Evaluating the Financial Health of the Selected Indian Steel Companies by Applying Altman Z Score Model

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Abstract

In India, the steel industry is one of the most important industries. It is to be seen among many other industries as the backbone. It supplies raw material for many other sectors and creates jobs for people in the country as well. The growth of such an industrial sector is therefore very significant for the public as well as for the economy. This study aims to assess financial health by using an Altman Z Score Model and to predict the chances of bankruptcy of selected steel businesses in India. For the purpose of the study five companies were selected. The present analysis is based on secondary data, covers the 5-year period from 2015-16 to 2019-20. The analysis indicated that Jindal Steel, Tata Steel BSL, and SAIL's financial health was very poor throughout the study period, and they were in distress zones. In 2017-18 & 2018-19 the z score for JSW Steel and in 2017-18, for the Tata Steel company stood at over 1,81 but less than 2,99 and hence in that period they were located in the Grey area. In short, it can be inferred that during the study period the financial health of all the tested enterprises was quite weak. It is recommended that the management of these companies take remedial measures to improve their financial condition; otherwise, there is a high risk of bankruptcy in the near future.

Key Words*: *Financial Health, Altman Z Score, Bankruptcy, Indian Steel Companies etc.

I. Introduction:

India is one of the world's most rapidly developing economies. Many sectors contribute to India's economic growth. Among many companies, the steel industry is considered a backbone. Steel is a raw material for most other businesses of the economy. Steel consumption per capita in all countries is considered as a key indicator to measure socio-economic growth and livelihood (R & G, 2019). India is the second highest steel manufacturer in the world [in producing cured steel] (India ranks as second largest steel producer of crude steel: Dharmendra Pradhan, 2021). In the Indian Steel Industry, there are several steel businesses. They serve several other sectors with raw materials and also provide employees with both direct and indirect job chances (R & G, 2019). And thus, for people as well as for the economy, this industry's expansion is really vital. The success of each organization, as finances are a base for all

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commercial activity, can be judged by its effective financial performance. This study therefore mainly aims to measure Indian Steel Companies' financial performance by employing the Altman Z score.

II. Review of Literature:

Sr. No.	Author(s)	Year	Title	Findings
1.	(Chavali & KARTHIKA)	2012	Application Of Z Score Analysis In Evaluating Steel Industry In India	The study revealed that, with the exception of two firms, the steel industry functioned well financially despite the impact of low demand and a global slowdown throughout the study period..
2.	(Gupta & Gopalkrishan)	2019	Bankruptcy Prediction For Steel Industry In India Using Altman Z Score Industry In India Using Altman Z Score	The study showed that only two out of ten companies were in the safe zones. Two large scale companies were in the distress zones during the study period.
3.	(Apoorva, Curpod, & Narmatha)	2019	Application of Altman Z Score Model on Selected Indian Companies to Predict Bankruptcy	It was revealed that the Altman Z score model is approximately 85 percent accurate and useful three years prior to the occurrence of the bankruptcy event.
4.	(Gnyana)	2015	Prediction of financial distress using Altman Z score: a study of select FMCG Companies	The analysis showed the solid financial condition of the z score for all selected undertakings over the study period. It is also recommended that organizations frequently estimate Z-score to plan for

				financial health improvement.
5.	(Saini)	2018	Evaluation of Financial Health of RCFL of India through 'Z' Score Model	The statistical research has shown that RCFL's profit-making and short-term investment capacities were weak and in danger zones during the study period.

III. Research Methodology:

- **Objectives of the Study:**
  - To evaluate the financial performance of the selected Indian Steel Companies.
  - To predict the chances of bankruptcy of the selected Steel Companies in India.
- **Research Design:**

  The present study is based on Descriptive Research Design.

- **Sampling Method & Sample Size:**

  A convenience sampling method is used for the aim of the study. Five Indian Steel Companies are selected namely Tata Steel, Jindal Steel, JSW Steel, SAIL, and Tata Steel BSL.

- **Source of Data:**

  The study is based on secondary data sources. This means that data from different publications, articles, research papers, websites and annual reports of the sampled companies have been collected.

- **Time period of the study:**

  The present study covers the time period of the five years i.e. from the year 2015-16 to 2019-20.

- **Tools & Techniques:**

  In order to study and predict the financial health of the selected steel companies in India Altman Z Score Model is applied.

- **Z Score Model:**

The Zscore approach for predicting bankruptcy was published in 1968 by Edward I. Altman, assistant professor at New York University. In academic studies, Z scores are utilised for predicting company defaults and are easy to calculate financial crisis mitigation strategies. It calculates the company's financial condition with different corporate incomes and balances sheet values (Altman, Financial ratios: Discriminant analysis and the prediction of coporate Bankruptcy, 1968). The following formula is given by the Altman (for public manufacturing companies):

$$\boldsymbol{Z = 1.2x1 + 1.4x2 + 3.3x3 + 0.6x4 + 1x5}$$

Where,

$x1$: $Working\ Capital\ to\ Total\ Assets$

$x2$: $Retained\ Earnings\ to\ Total\ Assets$

$x3$: $Earnings\ Before\ Interest\ \&\ Tax\ to\ Total\ Assets$

$x4$: $Market\ value\ of\ Equity\ to\ Total\ Liabilities$

$x5$: $Sales\ to\ Total\ Assets$

Dr. Edward Altman has defined the significant of each variable as under:

X1= Working Capital/Total Assets:

It compares the company's current liabilities to its overall assets. It represents the amount of current liabilities covered by total assets and hence measures the company's liquidity situation. The higher the ratio, the greater the liquidity for the company and the safer it is in comparison to low liquid ratios. A low ratio indicates that the company's total assets are insufficient to cover current liabilities, putting its liquidity at danger.

X2 = Retained Earnings/Total Assets

This figure displays how much the company depends on debt or leverage to finance its resources. The ratio refers to the profitability of a corporation as a proportion of total assets. The higher the ratio, the higher the company's dependence on loans to finance its resources. If the company has a high ratio, a large share of its resources is financed by retained profits.

X3= EBIT/Total Assets

This ratio calculates the company's ability to profit as a proportion of total assets without accounting for interest and tax. It evaluates the efficiency of assets for profit generation. The return on total assets shows the amount of money generated for every invested rupee.

X4 = Market Value of Equity/Total Liabilities

This ratio calculates the company's market value as a percentage of total liabilities. It depicts the market's reaction to the company's financial status. To a considerable part, a company's survival is determined by its market capitalization. It determines how much the market value of stock can fall before the obligations outweigh the assets. This ratio is significant since it reflects the general customer and investors and is not solely based on fundamentals.

X5 = Sales/Total Assets

It is also known as the asset turnover ratio since it evaluates a company's ability to generate sales for every rupee invested in assets. It reflects the company's efficiency in generating money through the use of its assets. The higher the ratio, the better for the company and indicates a more consistent character. The lower the ratio, the more vulnerable the company is since it is unable to maximize the utilization of its assets for revenue generation.

Categories of Companied based on Z score:

The companies can be classified into three categories on the basis of Z Score as under:

Z Score	Zones
Less than 1.81	Distress Zone
Between 1.81 to 2.99	Grey Zone
More than 2.99	Safe Zone

(Source: (Altman, 2005))

IV. Results & Findings:

Table 1: Z score of Jindal Steel

Year	X1	X2	X3	X4	X5	Z Score	Zone
2019-20	-0.069	0.401	0.059	0.244	0.443	1.263	**Distress**
2018-19	-0.117	0.389	0.065	0.326	0.476	1.289	**Distress**
2017-18	-0.098	0.378	0.034	0.320	0.281	0.997	**Distress**
2016-17	-0.092	0.361	0.014	0.288	0.223	0.838	**Distress**
2015-16	-0.114	0.379	0.005	0.230	0.206	0.755	**Distress**

(Source: Computed by the researcher from the secondary data)

The above table shows the calculated Z score of the Jindal Steel from the year 2015-16 to 2019-20. It is observed that the financial position of the company is poor during the year 2015-16 to 2017-18 and it is in Distress Zone. However, the financial position has been improved up to some extent in the year 2018-19 and 2019-20 but not much and still it is in the Distress Zone.

Table 2: Z score of JSW Steel

Year	X1	X2	X3	X4	X5	Z Score	Zone
2019-20	-0.0510	0.3119	0.0788	0.2897	0.5127	1.322	**Distress**
2018-19	-0.0725	0.3220	0.1442	0.6594	0.7001	1.936	**Grey**
2017-18	-0.0696	0.3227	0.1274	0.8142	0.7456	2.023	**Grey**
2016-17	-0.1029	0.2939	0.1084	0.5619	0.6376	1.620	**Distress**
2015-16	-0.1134	0.2736	0.0522	0.4220	0.4925	1.165	**Distress**

(Source: Computed by the researcher from the secondary data)

The table 2 depicts the result of Z score for the JSW Steel Company during the study period. The calculated Z score for year 2015-16 and 2016-17 is 1.165 and 1.62 respectively. The Z score during that period is less than 1.81 and therefore the company is in the Distress Zone which indicates the poor financial health of the company. It is also observed that the financial position of the company is quite satisfactory during the year 2017-18 and 2018-19 and it is in the Grey Zone. But in the year 2019-20 the Z score is 1.322 which is less than 1.81 and that implies poor financial health and the company is in the Distress Zone during 2019-20.

Table 3: Z score of Tata Steel

Year	X1	X2	X3	X4	X5	Z Score	Zone
2019-20	-0.0722	0.4882	0.0754	0.3036	0.3036	1.331	**Distress**
2018-19	-0.0622	0.5041	0.1394	0.4460	0.4460	1.805	**Distress**
2017-18	0.0722	0.4825	0.1024	0.5471	0.5471	1.975	**Grey**
2016-17	-0.0264	0.4368	0.0785	0.3538	0.3538	1.405	**Distress**
2015-16	-0.0541	0.5641	0.0744	0.2288	0.2288	1.337	**Distress**

(Source: Computed by the researcher from the secondary data)

The above table represents the calculated Z score for the Tata Steel from the year 2015-16 to 2019-20. During the year 2015-16 and 2016-17 is 1.33 and 1.40 respectively and it is lee than 1.81 and therefore, it is in the Distress Zone. The Z score for the year 2017-18 is 1.975 which is more than 1.81 but less than 2.99 which indicates the improvement in the financial position of the company and it is in the Grey Zone. But again in the year 2018-19 and 2019-20 the performance of the company goes down as the Z score during such period is less than 1.81 and it is in the Distress Zone.

Table 4: Z score of Tata Steel BSL

Year	X1	X2	X3	X4	X5	Z Score	Zone
2019-20	0.374	0.004	0.025	0.075	0.444	1.026	**Distress**
2018-19	0.476	0.020	0.063	0.092	0.502	1.364	**Distress**
2017-18	-8.404	-0.655	0.013	0.040	0.411	-10.525	**Distress**
2016-17	-3.752	-0.021	0.022	0.019	0.219	-4.230	**Distress**
2015-16	-4.180	0.037	0.007	0.021	0.189	-4.741	**Distress**

(Source: Computed by the researcher from the secondary data)

It can be observed from the above table in the initial three years of the study the Z score of the company is negative which suggests that the financial health of the company is very during that period and it is in the Distress Zone. In the year 2018-19 and 2019-20 the performance of company is slightly increased but not satisfactory and the Z score for both the period is less than 1.81 and as per the model the company is in the Distress Zone.

Table 5: Z score of SAIL

Year	X1	X2	X3	X4	X5	Z Score	Zone
2019-20	-0.032	0.285	0.059	0.132	0.488	1.124	**Distress**
2018-19	-0.080	0.292	0.059	0.242	0.569	1.223	**Distress**
2017-18	-0.121	0.277	0.018	0.279	0.498	0.967	**Distress**
2016-17	-0.195	0.299	-0.020	0.207	0.412	0.656	**Distress**
2015-16	-0.144	0.349	-0.047	0.232	0.384	0.684	**Distress**

(Source: Computed by the researcher from the secondary data)

Table 5 depicts the calculated Z score for the SAIL during the time period of the study. It can be observed from the above mentioned table that the financial performance of the company during the year 2015-16 to 2017-18 is very week as the company's Z score during such period is even less than the 1 and hence the company is in the distress zone. After 2017-18, some improvement in the financial position of the company as the Z score is improved but the still the company is in the distress zones.

V. Conclusion:

The steel industry is one of India's most important industries due to its forward and backward links with many other sectors such as transportation, building, and so on. Any organization's success is dependent on its ability to manage its finances effectively. The study's main goal is to assess the financial performance and predict the likelihood of bankruptcy of the selected Indian steel companies. For the aim of the study, the researcher has chosen five Indian steel companies. The researcher has selected five Indian Steel Companies for the purpose of the study. Data from the year 2015-16 to 2019-20 have been analyzed by applying Altman Z Score Model.

It has been discovered that Jindal Steel, Tata Steel BSL and SAIL's financial performance for the whole study period is very low, according to the results of the Altman Z score model. In the case of JSW Steel, throughout 2017-18 and 2018-19 the financial health was fairly good because the Z score in that period amounted to more than 1,81. But the company is in the distress zone during the remaining duration of the research. The financial health of Tata Steel is similar, as indicated by the Model, with the exception of 2017-2018. The financial health of the company is low. It may therefore be stated that over the majority of the research period, the financial performance of all the enterprises studied is very low. And hence, it is advisable to the management to take necessary and corrective steps to improve the financial health, otherwise there are high chances of bankruptcy.

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