.119	-.014	.603	.169	-.474						
CPT	-1.000	.010	-.129	-.387	-.208	.201	-.273					
TAT	.158	.134	-.049	.517	.114	-.729	.731	-.164				
SIZE	-.078	-.083	.170	-.368	-.048	.371	-.458	.084	-.442			
SIZE2	.094	.145	-.194	.373	.018	-.364	.411	-.100	.430	-.962		
AGE	-.211	.016	-.212	-.058	-.187	.009	.128	.208	.079	-.207	.096	
EXR	-.102	.079	-.242	.195	-.076	-.246	.263	.097	.286	-.883	.765	.368

Covariate Means

	Mean
EBM	.137
ROE	17.303
ROA	2.005
CUR	74.960
QUR	7.852
WCA	.002
DET	.045
CPT	.247
TAT	2.599
SIZE	5.104
SIZE2	47.116
AGE	19.000
EXR	.501

APPENDIX X

NPar Tests

[DataSet0]

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Mgt. Change	3	1.3333	.57735	1.00	2.00
Employee layoff	3	1.6667	.57735	1.00	2.00
Debt restructuring	3	1.3333	1.52753	.00	3.00
Equity Issue	3	1.3333	.57735	1.00	2.00
Asset Sales	3	1.3333	.57735	1.00	2.00
Dividends Cut	3	1.3333	1.52753	.00	3.00
Asset Acquisition	3	1.3333	.57735	1.00	2.00

Friedman Test

Ranks

	Mean Rank
Mgt. Change	4.17
Employee layoff	4.67
Debt restructuring	3.67
Equity Issue	3.83
Asset Sales	3.83
Dividends Cut	3.67
Asset Acquisition	4.17

Test Statistics^a

N	3
Chi-Square	6.613
df	6
Asymp. Sig.	.010

a. Friedman Test