Effect of financial distress on firm's performance of non-financial firms registered with Pakistan Stoke Exchange.

Sardar Ahmad[1]; Lie Zhang[2]; Adnan Ahmad[3]; Awais Ahmad[4]

[1, 2] School of Management Sciences, China University of Mining and technology, Xuzhou, PR , China.

[3] Iqra National University, Department of Management Sciences, Peshawar, Pakistan.

[4] Department of Management Science, Iqra University Islamabad Campus, Pakistan

Abstract

The purpose of this Research study is to analyze the effect of financial distress on firm's performance of non-financial firms registered with PSX. The causal-effect research design is used to conduct this study in order to judge the effect of financial troublesome on performance of non-financial firms. In this study the firm performance is taken as dependent variable and the financial distress of the firm as independent variable. While the variables of leverage and size is taken as controlled variables. The population of the study is comprised of all the companies which are related to the non-financial sector and whose shares are traded in Pakistan stock market. One sixty one corporations, listed on PSX have been chosen as a sample which represent the whole population of non-financial companies. The technique which is adopted to select the sample for this study is convenient sampling technique. The data of the sample companies are taken out from Firms' annual accounts of including balance sheets, P/L Statement, changes in equity statements etc. Data was analyzed in this study by using the software of MS office and SPSS. Analyzed data covers the time span of six years from 2011 to 2016. The gathered data which is sorted and ordered in Excel sheet is analyzed by using multiple discriminate model that is Altman's Z-Score model for measuring the financial distress variable, while Tobin's q is applied to measure the firm performance for analysis of non-financial companies. Finally, through the establishment of regression equation between both the study variables the impact of distress on firm performance is determined.

The main findings of the undertaken study provide the evidence that the performance of publically traded non- financial Pakistani companies are negatively affected by financial troublesome and the relationship between both the variables is significant. It means the result reaffirms the findings of Tan (2012), which shows that financial distress results in poor firm's performance. Further, the results indicate that the symptoms of distress existed in the firms of Pakistan as indicted by the Z-Score index, during the period of 2011-2016 and it can be concluded that if necessary actions are taken on the basis of these symptoms then the chances of losses can be minimal in future. The study also explored that high leverage is not a beneficial way of raising funds for running the operations of the firms listed on PSX. This conclusion is drawn on the basis of findings that shows the firm's performance in the presence of high debt will be negatively affected, So higher financial leverage results in lowering the firm's performance and vice versa.

Keywords*:* financial distress, non-financial firms, convenient sampling technique, balance sheets, P/L Statement, changes in equity statement, Altman's Z-Score model, Tobin's q Method, causal-effect research design, regression equation, PSX.

1. Introduction

Pakistan as an emerging economy facing different difficulties in maintaining the growth and stability of its economy, in which speedy failure of businesses is the major issue deterring the country from extended trade and commerce activities and consequently slowing down the development of Pakistan. The non-financial sector of Pakistan is an important part of its industry for stable and sound development and plays a vital role in bringing prosperity in the life of inhabitants of the country.

Therefore, this study has been carried out on the non-financial sector of Pakistan, which represents a varied nature of industries like fuel and energy, communication, production and distribution, packaging and gas industries, services and construction industries, petroleum and cement industries, pharmaceuticals and paper products industries, automobiles and chemical industries, Food and textile industries, sugar and fertilizers industries etc.

Moreover, no significant study is conducted in Pakistan in this regard. So there is a need to investigate the financial health of the companies for timely prediction of their possible failures or distress condition that led towards bankruptcy and it is also essential to determine how the financial trouble affects the performance of the distressed companies. Performance actually serves as an instrument for assessing the success of a firm. In order to quantify the performance, numerous scholars have trash about a great deal of tools aimed at measuring the firm's performance, which comprises Tobin's q, Profit Margin, Return on assets, Return on sales, MVA, dividend yield etc. However, there is no exact measurement tool offered up till now, which has the capability to quantify each and every aspect of the performance of a firm (Snow & Hrebiniak, 1980). In literature a mix of variables have been combined with performance to investigate how the performance effected by them. As all the stakeholders from all over the globe have a great concern with the performance of the firm, therefore, in this study performance had been investigated with the combination of financial distress.

On the other hand, financial distress universally turns into a threat due to which numerous corporations had headed towards shutdown at an alarming rate; thus several studies had been carried out internationally in this respect for ensuring economic stability and growth. Financial distress is a term which is used to refer an upset financial state where a company is confronted with complications of liquidity and trouble in fulfilling payable outstanding amount of debt triggering the winding up of the firm (Outecheve, 2007). Besides this, certain primary and secondary expenditures are also linked with financial distress.

The purpose of this study is to analyze the companies which are non-financial in nature through Z-Score and Tobin's q for measuring financial distress and performance of the 161 corporations by covering the period of six years (2011-2016) for the sake of investigation in order to derive accurate and proper predictor of financial health of the firms with respect to Pakistan corporate settings. Since several

research studies had been tested in developed economies like UK and USA but in contrary to that in emerging economies there is very rare work has been presented which is like a drop in ocean. Moreover, due to the dissimilarities in the corporate atmosphere, legal settings, political environment, economic pattern and macroeconomic factors prevailing in Pakistan, the studies which had been carried out in developed economies cannot be replicated here. In addition to that Rashid and Abbas (2011) identified that a large number of bankruptcies has been occurred in the recent years in Pakistan due to inconsistent political and economic circumstances, even there is no research is conducted in this field earlier to 2011. That's why there is an essential need to come up with a suitable measure of financial distress which help in alarming a company that when it is going to be in financial trouble which in return will reduce the frequency of these devastating incidence. Thus, this undertaken study will help in filling the contextual gap in the field of distress in Pakistan.

1.1 Financial Distress

The term financial distress is a wide phenomenon thus it requires the fundamental inquiry to describe it in detail. Different scholars have thrown light on financial distress according to their own bent of mind towards this issue. Thus financial distress can be described in so many ways. According to Andrade and Kaplan (1998), financial distress is a state whereby a firm has encounter with inadequate funds for repaying its mature debts to the lenders or facing complications in meeting their due obligations on time, due to which company ultimately lead to liquidation or only the choice of restructuring is left behind with the company to avoid bankruptcy. In the view of Foster (1986) a firm will be in distress condition when it faces severe difficulties in maintaining liquidity and break the trust of their creditors as it fails to meet the promises made in the credit contract with creditors. He also added that bankruptcy is the common characteristic of financially troubled company. Another similar view point in this regard pointing out that financial distress can be judge from the decrease in EBIT in contrast with financial expenditure. Moreover the likelihood of the distress increases with the increase in firm's expenses, lack of liquid assets, or when the return on revenues become more elastic to economic downturns. Hence, it means that the net effect of these financial difficulties results in creating hurdles in the survival of the firm in one way or in another. According to Outecheva (2007), financial distress is divided into four sections including performance worsening, failure of the company, insolvency and default; in which the prior two affect the

survival of the company while, the former two embedded in its liquidity. Further he added that, default is not necessary for the occurrence of distress but financial distress is compulsory item of default and bankruptcy as these cannot occur without the preceding period of distress. According to Aasen (2011), the most common reason that leads any company towards distress is the lack of expertise in management but the utmost reason is often deficit of liquid money.

Investigational inquiry in the domain of identifying the causes of distress, characterizes different factors like incompetent management, rivalry among competitors and worse financial performance are supposed to responsible in bringing financial distress in the firm (Outecheva, 2007). Opler and Titman (1994) noted that financial distress cost trigger three types of losses which include losses due to customers, competitors and employees. Customer based cost incurred due to the reluctance of customer for paying money to buy the goods or to do business with distressed firm. Competitor based cost incurred due to hard-hitting competition among competitors because of pursuing price war strategies and other antagonistic strategies for the purpose of squeezing out their vulnerable opponent from the market. Employee based costs incurred due to decrease in the salaries of the personnel because of financial sufferings that will result in hurting and demotivating the employees form doing work harder or ultimately results in leaving the company. In addition to this, employees of the distressed company are also insecure about their job continuity due to higher chances of liquidation and thus become less to produce which result in customer driven costs, tolerated by the company. Besides this, financial troublesome result in generating negative image of the company in the eyes of stakeholders because the companies ranked as financially distressed are considered incompetent in carrying their business. As a consequence dramatic fall is observed in the prices of shares as investors will avoid themselves to purchase the shares of such companies, as similarly stated by Mwangi, Muathe and Kosimbei (2014) that the companies which are in distress not only grind down the interest of investors on the capital market but also led to dramatic decline in stockholders' wealth and eventually if the remedial actions are not taken on time for handling the distress situation then the company will be enforced to the termination in the extreme cases.

1.2 Financial distress costs

The literature on financial distress costs usually distinguished in two types, direct and indirect costs. According to Beaver (1966), the costs of distress are actually the cost

which is tolerated by all the firms which are facing trouble in paying their liabilities and encounter difficulties in maintaining their survival. The literature on financial distress costs has focused foremost on direct financial distress costs.

Direct distress cost is the expenditure which is directly gained during the process of liquidating a company such as administrative and legal costs associated with bankruptcy, payments to consultants for restructuring advices, expense of filing liquidation in court etc. Warner (1977) reported that these costs earlier to one year of failure are four percent of firm's total worth, as well as have positive link with the time consumed in the shutdown of the company. It means that direct cost keeps on increase with the increase in time consumed in the process of closing the company.

Indirect costs are unknown in nature and are challenging to estimate as these costs are not observable as direct costs. Indirect cost is viewed as opportunity cost, as it is because of the distraction of management efforts in the condition of distress, for saving company's existence Outecheva (2007).

1.3 Performance

As the likelihood of financial distress or difficulties results in effecting the performance efficiency of a firm, either directly or indirectly. That's why it is crucial to understand what actually the performance meant to be. Neely, Gregory and Platts (2005) defines the performance in their own words as a process of gauging the efficacy and effectiveness of all the activities implemented and performed by a firm. Effective performance is a key factor for attracting the people towards it as well as it is used to track and evaluate the success of the firm in comparison with its planned goals and strategies. The success of the firm is determined by its performance over a certain time period. So the individuals who are accountable for running the company should bring new ideas and strategies for the development and improvement of the firm's performance as the progress of organizational improvement needs to recognize the impact of resources on corporate performance for effective management (Sharma & Gadenne, 2002; Madu, Aheto, Kuei & Winokur, 1996).

The undesirable performance leads to both local and foreigner investors' loss thus if a company is desirous for winning the competition from others in the market place then it should update its performance with the passage of time.

2: Literature Review

Previous researches in the field of financial distress are quiet rare and did not account for the determinants of distress and for the possible consequences caused by it. Usually the foregoing researches on financial distress employed debt level to determine its effect on the likelihood of distress in a corporate. Like the studies conducted by, Opler and Titman (1994) as well as Andrade and Kaplan (1998), had utilized debt focused variables by assuming that the direct association between debt and firm's financial distress will be existed. By the means of applying transactions loaded with heavy debt, both studies revealed that high debt is the major reason for bringing distress in a business. So, according to them, high debt will increase the chances of firm's distress.

In contradiction with them, some studies showed that leverage is also favorable for the firms which are facing distress in terms of bringing improvement, and the association existed between firm's distress and leverage possibly may be unspecified feature of organization development (Jensen, 1989; Wruck, 1990; Ofek, 1993). In agreement with these findings, the study undertaken in Pakistan by Akhtar, Javed, Maryam, and Sadia (2012) on energy and fuel sector listed in KSE showed the direct relationship between financial debt and economic performance of the firm. While, Opler and Titman (1994) assumed that financial distress and leverage are diligently linked with each other, without considering that leverage has some benefits with its cost as according to Jensen (1989), the contradictory effect of cost and benefit of leverage counterbalanced the effect of each other, and hence consequently this trade-off made the relationship insignificant between both variables.

Further, Muigai (2016) pursued the study aimed at establishing the impact of capital structure on the economic distress by taking forty one non-financial companies as a sample. The secondary data was obtained from the financial accounts of the sample companies listed in NSE for the period of ten years (2004 – 2013). The quantitative design was adopted by applying t-test and F-test for finding out the significance of individual variables and the overall model respectively. For finding the level of distress the model of Z-score was employed, while to investigate that how it will be influenced by capital structure the panel regression analysis was used. The findings of the study suggested that the high proportion of debt as compared to equity in a capital mix of non-financial corporations had an inverse effect on distress and the effect between the both will be significant in the corporate setting of Kenya.

By looking at other studies conducted by Black, Jang and Kim (2006) as well as Hodgson, Lhaopadchan and Buakes (2011), it was observed that firm performance is strengthen if the firm is having good governance. On the other hand, good corporate governance practices will become the protecting shield for the corporates in saving them form the danger of financial distress (Parker, Peters & Turetsky, 2002; Wang & Deng, 2006; Abdullah, 2006).

However, Theodossiou and Kahya (1996) in his empirical research identified a no of factors including debt, lack of skills in management, growth, size and profitability of the company which had attributed towards financial distress and the evidence of great involvement of all these factors in bringing distress, were provided in the research.

Aesan (2011) sought a study by using a sample of one eighty companies taken from the Oslo Stock Exchange specifically for studying the status of distress. Altman's model of Z-score was adopted for measuring financial distress and it is observed that in contrast with non-listed firms the firms listed on Oslo Stock Exchange was more inclination towards financial distress. Further negative association between financial debt and financial distress in financial crisis was recorded. Furthermore, it was discovered that those companies which are listed on OSE were more distressed in the period of financial crisis (2008-2009) as compared to 2004-2007.

Furthermore, a study conducted in Malaysia in order to assess the impact of financial distress and the structure of ownership in which the ownership structure is computed through the shares held by the both executive and non-executive directors plus external block holders. The study observed the negative linkage between distress and ownership structure as (Abdullah, 2006). The findings concurred with those recorded by Wang and Deng (2006), in which the same association between the likelihood of distress and ownership structure and ratio of independent directors was presented. But, Hassan Al-Tamimi (2012) study had a variation with it as it reveals the positive and significant connection between both the variables in UAE.

In addition to this, several researches had undertaken on determining the financial distress status but there is a scarcity of literature existed on the topic of how economic performance of a company is affected by distress.

High no of banks' failure due to financial distress in financial crisis, Kariuki (2013) encouraged to conduct a study in view of establishing the effect of distress on firm performance in Kenya. From the totality of 44 commercial banks the twenty two banks as a sample were drawn in which half of the banks were taken from listed bank

while half of the banks were non-listed. The secondary data of the sample companies for the period of 2008 to 2012 was gathered from the central bank and financial statements. The level of financial distress for each bank was computed with the help of multiple deterministic models (Altman's Z-score) and the performance was represented with the ratio of ROA. Regression equation was then used to determine the effect existed between the variables by the means of MS. Excel, provided the evidence of negative and significant relationship as financial distress resulted in worsening the performance of banks in Kenya. Also it was experienced that distress was intense in the non-listed commercial banks relative to the listed ones. On the basis of this study Kariuki (2013) concluded that due to the collapse of financial institutes from the last few years in the whole world it can be said that financial distress led to create disturbance in the cash flows and operating income of the banks negatively.

The results was in consensus with the empirical findings of Spatareanu, Manole and Kabiri (2016), they also noticed the negative influence of distress on firm's performance of Ireland firms in great depression of 2008-2014. In that investigation the credit default swap spreads (CDS) as market based tool were used to measure distress level in the banks which shows that it deteriorate the performance significantly by affecting investment expenses badly. More interestingly it was also disclosed in the study that firm having alternate source of funding or different sources of finance were capable to dismiss the negative impact of distress and thus exert no bad influence on banks performance. Moreover, it was also noticed that the industries having outside source of raising money will be more affected by distress than the industries which are less dependent on outside source of funding.

Tan (2012) in his research carried out an empirical study on eight different countries of East Asia (including South Korea, Hong Kong, Malaysia, Indonesia, Philippines, Taiwan, Singapore, and Thailand) for finding how the performance of 277 corporations is affected form the likelihood of financial distress in the financial crisis of Asia in 1997-1998. In the study ROA (Return on Assets) and a market based indictor (Tobin's q) as proxies for measuring performance level was assessed while; distress was computed through the extent of leverage taken by the sample firms. This investigation reveals firms have heavy leverage deteriorated the performance of the firms, which were under the study. And hence it also showed inverse impact of

distress on performance while the crisis magnifies this relationship. The result was mirrored with those of provided by Andrade and Kaplan (1998).

In a similar fashion, a study in London on one eighty three distressed companies was pursued by Smith and Graves (2005) for the purpose of identifying relationship between financial distress and firm performance. Over the time period of 1980 to 1990, the study evident that financially troubled firms under performs.

Opposing to that, Opler and Titman (1994) reported the positive and significant effect of distress on the performance of firm by undertaken industries which had already experienced the distress by covering the time period from 1972 to 1991. In the research it was examine that weather the industries loaded with heavy financial debt will more likely to tend towards low performance in the period of crisis as compared to the industries having low financial leverage. The performance level of the firms during distress period was assessed by identifying changes in growth of sales, market share and operating profit. It was observed that the firms which employed high level of debt were experienced decline in sales, market share and the income generated by operations, which showed inverse effect of debt on performance in financial depressed period. Further, it had investigated that the state of distress resulted in the betterment of firm performance by incorporating changes in the firms by taking debts for support like leveraged buyouts. Wruck (1990) also pointed out in his study that firm' performance improved in distress by making challenging choices of value maximization which the managers generally avoid in normal routine. Similarly, the same technique was adopted by Asgharian (2003) in testing the corporate performance in Sweden and he also observed the decline in stocks' return of firm during distress because of having heavy leverage transaction. On the other hand in Sweden Bergstrom and Sundgren (2002) recorded the different results in their study by founding negligible relationship between distress and firm's performance.

The disagreement of these results revealed that financial troublesome suffer the firms critically in some circumstances while encouraged moving towards the improvement of firm' value in other cases.

Moreover, Senbet and Seward (1995) discussed that bankruptcy has no connection with distress or worse performance as well as the firm which employed heavy debt will not necessarily led to failure because a firm which are not generating sufficient profit might be liquidated instead of that if it has not employed debt at all in sourcing its funds while, a firm with high leverage can survive as going concern if it is capable

of generating profit by using that leverage in a productive way. This findings differed with Kariuki (2013), according to him financially upset firms deteriorates the financial performance of that firm.

Aziz and Dar (2004) in their study spanned over the thirty five years period (1968 - 2003), run a detailed evaluation of empirical results on cash management and gamblers run theory, in which it was reported that the former one had errors with twenty six percent while the later one had accuracy percentage of ninety four. It was also revealed that logit analysis and MDA technique of Altman are 87 and 86 percent reliable tools respectively for predicting the degree of distress.

Karbhari and Muhamad Sori (2004), evaluated the level of financial trouble of the companies quoted at Kuala Lumpur Stock Exchange for the period of six years in Malaysia. Sixty six companies were included in the sample which is selected on random sampling basis, Z-Score technique was used to assess financial trouble while, paired sampling technique was used to classify the firms as financially active and no-active firms where each distressed firm has a match in non-distressed firms' category in the sample for the period of 1990 to 1996. The thirty three distressed and non-distressed firms showed that the signs of financial distress earlier form the Asia financial downturn of 1997 were present in the Malaysian firms and if noticed on time then it might help in saving the company form heavy losses as well as the negative consequences of economic crisis might be tolerable. The result also revealed the strong link between the ratios of Z-score model and the model was found very helpful in categorizing the firm as distress or non-distress.

Closer home, Choy, Munusamy, Chelliah and Mandari (2011) evaluated the performance of the firms in Malaysia from two prospects, after the occurrence of distress and after the second occurrence of distress, by gathering secondary data from Bursa Saham Malaysia. Interestingly, it was found that the performance got improved after facing the distress condition indicated by raise in share's return and revenues' income as compared to the performance in the pre-distress period. In addition to that, it was also observed that distress affect the performance of the firm negatively if it had faced by the firm at second time.

However, the review of empirical findings in existing literature seeking to clarify the effect of distress situation on performance led to confusion in this regard due to the mixed results of prior studies. As some studies provide the evidences of performance improvement in financial troubled condition while other postulated under

performance of firms in distress. Further, the role of financial leverage in altering the effect of distress on performance also faced contradictions in findings of previous work conducted by different scholars. To make these ambiguities clearer and for insightful investigation this study is set forth; it will also help in filling this scholarly gap.

2.1 Research Hypotheses

To attain the specific objectives, this study required to test the following hypotheses:

H_1: There is a significant relationship existed between financial distress and firm performance of Non-financial firms.

3. Methodology

3.1 Research design

The causal-effect research design is used to conduct this study in order to judge the effect of financial troublesome on performance of non-financial firms.

3.2 Population

The population of the study is comprised of all the companies which are related to the non-financial sector and whose shares are traded in Pakistan stock market. The population of the study did not undertake the financial companies listed on Pakistan stock exchange.

3.3 Sample

One sixty one corporations, listed on PSX have been chosen as a sample which represent the whole population of non-financial companies. The technique which is adopted to select the sample for this study is convenient sampling technique. Also, it has been taken care of that the sample firms necessarily meet the following prerequisites.

1. To be included in the sample, the firm should not be financial in nature.
2. To be included in sample, all firms have their financial data reported in their financial accounts for the period of 2011-2016.

3.4 Methods and procedures of Data Collection

The secondary data is collected for the current study. By means of the websites of required firms and from the website of Pakistan Stock Exchange and Open Doors for All website the secondary data is accumulated. The data of the sample companies are taken out from their annual accounts which involve balance sheets, statements of profit and loss, the shareholding patterns and changes in equity statements. The data is noted and organized in the Excel sheet in the form of current and non-current assets,

sales, current and non-current liabilities, accumulated profit/loss, MVE, EBIT and net profit/loss.

3.5 Data Analysis

Data was analyzed in the study by using the software of MS office and SPSS. Analyzed data covers the time span of six years from 2011 to 2016. The gathered data which is sorted and ordered in Excel sheet is analyzed by using multiple discriminant model that is Altman's Z-Score model for measuring the financial distress variable, while Tobin's q is applied to measure the firm performance for analysis of non-financial companies. Finally, through the establishment of regression equation between both the study variables the impact of distress on firm performance is determined.

3.6 Measurement of Study Variables

In the current study the firm performance is taken as dependent variable and the financial distress of the firm as independent variable. While the variables of leverage and size is taken as controlled variables

3.6.1 Z-Score Model

Different methods are proposed for measuring the level of financial distress in the existing literature including Univariate and Multivariate analysis model, Risk index model, Logit and probit models, neural works and latest artificially intelligent models. Though, it cannot be claimed that which model is superior or inferior as compared to other models because each model measured the distress status from a different perspective. But it can be argued that Z-Score is the model which is used in various pioneering studies and have gained wide acceptance and popularity.

For the purpose of attaining the objective of effectual determination of financial distress in this study, Altman's Z-Score model is going to be applied for judging its implication in the scenario of our country (Pakistan). Because, according to Abid (2000) and Zouari Z-Score have superior accuracy in finding the chances of corporate's bankruptcy.

It is also worth mentioning that the model of Z-Score was also test for the estimation of failure in the historic high profile scandal of corporate world. As the Z-Score of the WorldCom and the energy sector company named Enron was lies below the safe zone before few months earlier of filing for bankruptcy. That shows Z-Scores had given the warning signals before the revelation of this bad news.

Altman (1968) was the man who first discovers the Multiple Discriminant Analysis (MDA) approach for predicting financial distress forty nine years ago in 1968 which is still robust in the domain of determining distress. This technique was developed to make discrimination between the failing and non-failing status of firms with regard to the financial distress. Altman studied the total of sixty six companies' form the period of 1946 to 1965, in which thirty three non-distress firms were taken from the manufacturing sector of United States to test the different ratios for its effective prediction of bankruptcy. Hence he develops the Z-score index by the mix of five ratios (liquidity, retained earnings, profitability, leverage and sales turnover) with specific weightage and also determined discriminant point of 2.99 to classify the firm as distressed or non-distressed. The result of that study presented that Z-Score has a strong forecasting ability of financial soundness prior to two years of financial distress occurrence. Afterwards, the framework of his Z-score model as a multiple discriminant analysis get famed and become a prominently most accepted tool for figuring distress.

Altman designed the below formula aiming at defining the financial soundness that had been functionalized by different researchers in their woks as Agarwal and Taffler (2008); and Grice and Ingram (2001). Recently, the study conducted by Roomi, Ahmad, Ramzan and Zia-ur-Rehman (2015) in Pakistan on Karachi stock exchange also proposed that Z-Score is an upright estimator of financial distress for assessing the financial health of Pakistani firms. Mamo (2011) found the model 90% effective in determining financial soundness of the firms in Kenya. All the aforementioned studies are well enough for the indication of using Z-score as a reliable instrument in this study.

AS,

$$Z= 0.0121T1+0.014T2+0.033T3+0.006T4+0.999T5$$

Where,

Z = Overall Index of Z-score

T1= Working Capital/Total assets

This ratio defines how much the firm has its liquid assets comparative to its size in order to reflect company's short term financial strength for fulfilling its current liabilities, as generally firms in distress faces liquidity issues.

T2=Retained earnings/Total assets

This ratio helps in determining that how much profit is retained in the company to finance its assets as in financial suffering companies will experience reduction in profitability.

T3=Earnings before interest and tax /Total assets

This ratio reflects the earning power of the company which is generated from company's operations purely to show the operating efficiency of the company.

T4=Market value of Equity/ Book value of Total Liabilities

By taking in consideration the market dimension, this ratio reflects the market position of the company to show public confidence on the company. Higher MVE indicates higher possibility of firm to stay alive as going concern for a longer period.

T5= sales/total assets

This formula analyses the firm's capability of generating sales by utilizing its assets

Zones of Discrimination of Z-Score:

The corporate firms that Z-Score lies above the value 2.99 shows that the firms have strong financial position hence those firms will be the least minimal or no chances of risk to be failed. But contrary to that if Z-Score lies below the value 1.81 will indicate that this is a danger zone where the companies are in strong risk of failure. While, if the Z-Score of the company lies in the area which is below than 2.99 and above than 1.81, indicates the in between situation in which company in near future can be directed towards either to distress or to the safe zone.

3.6.2 Tobin's Q

A number of accounting and market base measures of performance have been offered in which no one undertakes every performance prospect into consideration. Brainard and Tobin (1968) presented Tobin's Q as a market based tool for assessing firm's performance in regard to future firm's performance. Thus, consistent with Tan (2012) Tobin's q is adopted as a proxy in this study for computing the performance of the firm. This choice is based on the fact that Tobin's q is the tool which is least influenced from accounting practices. Tobin's q formula is given below:

$$\text{Approximate } q = (MVE + PS + DEBT) / TA$$

Where,

MVE = Market value of Equity

PS = liquidating value of preferred stocks outstanding

DEBT = value of the firm's short-term liabilities net of its short term assets, plus the book value of the firm's long-term debt.

TA = book value of the total assets.

3.7 Statistical Test:

In order to discover the influence of financial distress on performance of the firm, the following linear regression equation is adopted:

$$Y= \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Here, Y will be the dependent variable (Financial performance); X_1 will be the independent variable (Financial distress); α = Intercept constant; X2 = Firm's size and X_3 = Leverage.

The dependent variable of the firm will be measured with the help of Tobin's q. Tobin's q will be calculated according to the aforementioned formula. Moreover, certain firm specific variables like firm size and leverage will be taken as control variables with the purpose of controlling the effect of financial distress on performance which can hamper the result. Firm size have been taken as natural logarithm of total assets while leverage as dividing it on total assets. Further, Z-Score will be employed for measuring financial soundness of the firm (independent variable).

4. Data Analysis, Results & Interpretations

4.1 Descriptive Statistics

The computational work done on the collected data under the study is described and presented in tabulated form, which comprises measure of central tendency as mean and measure of deviation as standard deviations as shown below.

Table 4.1 Summary of Descriptive Statistics

	Mean	Std. Deviation	N
Performance of the company	9.8926571	189.72049835	918
Z-Score of the company	3.8545348	27.49033566	918
Size of the company	22.4778386	1.66192320	918
Leverage of the company	.5806522	.31786352	918

Source: Research Findings

The dependent variable (performance of the companies) under the study is calculated through the Tobin's q, gives an average value of 9.8926571 and standard deviation value of 189.72049835 which shows that the overall performance of the companies listed on Pakistan Stock Exchange is satisfactory but there are more variations existed among the performance of these firms as depicted by the standard deviation of 189.72 in Table 4.1.

Z-Score of the companies (independent variable) is used as a proxy for financial distress which gives an average value of 3.8545348 and standard deviation value of 27.49033566. That indicates the financial soundness of the listed non-financial firms as a whole as depicted by its mean value. While the size of the company which is taken as natural logarithms of total assets of the sample companies as a control variable gives the mean value of 22.4778386 and standard deviation value of 1.66192320. Leverage of the companies is defined as debt ratio which gives the mean value of .5806522 and standard deviation value of .31786352.

4.2 Regression Analysis

The following linear regression model is designed for assessing that how the performance is affected by the distress of the companies.

$$Y= \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Table 4.2 Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	Sig. F Change
1	.553[a]	.306	.304	158.3114798	.306	134.320	.000

a. Predictors: (Constant), Leverage of the company, Z-Score of the company, Size of the company

Source: Research Findings

The value of R square which is also called coefficient of determination shows how well the model fits the data. The coefficient of determination in the above table shows that changes in the independent variable (financial distress) explain the variation in the performance of the companies about 0.306 or 30.6%. While, an estimate of 0.553

shows that the positive linear association between the explained and explanatory variables exists here.

4.3 Regression Coefficients

Table 4.3 Regression Coefficient

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	207.407	79.236		2.618	.009
Z-Score of the company	3.716	.206	.539	18.037	.000
Size of the company	-6.548	3.414	-.057	-1.918	.055
Leverage of the company	-111.361	16.973	-.187	-6.561	.000

a. Dependent Variable: Performance of the company

Source: Research Findings

The results for regression coefficients are presented in the table below.

As a result, the linear regression models turns into the model below;

$$Y= 207.407 + 0.539 \text{ (Z-Score)} - 0.057 \text{ (Size)} - 0.187 \text{ (Leverage)}$$

This model shows that a unit increases in z-score will bring about .539 units increase in performance of the firm while, a unit increase in size of the company will lead to decrease of .05 units in firm performance. And a unit increases in leverage of the company will bring .187 units decrease in the performance of the firm.

4.4 Interpretation of the Findings

The SPSS is used to analyze the regression equation to find the impact of financial distress on firm's performance. The findings of the study reveals that most of the companies listed on PSX is distress financially but the overall situation in terms of financial distress is satisfactory as shown by the average Z-Score which is 3.8545348. This is because the Z-Score is greater than 2.99 which indicate the safe Zone in accordance with discriminant zones of Z-Score. In addition to that, the variations of the performance are very high among the companies whose shares are traded in the

Pakistan stock exchange as shown by the standard deviation (189.72) in table 4.1. Moreover, the intercept of the regression equations shows that if all the independent variables are zero or the financial distress didn't exist then the firms' performance will be positive which shows that in the absence of distress the earnings of firms' will be positive. The study further observed that increase in financial distress (indicated by lower Z-Score of the sample companies) will deteriorate the firm performance (calculated by Tobin's q) and vice versa. It means that firm's distress have negative effect on the firm performance of the sample companies, which is also reaffirm by the findings of Tan (2012) and Smith and Graves (2005) as they also proved that firm's performance get poorer due to the existence of financial distress.

5. Conclusion and Suggestions

5.1 Conclusion

In conclusion, it is worth stating that financial distress is an undesirable condition that may came across to any corporation irrespective of their size and country in which it exist either it is developed or under development. Therefore, predicting financial soundness of a firm has recently gained the attention of many scholars and practitioners. The primary objective of this study was to empirically investigate the performance level of the companies listed on PSX in the period of facing financial difficulties by taking 161 companies as a sample. The main findings of the undertaken study provide the evidence that the performance of publically traded non- financial Pakistani companies are negatively affected by financial troublesome and the relationship between both the variables is significant. It means the result reaffirms the findings of Tan (2012), which shows that financial distress results in poor firm's performance. Further, the results indicate that the symptoms of distress existed in the firms of Pakistan as indicted by the Z-Score index, during the period of 2011-2016 and it can be concluded that if necessary actions are taken on the basis of these symptoms then the chances of losses can be minimal in future. The study also explored that high leverage is not a beneficial way of raising funds for running the operations of the firms listed on PSX. This conclusion is drawn on the basis of findings that shows the firm's performance in the presence of high debt will be negatively affected, So higher financial leverage results in lowering the firm's performance and vice versa.

However, this topic has not been inspected in our country. That's why further inquiries are needed to be carried out in this regard to validate the findings of the current study.

5.2 Future Research Suggestions

On the basis of this study, it can be proposed that upcoming researches in this field can expand this study by means of applying a mix of measures of performance which are grounded on both accounting and market basis, to accurately defining the firm performance. It is because of the fact that this study operationalizes the Tobin's q method (Market based method), which reflect the future performance while didn't consider the historic performance of the firm. That's why it is recommended to use other measures as well in future like ROA, Return on Equity etc. Similarly, other latest models are also available for assessing the financial health of the companies like neural and artificial work system and Ohlson's o score that can be used in future research instead of Z-Score to determine the best model for evaluating business failure in Pakistan.

Moreover, additional investigation on this topic is still desired to strengthen the current findings of this study. Therefore, in future researchers may opt the same study and can apply it on financial sector, non-listed firms or to small enterprises. Because it is generally assumed that public companies have stronger contacts with government and other giant organizations, have greater access to funds, so there is a chances that it will less effected by financial difficulties as compared to the non-listed or small firms. However, there is an uncertainty exists that how financial distress consequences affect the operational performance of different stock markets. Though, Pakistan has a volatile stock market, therefore it will be interesting to attempt this study on different countries' stock markets for comparing their results in this regard.

References

Aasen, M. R. (2011). Applying Altman's Z-Score to the Financial Crisis: an empirical Study of financial distress on Oslo Stock Exchange (Master's thesis).

Abid, F., & Zouari, A. (2000). Financial distress prediction using neural networks.

Agarwal, V., & Taffler, R. (2008). Comparing the performance of market-based and accounting-based bankruptcy prediction Models. Journal of Banking & Finance, 32(8), 1541–1551.

Akhtar, S., Javed, B., Maryam, A., & Sadia, H. (2012). Relationship between financial leverage and financial performance: Evidence from fuel & energy sector of Pakistan. European Journal of Business and Management, 4(11), 7-Asgharian, H. (2003). Are highly leveraged firms more sensitive to an economic downturn?. The European Journal of Finance, 9(3), 219-241.

Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. The journal of finance, 23(4), 589-609.
Andrade, G., & Kaplan, S. N. (1998). How costly is financial (not economic) distress? Evidence from highly leveraged transactions that became distressed. The Journal of Finance, 53(5), 1443-1493.
Aziz, M. A., & Dar, H. A. (2004). Predicting Corporate Financial Distress: Whither do We Stand?. Department of Economics, Loughborough University.
Beaver, W. H. (1966). Financial ratios as predictors of failure. Journal of Accounting Research, 6, 71-111.
Bergstrom, C., & Sundgren, S. (2002). Restructuring activities and changes in performance following financial distress. SNS Occasional Paper, 8.
Black, B. S., Jang, H., & Kim, W. (2006). Does corporate governance predict firms' market values? Evidence from Korea. The Journal of Law, Economics, and Organization, 22(2), 366-413.
Brainard, W. C., & Tobin, J. (1968). Pitfalls in financial model building. The American Economic Review, 58(2), 99-122.
Choy, S.L.W., Munusamy, J., Chelliah, S., & Mandari, A. (2011). Effects of financial distress condition on the company performance: A Malaysian perspective. Review of Economics & Finance, 1, 85-99.
Foster, G. (1986). Financial Statement Analysis, 2/e. Pearson Education India.
Grice, J. and Ingram, R. (2001). Tests of the generalizability of Altman's bankruptcy prediction model. Journal of Business Research, 54(1), 53-61.
Hassan Al-Tamimi, H. A. (2012). The effects of corporate governance on performance and financial distress: The experience of UAE national banks. Journal of Financial Regulation and Compliance, 20(2), 169-181.
Hodgson, A., Lhaopadchan, S., & Buakes, S. (2011). How informative is the Thai corporate governance index? A financial approach. International Journal of Accounting & Information Management, 19(1), 53-79.
Jensen, M. C. (1989). Active investors, LBOs, and the privatization of bankruptcy. Journal of Applied Corporate Finance, 2(1), 35–44.
Karbhari, Y., & Muhamad Sori, Z. (2004). Prediction of corporate financial distress: Evidence from Malaysian listed firms during the Asian financial crisis.
Kariuki, H. N. (2013). The effect of financial distress on financial performance of commercial banks in Kenya. Unpublished MBA Project, University of Nairobi.
Madu, C. N., Aheto, J., Kuei, C. H., & Winokur, D. (1996). Adoption of strategic total quality management philosophies Multi-criteria decision analysis model. International Journal of Quality & Reliability Management, 13(3), 57-72.
Mamo, A. Q. (2011). Applicability of Altman (1968) model in predicting financial distress of commercial banks in Kenya. PhD diss.
Muigai, R. G. (2016). Effect of Capital Structure on Financial Distress of Non-Financial Companies Listed in Nairobi Securities Exchange (Doctoral dissertation, COHRED, Finance, JKUAT).
Mwangi, Muathe, S., & Kosimbei, G. (2014). Relationship between capital structure and performance of non-financial companies listed in the Nairobi Securities Exchange, Kenya. Global Journal of Contemporary Research in Accounting, Auditing and Business Ethics, 1(2), 72-90.
Nahar Abdullah, S. (2006). Board structure and ownership in Malaysia: The case of distressed listed companies. Corporate Governance: The international journal of business in Society, 6(5), 582-594.

Neely, A., Gregory, M., & Platts, K. (2005). Performance measurement system design: A literature review and research agenda. International journal of operations & production management, 25(12), 1228-1263.
Ofek, E. (1993). Capital structure and firm response to poor performance: An empirical analysis. Journal of financial economics, 34(1), 3-30.
Opler, T. C., & Titman, S. (1994). Financial distress and corporate performance. The Journal of Finance, 49(3), 1015-1040.
Outecheva, N. (2007). Corporate financial distress: An empirical analysis of distress Risk. (Unpublished doctoral dissertation), University of St Gallen, Switzerland.
Parker, S., Peters, G. F., & Turetsky, H. F. (2002). Corporate governance and corporate failure: a survival analysis. Corporate Governance: The international journal of business in society, 2(2), 4-12.
Rassid, A., & Abbas, Q. (2011). Predicting bankruptcy in Pakistan. Theoretical and Applied Economics, 9(562), 103-128.
Roomi, M. S., Ahmad, W., Ramzan, M., & Zia-ur-Rehman, M. (2015). Bankruptcy Prediction for Non-Financial Firms of Pakistan. International Journal of Accounting and Financial Reporting, 5(2), 26-37.
Senbet, L. W., & Seward, J. K. (1995). Financial distress, bankruptcy and reorganization. Handbooks in operations research and management science, 9, 921-961.
Sharma, B., & Gadenne, D. (2002). An inter-industry comparison of quality management practices and performance. Managing Service Quality: An International Journal, 12(6), 394-404.
Smith, M., & Graves, C. (2005). Corporate turnaround and financial distress. Managerial Auditing Journal, 20(3), 304-320.
Snow, C., & Hrebiniak, L. (1980). Strategy, Distinctive Competence, and Organizational Performance. Administrative Science Quarterly, 25(2), 317-336.
Spatareanu, M., Manole, V., & Kabiri, A. (2016). Bank Distress and Firm Performance during the Great Recession-Evidence from Ireland (No. 2016-001). Department of Economics, Rutgers University, Newark.
Tan, T. K. (2012). Financial distress and firm performance: Evidence from the Asian financial crisis. Journal of Finance and Accountancy, 11, 1.
Theodossiou, P., & Kahya, E. (1996). Non-Stationarities in Financial Variables and the Prediction of Business Failures. In Proceedings of the Business and Economic Statistics Section, American Statistical Association (pp. 130-133).
Wang, Z. J., & Deng, X. L. (2006). Corporate governance and financial distress: evidence from Chinese listed companies. The Chinese Economy, 39(5), 5-27.
Warner, J. (1977). Bankruptcy Costs: Some Evidence. The Journal of Finance, 32(2), 337-347.
Wruck, K. H. (1990). Financial distress, reorganization, and organizational efficiency. Journal of financial economics, 27(2), 419-444.