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Application Of Z-Score Model for Financial Health Checkup: Case Study on Selected Airways Companies

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ABSTRACT

Various stake holders such as bankers, financial institutions, investors, employees, government etc. need to know about the financial health of the business. Financial Analysis and Financial Statements are the two main tools which can help the future availability and utilization of the firm. For arriving at the conclusions about the financial health of any business, there are several tools available. Out of all of them ratio analysis is one of the most widely used tool. Despite ratio is a powerful tool, combining different ratios into a single measurement is not possible. Prof. Edward I. Altman has made an effort to combine these ratios into a single model. This model is popularly known as 'Z score model' which is used to predict financial health of the business. The present paper is based on the secondary data of the company. The researchers have attempted to apply Z score model to check the financial health of Spice Jet Airline and Jet Airways Ltd. Company. The analysis showed the correct position of Jet Airways Ltd. as bankrupt, and Spice Jet Airways lies in the Grey Zone.

Key Words: -Financial health, Ratio analysis, Single measurement, Z score, Airways Companies

INTRODUCTION

The success of any company depends on effective financial practices which starts from proper procurement of funds and ends by proper utilization of funds, this is possible when the financial activities of the firms are analyzed. Thus, financial planning, financial analysis and financial statements helps the firms to know the strength and weakness of the companies. So, after financial planning, financial analysis is the crucial step for a company to be successful. The main tool for financial analysis is the financial statements of the companies. Preparation of financial statements is an important task for any business. With the help of these financial statements, the business can communicate about several aspects about the financial health of the business. Various stake holders are interested in knowing about the financial health of the business. These stake holders can be classified into two categories viz. internal and external. Internal stake holders such as employees, executives, various levels of management use the financial statements for various purposes. External stake holders such as investors, credit agencies, government agencies, bank, financial institutions, other creditors etc. are interested in financial statements to know about the financial soundness of the business. In order to arrive at the conclusions about the financial soundness of the business the users of financial statements apply various tools of financial analysis such as comparative financial statements,



common-size financial statements, trend percentages, fund flow and cash flow analysis and ratio analysis. Out of all these tools of financial statement analysis, ratio analysis is the widely used tool because of its efficiency and effectiveness of arriving at the conclusions about the financial soundness of the business.

INTRODUCTION TO Z-SCORE MODEL

Z-Score Model has been established by Edward Altman in the 1960s, he was an assistant professor of finance at New York university during that period. The model was prepared by Altman based on the research work done by considering the data of banks and have provided the bankruptcy model. In his study he considered 22 ratios and finally stated or formed the model considering 5 ratios which help to measure bankruptcy of the firms. This model helps to evaluate the general trend in the financial health of an enterprise over a period. Many accounting ratios are used to know financial health of the enterprise. Edward Altman established Z-Score model, he combined many accounting ratios (liquidity, leverage, activity and profitability) to form an index of profitability. A lower score of Z-Score Models depicts higher odds of bankruptcy. The model helps to analyze the financial solvency status of the firms and helps to take correct decisions regarding not entering the solvency Zone or Distress Zone, with the help of parameters given by Edward Altman.

Edward has developed different Models for Different Business and Firms.

The original model was developed further to know the financial soundness and financial solvency status of the private firms.

TABLE- 1

Model	Parameters	Description
Z- Score Estimated for Private Firms $Z = 0.717 X_1 + 0.847 X_2 + 3.107 X_3 + 0.420 X_4 + 0.998 X_5$	Z > 2.9 Safe Zone	$X_1 = \text{Working Capital} / \text{Total Assets}$
	1.23 < Z < 2.9 Grey Zone	$X_2 = \text{Retained Earnings} / \text{Total Assets}$
	Z < 1.23 Distress Zone	$X_3 = \text{Earnings Before Interest and Tax} / \text{Total Assets}$ $X_4 = \text{Book Value of Equity} / \text{Total Liabilities}$ $X_5 = \text{Sales} / \text{Total Assets}$



REVIEW OF LITERATURE

Altman, E. (1968) has studied the theory of Traditional Ratio Analysis and Multiple Discriminant Analysis with the help of this method the researcher has developed Z-Score Model combining the ratios. The researcher has taken into consideration 66 corporations with 33 firms in each group. The researcher has analyzed the several factors which affect the firms. To measure the financial soundness the researcher has derived Z-Score Model. The researcher has reached the conclusion that discriminant ratio model proved to be accurate in predicting bankruptcy perfect in 94% of the sample of 1st 33 units and 95% of all firms in the bankrupt and non-bankrupt groups assigned to their actual group classification. The researcher also suggested the practical and theoretical implications of model. The researcher also told that the subject need to further researched and investigate the problems and even the model.

Pakdaman, H. (2018), the researcher in the paper titled “Investigating the ability of Altman and Springate and Zmijewski and Grover Bankruptcy Prediction Models in Tehran Stock Exchange” has researched with a motive to know which prediction model among Altman, Springate, Zmijewski or Grover will be best to predict the financial conditions of the companies listed in Tehran Stock Exchange. The researcher even wanted to know the financial status of the company and issue of the continuity of their activities. The research was also undertaken so that it can help the stakeholders to take better decisions. The researcher has taken into consideration the data of 35 companies from textile and ceramic industry group which have been listed on the Tehran Stock Exchange. The researcher has taken into consideration the data of 5 years to study and find the results which test will be best to prove the financial crises of the company. The researcher has considered the time period between 2011-2016 for the study. The researcher has collected the data from the financial statements of the company. The researcher has framed 8 hypotheses to further know which model can help to predict the financial crises of the companies. The researcher has used Correlation test to examine the significance of each bankruptcy Model and further have used multiple Linear Regression to find out the best fit Model. The researcher found that Grover Model was the best Model for forecasting financial crises in Tehran Stock Exchange. The researcher also suggested that Stock Exchange should be organized in order to provide the data as per Grover Bankruptcy Pattern and even auditors can use this model in predicting and commenting for the future continuity of the companies listed on Tehran Stock Exchange.

Panigrahi, A. (2019) the researcher in the paper titled “Validity of Altman Z Score Model is predicting financial distress of Pharmaceutical Companies” aims to examine the financial distress status and financial health of some selected pharmaceutical companies using Altman Z- Score Model. The researcher has taken



into consideration the data of 4 pharmaceutical companies for the study i.e. Aurobindo Pharma, Lupin Pharma, Dr. Reddy's Laboratories and Sun Pharma. The researcher has taken the data of 5 years for the study i.e. 2012-13 to 2016-17. The researcher has collected the data from annual reports and from the website moneycontrol.com. The researcher has used Z-Score Model to analyze the data. The researcher has done calculations as per Altman's Z-Score test for solvency Analysis. The researcher has even calculated average of the industry calculating upon 5 ratios that are considered in Z-Score Model. The researcher has calculated the average Z-Score of the pharmaceutical industry which shows that pharmaceutical industry is financially sound. The researcher also concluded saying that the highest average was of Dr. Reddy's followed by Lupin Pharma, Sun Pharma and lastly Aurobindo Pharma. The researcher also concluded that study shows Aurobindo Pharma was found in Distress Zone in 2013-14 than probably they were able to reach the safe zone by 2016-17. The researcher has also said that this research would be helpful to investors in making certain decisions on which they can decide the current and future position of the company. The researcher in the concluding remarks added that if the risk of default and bankruptcy increases when a firm adopts more aggressive working capital policies which shows that company may be facing bankruptcy and serious financial crisis.

Yadav, C. and Pallapothu, V. (2015) the researcher in the paper titled "Predicting Bankruptcy: An Empirical Study Using Multiple Discriminant Analysis Models" have researched on predicting the best MDA model which accurately predicts the bankruptcy. The researcher has analyzed the data using 2 MDA models – Altman Z-Score Model and Springate Model. The researcher also aims to find and help the users to make the right choice among the model to find the solvency status of the companies. The research was also undertaken with an objective to the analyze the dimension and to get an idea in which area improvement is needed. The researcher also wanted to find out whether healthy companies are performing significantly as compared to non-healthy companies using statistical tools. The researcher has considered a sample of 45 companies for the study. The researcher has collected the data from the financial statements of the companies. The researcher has considered the data of 5 years for the study. The researcher has used T-test to analyze the data. The researcher has performed T-Test on the values of Z-Score and Springate Score of healthy and Distress companies. The researcher concluded that Altman Z-Score is more conservative in nature.

Objectives of Present Research Paper

- 1) To study the solvency status of companies using Z-Score Model



- 2) To study the financial health of selected companies.

RESEARCH METHODOLOGY

To carry out the research work properly and systematically, it is necessary to prepare a research methodology first. In present research paper, following research methodology is used.

Title of the Study

The title of the study is as under

“Application Of Z-Score Model for Financial Health Checkup: Case Study on Selected Airways Companies”

Sample Size

The study is undertaken by considering the data of different companies associated with Airways Industry. The study includes data of SpiceJet Airways and Jet Airways Ltd.

Method of Data Collection

The researchers have used secondary data for the analysis. The details of different ratios are taken from www.moneycontrol.com. The details have been collected from the Annual Reports of the company. The researcher has considered the data of last 5 years for the study from 2014 to 2018.

Limitations of Present Research Paper

The main limitations of the present research project are.

- 1) The method of data collection is secondary, so the analysis has been done from the data that has been available in the financial statements of the company.
- 2) The data has been collected for 5 years only so the result is not applicable for coming years.
- 3) The outcomes are only available for the above companies and not the other companies.



Analysis and Interpretation

Z-SCORE ANALYSIS

TABLE – 1

A table showing calculation of Z-Score of SpiceJet Airways

Z Score = 0.717X₁+0.847X₂+3.107X₃+ 0.420X₄+ 0.998X₅						
Year	0.717X₁	0.847X₂	3.107X₃	0.420X₄	0.998X₅	Z Score
2014	-0.513	-0.458	-0.933	0.057	2.107	0.260
2015	-0.527	-0.720	-0.708	0.065	1.977	0.087
2016	-0.490	-0.487	0.541	0.065	1.750	1.378
2017	-0.425	-0.342	0.461	0.070	2.023	1.786
2018	-0.378	-0.132	0.485	0.060	1.859	1.894

TABLE – 2

A table showing calculation of Z-Score of Jet Airways Ltd.

Z Score = 0.717X₁+0.847X₂+3.107X₃+ 0.420X₄+ 0.998X₅						
Year	0.717X₁	0.847X₂	3.107X₃	0.420X₄	0.998X₅	Z Score
2014	-0.778	-0.258	-0.732	0.002	1.828	0.062
2015	-0.708	-0.399	-0.103	0.002	1.876	0.668
2016	-0.591	-0.282	0.546	0.002	1.885	1.561
2017	-0.493	-0.608	0.384	0.002	2.148	1.433
2018	-0.409	-0.499	-0.053	0.002	1.782	0.823

Table – 3

A Table Showing Overall Interpretation of Z- Score

Year	2018	2017	2016	2015	2014
SpiceJet Airways	1.894 (Grey Zone)	1.786 (Grey Zone)	1.378 (Grey Zone)	0.087 (Distress Zone)	0.260 (Distress Zone)
Jet Airways Ltd.	0.823 (Distress Zone)	1.433 (Grey Zone)	1.561 (Grey Zone)	0.668 (Distress Zone)	0.062 (Distress Zone)



MAJOR FINDINGS

- From the present study the researchers found that among the 2 selected companies both companies lie in grey zone and distress Zone.
- It was found by the researcher that both companies are not financially sound.
- It was found that with help of Z-Score Model that Jet Airways Ltd is in distress zone means is it Bankrupted.

CONCLUSION

From the present research work we can conclude that the Z-Score Model is very precise in finding the bankruptcy stage of the company. From the above results it was found that Jet Airways Ltd. which is already bankrupt the model shows it is in distress Zone and Spice Jet Airways which had been in bankruptcy stage during 2014 and 2015 is already proved by the model even gradually the financial position of company is improving so the status of company lies in Grey Zone.

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