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Impact Of Financial Health On Firms' Value Of Steel Industry In India

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Abstract

The financial health of a firm plays a crucial role in determining its market value, operational efficiency, and long-term sustainability. This study examined the impact of financial health on the value of firms in the Indian steel industry,for a period of twelve years from 2013-14 to 2024-25 using Z-Score. It is an essential sector contributing significantly to the country's economic development. Since the implementation of the LPG (Liberalization, Privatization, and Globalization) policy in 1992, the Indian steel industry has undergone substantial transformation, with increased competition, foreign investment, and capital market participation. The findings suggest that firms with strong financial health exhibit higher market value, better investor confidence, and improved growth potential only for JSL Steel.So the companies seriously look into the matter and try improve the health condition to bring the companies into the safety zone.

Key words: Market capitalization, Financial health, Firm value, Steel industry.

Introduction

Indian economy has seen remarkable development especially after 1992, in which The LPG policy adopted, and is in a position to attract funds from other countries. This policy opened up the markets to a large extent. Businesses carryout more number of activities and earn profits for all the associates. It leads to equal competitions among industries developed. It should be faced effectively by the organizations. Any organization, to work effectively, need free flow of funds. Required funds are needed to carry out the transactions, meet commitments in time and so on. If an organization is not in a position to meet its commitment on time it leads to business stress. The success of the company is highly dependent on its financial health. Competition can be faced efficiently with consistent financial health. It is necessary that every business needs to assess the financial health of a company continuously and to know how to enhance

it in order to remain competitive and expand as an organization. A company's ability to withstand in the market depends on its financial situation. It becomes very difficult to survive for a very long term without the element of profitability. Thus, it can be said that the importance and maintenance of financial health is necessary.

Financial health for businesses refers to the state of ability to remain economically viable, sustain operations, and grow. It measures the business's stability, solvency, and profitability. Assessing financial health is vital for businesses, as it helps for decision-making, indicates the effectiveness of business strategies, helps secure loans or investments, and ensures the business to meet its commitments. When these conditions are not met it is case of Financial distress. Distress is a condition of financial difficulties like insufficient e cash flows to meet its current obligations and which causes increased business risk. Financial distress usually emerges with increasing liquidity pressures and then continues in the form of diminishing assets, the inability of the company to meet its financial obligations and dragging the company into bankruptcy.

Review of Literature

Mizan and Hossain (2014) examined the financial health of listed firms in the cement industry of Bangladesh by taking data from 2006 to 2010 using Z-score model for the empirical analysis. The study revealed that two firms viz., Heidelberg Cement and Confidence Cement have come under the Green Zone. The remaining three firms' health did not sound good and Meghna Cement is in the grey area and the other two located in the distress zone. **Rooh Ollah Arab and Georgee (2014)** have examined the Financial Strength of the identified units in the steel industry in India in terms of short-term solvency and long-term solvency for 10 years from 2003-04 to 2012-2013. The study used current ratio, quick ratio, absolute liquid ratio, debt-equity ratio, total assets to debts ratio, long-term debt to net working capital, proprietary ratio, fixed assets to net worth ratio, and interest coverage ratio to assess short term solvency. Long-term solvency was measured with ratios Debt-Equity Ratio, Total Assets to Debt Ratio, Long-Term Debt to Net Working Capital, Proprietary Ratio, Fixed Assets to Net worth Ratio and Interest Coverage Ratio. It was concluded that the performance of all the ratios was satisfactory. **Ahmed and Alam (2015)** carried out a study to assess the bankruptcy risk of 15 commercial banks with the help of Altman Z-Score. It is revealed that most of the banks have lower Z- Score such as 1.81 or less than 1.81 and they belong to the distress zone. The stdy also indicated that out of the sample taken for the study, 7% of the total banks only good financial position in 2009. It found financial position of the selected banks was gradually deteriorating and no banks falls in the safety zone after 2011. **Dr. Chetana R Marvadi (2016)** investigated the financial health of selected Steel companies in India with special reference to Tata Steel Ltd., JSW Steel Ltd., Jindal Steel Ltd., and SAIL for 7 years from 2008-09 to 2014-15. The Z-Score as calculated showed that the financial position of SAIL, Tata Steel Ltd., and JSW Steel Ltd. were satisfactory and the financial position

of Jindal Steel Ltd. was not good and efforts are needed to increase the score. The study concluded that the overall financial health of the sample companies was satisfactory during the study period. **Mahesh and Ranjithkumar (2019)** have analyzed the fiscal performance of the selected PSU steel companies in India which struggled to sustain Industry growth. The financial health of seven selected PSU companies are predicted through Altman's Z- score and found that five variables that contribute to the Z score to assess the bankruptcy measurement Gross current assets after paying liabilities have been the main cause for the low level of Z score. **Angela Dirman** tried to provide understanding and knowledge to the public, especially investors and creditors about the effect of profitability, liquidity, leverage, company size, and free cash flow on financial distress of companies listed on Indonesia Stock Exchange (IDX). The analysis was carried out on secondary data taken from the financial statements of the selected companies. T-test, the classic assumption tests which includes normality test, multi-collinearity test, heterokedasticity test, and autocorrelation test were used for the analysis. The results indicated that profitability has a positive effect on financial distress; liquidity, leverage, and free cash flow variables do not effect financial distress; and firm size variable had a negative effect on financial distress. **Giuseppe Festa, Matteo Rossi, Ashutosh Kolte and Luca Marinelli(2021)** investigated the financial structures of the top five pharmaceutical companies in India to determine their financial soundness and the existence of risk of bankruptcy and the role of intellectual capital (IC) to financial stability. The study used operating ratios, profitability ratios, possibility of bankruptcy (through Z-scores) and attractiveness of the financial structure (through the F-score), with consequent focus on IC. The study found that the financial structure was stable for the selected companies. They are required to consider the impact of IC carefully in case of patent issues to enhance innovation capabilities and overcome international competition. **Venkata Mrudula Bhima Varapu et., al(2023)** investigated the influence of competition on financial distress (FD) in the healthcare industry using the Altman Zscore values as the proxy for FD using secondary data from ten healthcare companies operating in India between 2016 and 2020. The study indicated a significant negative relation with the exogenous variables of the study, implying that a higher level of competition enhances a firm's FD or adversely affects financial health. **Sachin Singh, Dr Pradeep Kumar Singh and Sanjay Kumar(2023)** analysed the financial health and soundness of the company STFC by determining the healthy zone and financial position for the period 2011-12 to 2021-22 to determine the financial health of the company using Multiple discriminant analysis (MDA) and suggested measures to improve the financial position of the company in future. **Md. Rezaul Karim et., al.** studied the impact of COVID-19 on the liquidity and financial health of the listed banks in Bangladesh using Liquidity ratios to measure the liquidity condition of the banks and revised Altman's Z-Score Model for non-manufacturing companies to measure the financial health. The ratios are compared before and during the COVID-19 periods to assess the impact and indicated a deterioration of liquidity position and financial health of the listed banks after the emergence of this pandemic.

Statement of the Problem

The existence of uncertainty in business does not guarantee existence of firms by overcoming difficulties. Permanence or stability is very difficult for firms and survival becomes the prime concern for all the business houses. The durability or existence of firms involves activities like financial investments, funding, capacity building, expansion and others. In every business, either it is manufacturing, service or investment, feasibility of business activities is very important. In fact, this is affected by many causes due changes in the environment and it is also difficult to predict such changes that affect the business and prospects. So maintaining financial soundness is necessary for the organizations to survive. This raised the interest researcher to study financial health of steel companies to answer the following question.

Are steel companies financially sound and is there any relationship of health status on the firms, value?

Scope of the Study

India possesses abundant mineral resources, so it primarily attracts steel companies. The prices of coal, mineral extraction will vary time to time. It will have direct impact on business operations. These changes will reflect in performance of business by means of impact on operational efficiency, profitability and others. This in turn affects the share prices of the firms in the market which is closely monitored by the investors along with the risks associated with it. They look into the financial health and its effect on the firms' value in the market. This information helps different people who are associated with the firm in various capacities like managers, policy makers, investors and others to gain understanding on financial health of firms enabling them to take effective decisions in their own areas.

Based on this background, the researcher had interest in knowing the health of the firms through performance of steel companies in India. Steel industry plays important role for the development of any economy. Steel is the basis for different business activities like engineering industry, railways, construction etc., as steel is the prime raw material for these industries in some form or other. Moreover, the significance of steel can be understood from the fact of socio-economic development and living standard of the people based on per capita steel consumption in a country. The success of these kinds of business depends on the efficient management of its resources. Analysis of financial health helps to highlight the strength, weaknesses and other financial aspects of the company.

Tools used

Different suitable tools are available for its prediction. Business houses use such tools to predict such volatility for early prevention and one such tool is Edward Altman's Z-Score Model. This model gained its popularity from 1985 onwards. It measures the financial health of the firms using multivariate formula. The model measures almost all the aspects of performance of a business like relative liquidity, longevity,

operating profitability, leverage, solvency and productivity. It gives clear conclusion and avoids judgement bias and is reliable. Multiple regression analysis was used to assess the impact of Z-Score on the value of the firm.

The iron and steel industry in India also needs to understand its prosperity to avoid any kind of difficulties and ensure effective utilization of firm's resources to maximize its earnings by carrying out testing and studying different aspects of performance continuously.

Population and Sampling for the Study

The population included steel companies in India which were listed on the Bombay stock exchange at the time of the study

As a study cannot be carried out on the total population on account of various reasons like length of the period, time consumption, cost involved and so on, a few companies were decided to represent population to examine characteristics which inferred the characteristics to the entire population (Greenbaum, Templeton, & Bar-David, 2009). The sample for the study was taken from the population steel companies that are listed in the Bombay Stock Exchange using three criteria viz., the first factor was the observation period for which the study was conducted and it covered a period 12 years from 2013 to 2025. The second factor was the listing of the company in the Bombay Stock Exchange during the observation period and the third criteria was that the said company belongs to steel industry with high market capitalization.

Research Design

Research design refers to a strategy used to carry out a particular work i.e., finding answer to the questions by the research to solve a problem. This intends to connect empirical data, research questions and conclusion. It also decides the arrangements required and speak about the direction within which data can be collected and analysed.

Quantitative method, used in the present study, involves objective measurement of variables and data and determining tools either statistical or mathematical for analysis of data collected. The present study was carried out to assess the financial health and its impact on fims' value. This was examined by using Altman's tool and multiple regression analysis using secondary datasets. The quantitative research method involved logical formation and examination of research questions raised in the process of research, application of suitable tools to answer the questions and determine the outcome between selected variables. The quantitative method needs measurement of variables in terms of numerical data collected from secondary sources for the purpose of proving the relationship using statistical tests.

Variables used for the Study

The present study used Edward. I Altman's Model to assess the performance in multi angle to see whether any financial difficulties exists. Altman score critically examine the financial deviation by using 5 different variables viz., net working capital, retained earnings, EBIT, market value of equity shares, turnover and total assets. The selected variables in the form of ratios are a linear combination of five ratios named as X1, X2, X3, X4 and X5 respectively. The ratios are calculated from corporate income statement and balance sheet values to measure the said ratios. These five ratios are multiplied by a set of factors (i.e, a co-efficient developed by Prof. Altman) and the outcome is added to determine the company's Z-Score.

The Model is specified as:

Z = 1.2 X1 **+ 1.4** X2 **+ 3.3** X3**+ 0.6** X4 **+ 1.0** X5

Where,

Z = Score

X1 **=** Working Capital / Total Assets - to show liquidity position in comparison with total capitalization

X2 = Retained Earnings / Total Assets - to know the cumulative profitability overtime and leverages

X3 = Earnings Before Interest and Tax / Total Assets - to expresses operating performance and productivity of assets.

X4 = Book Value of Equity / Book Value of Debt - to present the long-term solvency position

X5 = Sales / Total Assets - to reveal the efficiency in utilising the asset

In order to find out the impact of Z-Score on firms' value, Price to book value ratio was considered to represent value of the firm.

Criteria for Testing the Health Status

Sources of Data for the Study

This study used secondary data. The secondary data that was collected in this study were derived from the following sources:

1. Different Official websites like websites of sample companies, money control.com, trendlyne.com, yahoo finance.com and other relevant websites where the required data were available.

2. Annual reports of the selected Steel companies as sample for the study using the financial statements to find out the financial ratios and its calculation for the selected companies.

The data were taken from these sources as it was available and were converted into needed format to suit the purpose of the study.

Period of Study

The study was carried out for a period of twelve years ranged from financial years 2013-14 to 2024-25.

Analysis of data

With the help of the ratios as required, Z-Score was calculated using Altman's formula and the results were presented in the following table 1.

Table 1

Z-Score of the Selected Steel Companies for the Study Period

Year	JSW	TATA	JSP	SAIL	JSL
2013-14	1.07	1.58	1.34	1.60	0.93
2014-15	1.08	1.36	1.04	1.44	0.77
2015-16	1.06	1.08	0.82	0.56	1.01
2016-17	1.50	1.05	0.95	1.10	1.64
2017-18	2.01	1.53	0.95	1.02	1.77
2018-19	1.90	1.39	0.95	1.22	1.76
2019-20	1.18	0.94	0.93	1.08	1.62
2020-21	1.72	1.32	2.01	1.41	2.02
2021-22	2.56	2.40	2.71	2.22	3.07
2022-23	2.05	2.00	2.93	1.54	3.22
2023-24	1.87	1.6	2.67	1.31	3.23
2024-25	2.31	1.76	1.87	1.82	2.98
Average "Z" Score	1.69	1.37	1.59	1.36	2.01

Source: Calculated by the author

Table 1 depicted the Z-Score of JSW from 2013-14 to 2024-25. It was clear from the table that the Z-Score of Company varied from 1.06 to 2.31. It was highest in the year 2021-22. So it can be concluded that the company was not in safe position as the Z-Score of all the years except 2017-18, 2018-19, 2021-22, 2022-

23, 2023-24 and 2024-25 fall below 1.8 which is considered to be the bankruptcy zone. The average score of "Z" score of JSW was 1.69 which denotes that it was in bankruptcy zone.

Table 1 indicated the "Z" Score of TATA steels and it was understood that the ratio was below 1.8 ie., in bankruptcy zone except 2021-22 and 2022-23. It ranged from 0.94 in 2019-20 to 2.4 in 2021-22. The average score of TATA Steels showed 1.37 which was a clear indication that the company was in bankruptcy position.

The "Z" Score of JSP as above explained that the score ranged from 0.82 in 2015-16 to 2.93 in 2022-23. It was observed that the scores of all years except 2020-21, 2021-22, 2022-23 and 2023-24 were below 1.8 years which was in the bankruptcy position. The average score of JSP was 1.59 and it clearly indicated its bankruptcy position.

The "Z" Score of SAIL as above explained that the score ranged from 0.56 in 2015-16 to 2.22 in 2021-22. It was understood that the scores of all years except 2021-22 and 2024-25 were below 1.8 years which is in the bankruptcy position. The average score of JSP was 1.32 indicating its bankruptcy position.

The "Z" Score of JSL as above explained that the score ranged from 0.77 in 2014-15 to 3.23 in 2024-25. It was clear that the scores of all years except in the years 2020-21 to 2024-25 were less than 1.8 and indicated that the company was in bankruptcy position in these years. But the average score of JSL was 2.01 and it clearly indicated that the company enjoyed good financial condition because the ratio is more than 1.8 i.e., 2.01.

In general, the financial strength of the 4 companies selected for the study was remote. Companies which were found to be in financial distress indicated that they did not have sufficient accumulated profits to plough back to meet needs and not using the resources efficiently. The management can have regular check and take appropriate measures to correct the situation by finding out the reasons and using the resources efficiently to stand in good financial conditions.

Average Z-Score of the selected Steel Companies

Table no.2

Status of Financial Health of the selected Steel Companies for the study period from 2013-14 to 2022-23

Name of the Company	Average Z-Score	Zone	Range
JSW Steels	1.69	Distress	Low
TATA Steels	1.50	Distress	Low
JSP	1.59	Distress	Low
SAIL	1.36	Distress	Low
JSL	2.01	Grey	Safety

Source: Calculated by the author

The Above table 2 presented average Z-Score of the selected steel companies in India for the study period from 2013-14 to 2024-25. From the above table, it was clear that average Z-Scores of four companies namely JSW Steels, TATA Steels, JSP and SAIL were less than 1.8. Hence, these steel companies were not in good financial health.

Testing of Significance of Z-Scores between Selected Steel Companies

To find out the existence of difference between the companies' Z-Score values, the researcher applied ANOVA test and the results have been given in the Table 3 for summary of output and the results of ANOVA in table 4.

Table 3

Application of ANOVA – Summary of Financial Health (Z Scores)

Groups	Count	Sum	Average	Variance
JSW	12	23.03	1.69	0.26
TATA	12	18.01	1.50	0.17
JSP	12	19.17	1.59	0.64
SAIL	12	16.32	1.36	0.17
JSL	12	24.02	2.01	0.82

Source: Calculated by the author

From the above table 3, it was known about the average and variances of the Z Score. It was noticed that JSL had highest average (2.01) and the company TATA had highest variance score(0.17). So it was considered necessary to determine the differences if any presented in the group means and to see whether

the differences were statistically significant, ANOVA test was applied and the results are shown in the table below with the Hypothesis framed.

- **Null Hypothesis: All group means are equal ie., there is no significant difference between Z Scores of the selected companies.**
- **Alternative Hypothesis: Not all group means are equal ie., there is significant difference between Z Scores of the selected companies.**

Table 4

Results of Application of ANOVA Test on Selected Companies – Z Score Values

Source of Variation	SS	Df	MS	F	P-value	F critical
Between Groups	2.79	4	0.69	1.66	0.17	2.53
Within Groups	22.99	55	0.41			
Total	25.78	59				

Source: Calculated by the author

It is indicated by the above table 4 that the p-value 0.17 is more than $\alpha = .05$, the null hypothesis of the ANOVA was accepted concluded that there was sufficient evidence to say that all of the group means are equal. This means that the Z Scores of all the five companies expressed the same average values.

Analysis of Impact of Z Score on Firms' Value - Price to Book Value ratio

Financially sound companies attract investors to invest in securities of such companies. So analysts, investors and other interested parties like to know the financial soundness and its impact on firms' value. So this research, applies regression analysis to know the impact on Z Score on firms' value ie., price to book value ratio. So Z Score was considered as independent variable and price to book value ratio was dependent variable. The analysis was carried out and the summary of results was presented in the following pages in tables 5 to 7

Table 5

Summary output of Impact of Z Score on Firms' Value

Regression Statistics	Names of Sample Companies				
	JSW	TATA	JSP	SAIL	JSL
Multiple R	0.98	0.66	0.92	0.95	0.66
R Square	0.97	0.436018	0.85	0.91	0.44
Adjusted R Square	0.88	0.365521	0.76	0.82	0.34
Standard Error	0.41	0.239263	0.451	0.21	2.01
Observations	12	12	12	12	12

Source: Calculated by the author

Table 5 presented the summary of output of regression analysis by taking Z score as independent variable and price to book value ratio as dependent variable. It explained the extent to which the dependent variable Z Score impacted the dependent variable i.e., price to book value ratio. The changes can be explained in terms of value or the percentage of variation in the dependent variable (Price to book value ratio) by the Z Scores of all companies. It was observed that the independent variable Z Score explained 82.14% of the variance in price book value ratio of JSW steels, 36.55% variance of TATA Steels, 18.23% of JSP, 15.14% of SAIL and 8.6% of JSL as represented by the value of Adjusted R-square. The remaining 17.86% of JSW, 63.45% of TATA Steels, 81.77% of JSP, 84.86% of SAIL and 91.4% of JSL of the values are due to other factors which were not explained in this research.

Findings and Conclusion

Z Score Analysis

- All the sample companies except JSL were not financially sound, they were in distressed condition ie., their financial health was at low level.

-Anova teat was applied on the Average values of Score of all the sample companies , It was observed that there was no significant difference in the mean values of the sample companies;

- regarding co-efficient values, the values have positive influence in case of all the sample companies and all the companies except SAIL have significant influence on the price to book value.

Suggestions and Conclusion

Based on Z score analysis, the financial health was very poor except in case of JSL. So the companies seriously look into the matter and try improve the health condition to bring the companies into the safety zone. Moreover, Z-Score had influence on firms' value. So the firms shall be careful in maintaining the

organizations ensuring good financial health through effective use of resources thereby ensuring enhanced value to the firms.

The management can use the results and understand the present health and take appropriate measures to maintain the firms' value which attracts potential investors towards investment in this sector and will help to retain existing investor for long period and acquire fund for future projects.

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