

Predicting Financial Insolvency of Listed Power Generation/Distribution Companies in India Using Z– Score

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Abstract: *The key to the global competitiveness of Indian economy lies in building a high-class infrastructure” such as transportation, communication and power, facilitates the growth of economic activities to contribute national or state GDP through Revenue mobilization. The study attempts to evaluate the financial health of power generation/ distribution utilities listed operating in India. The study is quantitative in nature. It attempts to examine the financial health of the power generation/ distribution utilities listed in money control. Secondary data is used for the study. It covers a sample of 19 power generation/distribution utilities listed in India using Z score. The study found that most of the sample companies are falling in the distress zone. Hence there is a urgent need for the management of the company to examine and reduce the financial distress of the firms*

Keywords: *Z-Score, Financial Analysis, Discriminate Analysis, Bankruptcy.*

I. Introduction

Power generation/ Distribution is one of the major requirements for sustainable and inclusive economic growth is an extensive and efficient infrastructure network in any economy. Indeed it is very important for the effective functioning of the economy and industry. In Abstract of Economic survey 2010-11, it is quoted that “The key to the global competitiveness of Indian economy lies in building a high-class infrastructure” such as transportation, communication and power, facilitates the growth of economic activities to contribute national or state GDP through Revenue mobilization (The Economy of Andhra Pradesh, 2007-08). Therefore, power generation and distribution is a primary requirement to drive the overall development of the Indian economy. Here when we talk about power sector we refers to power generation and distribution utilities. Unavailability of electricity will lead to low production, hence low trades and business. The requirement of power does not restrain to only business entities or domestic consumers, but also requires for agricultural and other purposes.

II. Literature Review

The literature has thrown light on few research works on financial health using z score analysis.

Gowri&Sekhar (2014) have measured the financial health of automobile companies in India for the period of 2003-04 to 2011-12. The study applied Altman’s Z-Score to measure the financial condition of select sample. The study found that companies are in safe zones, but there overall performance of the company has decreased during the study period. The author recommended that the companies maintain consistency in performance.

Pradhan, R (2014) have predicted the bankruptcy of banking sector using Z score method. A sample of three public sector banks namely Oriental, SBI & PNB has been considered for the study. The financial data for the period of 2000 to 2009 was taken for the study. The analysis suggests that the Z score value of Oriental Bank of Commerce is the highest amongst the mentioned three banks.

Pardeshi, b. &Thorat, H. (2015) evaluating the financial health of five central public sector enterprises in India by applying Z Score model. The data was collected from PSU index of BSE for the period of 2010-2013. The study found that that ONGC, BEL and RCF are in gray zone indicating that the solvency level is medium whereas the SAIL and NTPC are in distress zone indicating the companies are near bankruptcy.

Rajasekar, T; Ashraf, S &Deo, M (2014) have attempted to study the financial distress of Indian Navaratna companies during the period 1995 to 2012. Data related to financial ratios was collected from CMIE database. The study found that six out of fourteen Navaratna companies were financially sound throughout the years, but the remaining eight companies were found to be financially weak for few of the years. Therefore it is suggested the Companies which are in distress should improve their performance.

Objective of the study

To evaluate the financial health of power generation/ distribution utilities listed operating in India.

III. Methodology:

The study is quantitative in nature. It attempts to examine the financial health of the power generation/distribution utilities listed in money control. Secondary data is used for the study. It covers a sample of 19 power generation/distribution utilities listed in India. The list of companies used for the study is listed in Table 1. The data is procured from money control. Altman's Z Score is used to analyze the financial statements of the companies. Excel 2007 has been used to analyze the data.

Table 1: List of listed Power Generation/ Distribution Companies in India.

S.No.	Companies	S.No.	Companies
1	Tata Power	11	GVK Power
2	Reliance Infra	12	Rattan Power
3	CESC	13	BF Utilities
4	Reliance Power	14	Rattan Infra
5	Adani Power	15	KSK Energy Vent
6	JSW Energy	16	Energy Dev
7	Torrent Power	17	Advance Meter
8	Suzlon Energy	18	S E Power
9	Jaiprakash Pow	19	Suryachakra Pow
10	Schneider Infra		

Source: Money Control, 2017

Altman's Z -score

Ed Altman has developed Z-Score model in the year 1968. The idea was to develop a tool that can identify the bankrupt and non bankrupt companies using a statistical test. Initially in his study, he used 22 financial ratios and found that five ratios were in fact leading to predicting firms that go into bankruptcy. Hence the five ratios namely, 1. Working capital / total assets, 2. Retained earnings / total assets, 3. EBIT/Total Assets, 4. market value of equity/total liabilities and 5. sales/total assets predict corporate bankruptcy.

According to Ijaz & et al, (2013), Altman Z-Score is the most efficient model to judge the financial failure of the companies and it is a way to measure and monitor financial performance by analyzing specific financial ratios for a given company (Tracy, P & et al, 2013).

The original model to calculate the Z score for public manufacturing companies is as follows:

$$\mathbf{Z\text{-Score} = 1.2A + 1.4B + 3.3C + 0.6D + 0.999E}$$

Where:

A = working capital / total assets

B = retained earnings / total assets

C = earnings before interest and tax / total assets

D = market value of equity / total liabilities

E = sales / total assets--- asset turnover ratio

Data Analysis and Interpretation:

Working Capital to Total Assets:

This ratio is a measure of firm's liquidity to meet financial obligations and further indicate shows allocation of company assets into liquid and non liquid assets. A higher ratio indicates stronger financial position. The Table 2 shows the distribution of working capital to total assets in sample companies. The mean value of working capital /Total assets is -0.03. Among the sample companies, ten companies are having either negative balance whereas the other sample companies are having very low working capital to total assets. It indicates that these companies are facing inability to maintain appropriate working capital in proportion to total assets.

Retained Earnings to Total Assets:

Retained Earnings to Total Assets is a measure the extent to which a company relies on debt, or leverage. It is a measure of cumulative profitability over time as a proportion of total assets. The Table 2 shows that the mean retained earnings on total assets is 0.21. It is important to check if the retained earnings balances are used includes all shareholder reserves.

Descriptive analysis

	WC/TA	RE/TA	EBIT/TA	MVE/TL	SALES/TA
TATA POWER	-0.23	0.38	0.08	0.77	0.28
CESC	0.03	0.30	0.07	1.18	0.32
RELIANCE INFRA	0.12	0.53	0.07	0.53	0.27

RELIANCE POWER	0.01	0.31	0.04	0.57	0.11
ADANI POWER	-0.16	0.06	0.04	0.38	0.29
JSW ENERGY	-0.03	0.27	0.12	1.25	0.39
TORRENT POWER	0.05	0.32	0.08	0.66	0.43
SUZLON ENERGY	-0.08	-0.17	-0.09	2.22	1.08
JAI PRAKASH POWER	-0.10	0.10	0.05	0.20	0.09
SCHNEIDER INFRA	0.03	0.08	0.00	2.55	1.11
GVK POWER	-0.11	0.08	0.02	0.07	0.10
RATTAN POWER	-0.07	0.14	0.01	0.13	0.05
BF UTILITIES	0.07	0.02	0.08	0.78	0.13
RATTAN INFRA	0.05	0.58	0.00	0.75	0.00
KSK ENERGY VENT	-0.08	0.11	0.03	0.11	0.12
ENERGY DEV	-0.03	0.23	0.03	0.51	0.15
ADVANCE METER	0.26	0.70	-0.02	0.65	0.08
S E POWER	0.04	0.07	-0.02	0.88	0.07
SURYACHAKRA POW	-0.26	-0.12	-0.12	0.10	0.38
Mean	-0.03	0.21	0.02	0.75	0.29

EarningsbeforeInterest &Tax to Total Assets:

It is a measure of the productivity of the firm's assets, independent of any tax or leverage factors. It refers to the current profitability in proportion of the total assets. The Table 2 shows that the mean earnings before interest and tax to total assets is 0.02, indicating that the ratio is very negligible. Therefore it can be inferred that the current profitability in proportion to total assets is very low and negligible.

Market Value of Equity to Total Liabilities

Market value of equity to total liabilities refers to relationship between equity and total liabilities. It indicates that how far the assets of the company decline before the business becomes insolvent. The Table 2 shows that the market value of equity to total liabilities was 0.75.

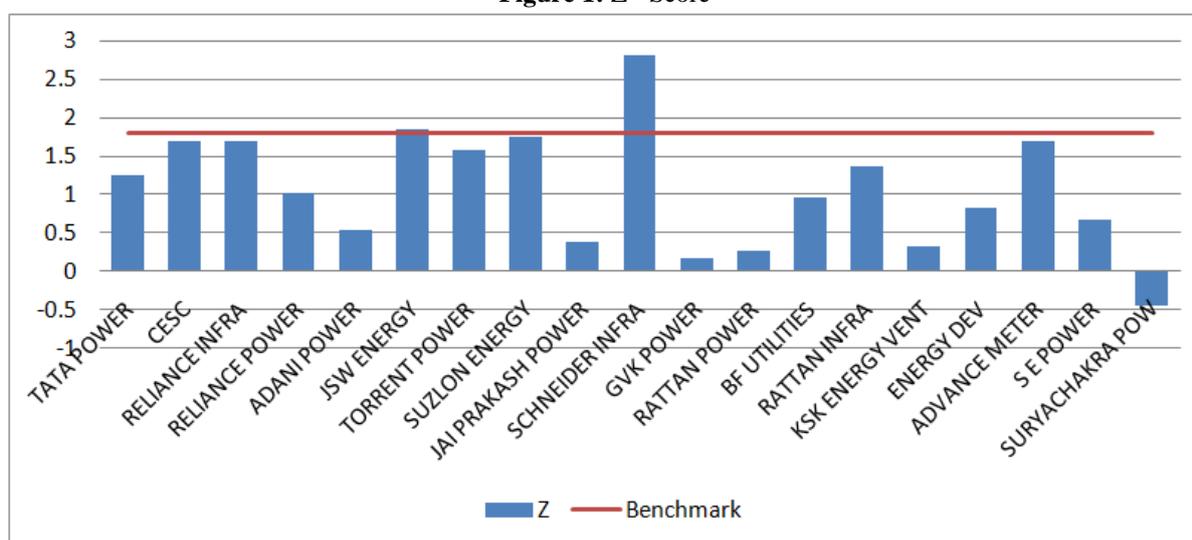
SALES to Total Assets

It is a measure of efficiency with which a company is organizing its assets in generating revenue. It helps us to identify how much sales are generated per dollar of assets. A higher ratio indicates better performance on path of the company. The Table 2 shows that the sample mean of sales to total assets is 0.29.

Z - Score Analysis:

The Table 2 shows the values of Z score to interpret the health of different sample companies. In case the z score is greater than 2.99, then the companies are labeled in safe zone, whereas the companies whose z score lies between 1.81 and 2.99 are labeled as gray zone. The companies whose z score is below 1.81 are termed as distressed companies. Therefore these companies should improve their financial health to avoid bankruptcy. The main idea of the study is to find the companies which lie in "distress zone" and identify the reasons for distress.

Figure 1: Z - Score



The figure 1 shows the “Z score values” of sample of 19 power generation/distribution utilities listed in India. Excluding three companies namely Schneider Infra, Suzlon Energy and JSW Energy, all other sample utilities are in distress zone. In case the sample companies are having ZScore less than 1.81, then there failure is certain and probably turn into bankruptcy within next two years. The study found that most of the sample companies are falling in the distress zone. Hence there is an urgent need for the management of the company to examine and reduce the financial distress of the firms.

IV. Conclusion:

In the present era, development and modernization are forcing heavy competition in the economy. It is not possible without establishment and proper functioning of power generation/ distribution companies. Indeed, these companies are driving forces for developing the entire economy. To measure financial distress, Z score is used. The companies with low Z score indicates that these companies are in distress. Among the sample companies, it is found that most of them are in distress zone. It is suggested that the management of the these companies, attempts to understand the root cause of the problem and find a solution that is amicable to respective firms.

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