

FINANCIAL HEALTH OF SELECTED IRON AND STEEL COMPANIES IN INDIA - Z SCORE MODEL

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ABSTRACT

Financial analysis is a process of critical examination of the financial information contained in the financial statement in order to understand and make decision regarding the operation of the firm. In this study, an attempt was made to ascertain the financial soundness of the selected steel companies. For this purpose, ten years data were collected with the help of secondary sources of information. This paper uses the Altman's Z-score model to predict the financial status of selected steel companies in India. The result clearly indicate that the liquidity, working capital turnover efficiency and solvency position of the companies is that the financial health of Jsw, Tata Steel and Mahindra ugin were good and there is no scope of bankruptcy, where as the financial health of other selected companies were not in healthy Zone in many years.

Keywords : *Financial soundness, Liquidity, Solvency, Altman's Z- score.*

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INTRODUCTION

Financial appraisal provides a method for assessing the financial strengths and weakness of the of the steel industry in India using financial statements. There are two views of the financial strength of every organization based on the period of lending i.e, the short term and long term. The short term financial strength relates to the technical solvency of an organization in the near future, while the long-term financial strength depends on the structure that has been imposed in financing more permanent assets requirements.

The efficiency of the business is measured by the amount of profit earned. The greater the profit, the more efficient is the business considered to be. The profit of a business may be measured by studying the profitability of investment in it. Profitability may be defined as the ability of a given investment to earn a return from its use. This ability is referred to as lending power or operating performance of the concerned investment. Profitability is a relative term and its relation with the factors by which the profit is affected. It is the test of efficiency, powerful motivational factor and the measure of control in any business.

The survival of the firm depends on its performance in the past years. A company having a balanced capital structure with good resources utilization efficiency will survive and perform well. Today's good performer can become sick tomorrow if proper care is not exercised to evaluate its performance. The techniques of ratio analysis are capable of diagnosing determine the factors that lead to financial distress and failure of companies.

In the changed environment, application of financial management techniques would help the steel industries in increasing their productivity and profitability. An attempt has been made in their paper to have an insight in to the examination of financial health of the selected Indian steel companies.

REVIEW OF LITERATURE

Hamsalaksmi and manickam (2005) analyzed the financial performance of the thirty four Indian software companies. The structure of liquidity position, leverage position and profitability position of the selected companies were analysed in the study. It was found that the liquidity position and working capital were favorable during the period of study. The debt equity position revealed that the companies really more upon the internal financing than debt financing. Based on turnover ratios it was suggested that the efficiency in management of fixed assets and total assets must be increased. Return on investment and return on equity proved that the overall profitability position of selected software companies has been increasing gradually.

Chakraborty (2008) in his study he disclosed that positive association of current ratio with profit before interest and tax margin and return on capital employed. Similarly, inventory turnover ratio and debtor turnover ratio showed positive relation with profitability in most of the case under the study.

Anuradha Rajendran (2009) made a study in sugar companies with the help of z-score model. The study reveals that the financial health of the selected sugar industries fall in the health zone.

Venkatjanardhan Rao and Durgaprasad(2009) examined the overall financial performance of Mahindra and Mahindra Limited and Eicher Motors. They compare the

financial performance of both the companies and revealed that the performance of Eicher Motors Limited is better than Mahindra and Mahindra Limited.

Roil Pradhan (2011) revealed that the financial health of private sector banking firms through Z score Analysis. The analysis suggest that the model can forecast the financial position of the firm in case of loan value enhancement as well as the extension of the repayment period implying to be effective in the designing of policy measures related to credit viability that proves to be a vital tool to regulate the occurrence of credit defaults.

Selvaraj and Rajangam (2013) studied the overall performance of seshasayee paper boards Limited by applying ratio analysis, profitability was sound during the study period, the company's market is growing, and it was earning an acceptable return on invested capital, and it has good future opportunities for growth.

NEED OF THE STUDY

All the above reviews show the significance of measurement of financial Health. The present study made an attempt to measure the financial health along with liquidity, solvency and leverage position of select steel companies in India. Steel industry is an manufacturing industry. Its contribution is more in country's economic growth and GDP. So the present study is concerned on financial health of selected steel companies in India.

OBJECTIVES OF THE STUDY

To analyse the financial performance through liquidity, working capital, investment efficiency and solvency ratios and to measure the financial health of the select steel industry with Altman's Z- score model.

INDIAN STEEL INDUSTRY

The Indian steel industry has entered into a new development stage from 2007-2008, riding high on the resurgent economy and rising demand for steel. Rapid rise in production has resulted in India becoming the 3rd largest producer of crude steel in 2015 and the country continues to be the largest producer of sponge iron or DRI in the world. As per the report of the Working Group on Steel for the 12th Five Year Plan, there exist many factors which carry the potential of raising the per capita steel consumption in the country. These include among others, an estimated infrastructure investment of nearly a trillion dollars, a projected growth of manufacturing from current 8% to 11-12%, increase in urban population to 600 million by 2030 from the current level of 400 million, emergence of the rural market for steel currently consuming around 10 kg per annum buoyed by projects like Bharat Nirman, Pradhan Mantri Gram Sadak Yojana, Rajiv Gandhi Awaas Yojana among others.

At the time of its release, the National Steel Policy 2005 had envisaged steel production to reach 110 million tonnes (mt) by 2019-20. However, based on the assessment of the current ongoing projects, both in greenfield and brownfield, the Working Group on Steel for the 12th Five Year Plan has projected that domestic crude steel capacity in the country is likely to be 140 mt by 2016-17 and has the potential to reach 149 mt if all requirements are adequately met.

SOURCE OF DATA

Annual reports of Tata steel, Jsw, Sail, Ferro alloys corporation, Mahindra ugene steel company, Welspun corporation, From the year 2004-2014 are taken.

LIQUIDITY TEST

Liquidity or short-term solvency is an attribute that signifies the capacity to meet the financial obligation as and when required. The liquidity ratios are used to measure the short-term solvency and indicate the ability of a firm to meet its debt requirements as and when they become due. Current liabilities are used as the denominators of the ratios because they are considered to represent the most urgent debt, requiring retirement within one year or most preciously, within one operating cycle. The available financial resources to satisfy these obligations must come primarily from cash or the conversion of cash of other current assets.

In order to test the liquidity of the company, two most popular ratios, viz., current ratio and quick ratio were calculated and presented in the Table 1.

TABLE 1
LIQUIDITY RATIOS

Year	Tata steel		Jsw steel		Sail		Ferro alloys		Mahindra ugene		Welspun	
	CR	QR	CR	QR	CR	QR	CR	QR	CR	QR	CR	QR
2004 – 2005	0.72	0.44	0.99	0.60	1.18	0.86	1.62	1.24	1.59	0.89	1.16	0.71
2005 – 2006	0.72	0.41	0.90	0.59	1.23	0.82	1.71	1.38	1.83	1.19	1.29	0.75
2006 – 2007	1.77	1.49	0.76	0.47	1.59	1.10	1.79	1.40	1.69	1.10	1.44	0.99
2007- 2008	3.92	3.65	0.59	0.29	1.73	1.30	2.18	1.62	2.02	1.33	1.30	0.63
2008 – 2009	0.97	0.68	0.53	0.30	1.82	1.30	2.52	1.75	1.83	1.21	1.21	0.64
2009 – 2010	1.12	0.86	0.58	0.32	2.05	1.59	1.84	1.09	1.73	1.14	1.76	1.13
2010 – 2011	1.55	1.31	0.82	0.49	1.97	1.40	1.83	1.04	1.62	1.10	1.33	0.82
2011 – 2012	0.93	0.69	0.80	0.54	1.49	0.82	1.33	0.70	1.23	0.83	1.07	0.67
2012 – 2013	0.86	0.61	0.95	0.69	1.42	0.68	1.72	1.03	2.34	1.97	1.10	0.65
2013 – 2014	0.57	0.32	1.04	0.71	1.23	0.62	1.34	0.77	2.89	2.55	0.74	0.47

Table 1 shows current ratio and quick ratios from the year 2004 to 2014 for select steel industry of the study. Both current ratios and quick ratios for almost all the years are less than the standard norm in during the study period (2004-2014) for six selected steel companies of the study, reflecting the poor liquidity position of the companies.

WORKING CAPITAL INVESTMENT EFFICIENCY TEST

In order to substantiate the liquidity test, it is essential to test the working capital investment efficiency test also, because inventory and accounts receivable are the two important constituents of current assets may sometimes block the proprietor's funds. These are the common working capital investment efficiency ratios:

- Inventory Turnover Ratio (ITR)
- Debtors Turnover Ratio (DTR)

Table 2 represents the working capital investment efficiency ratios of the selected six companies.

TABLE 2
WORKING CAPITAL INVESTMENT EFFICIENCY RATIOS

Year	Tata steel		Jsw steel		Sail		Ferro alloys		Mahindra ugrine		Welspun	
	ITR	DTR	ITR	DTR	ITR	DTR	ITR	DTR	ITR	DTR	ITR	DTR
2004 – 2005	4.78	23.50	6.84	19.83	4.55	16.61	5.85	27.87	4.68	5.73	3.13	5.55
2005 – 2006	4.04	26.99	4.73	24.58	1.92	14.89	6.14	19.73	4.99	4.94	2.94	6.43
2006 - 2007	4.28	29.81	5.11	36.24	3.70	16.36	6.99	16.19	4.98	4.62	4.20	6.01
2007 – 2008	4.08	33.45	5.46	39.11	4.19	14.90	6.66	27.05	5.86	5.00	2.85	5.99
2008 – 2009	4.39	41.29	5.58	38.09	3.87	14.43	5.52	33.63	7.28	5.67	2.51	8.93
2009 – 2010	4.55	46.58	5.42	37.79	3.07	12.46	5.54	34.92	6.86	5.33	3.22	9.53
2010 – 2011	3.23	68.46	4.95	32.95	3.23	11.11	4.50	27.98	7.71	5.38	4.07	7.41
2011 – 2012	3.19	51.10	5.23	29.12	2.78	10.39	4.54	18.75	3.57	2.53	3.08	5.83
2012 – 2013	3.59	44.91	5.45	7.11	2.32	9.71	4.75	14.63	7.56	3.63	3.74	6.41
2013 – 2014	3.26	53.21	5.81	8.24	2.37	9.43	5.59	14.98	16.20	5.92	4.31	7.11

Tata Steel Ltd

The inventory turnover ratio fluctuate from 4.78 to 3.26 is showing fluctuating trend during the study period . It reflects an additional burden on the part of the working capital of the company. The Debtors turnover ratio is fluctuating during the study period and varied from 23.50 to 68.46 indicating the credit sales of the company increased year by year during the study period.

JSW Steel Ltd

The ITR gradually decreased from 6.84 to 4.73 is showing fluctuating trend during the study period . It reflects an additional burden on the part of the working capital of the company. The Debtors turnover ratio is fluctuating during the study period and varied from 19.83 to 39.11 indicating the credit sales of the company as high in the study period.

SAIL

The ITR gradually decreased from 4.55 to 1.92 is showing fluctuating trend analysis during the study period . There is a gradual decrease of the cost of good sold. It reflects an additional burden on the part of the working capital of the company. The Debtors turnover ratio is fluctuating during the study period and varied from 16.61 to 9.43 indicating the credit sales of the company decreased year by year in the study period from 2004 to 2014.

Ferro Alloys Corporation

The inventory turnover ratio from 5.85 to 6.99 is showing fluctuating trend analysis in the study period from 2004 to 2007. There is a gradual increase of the cost of good sold . The Debtors turnover ratio is fluctuating during the study period and varied from 27.87 to 14.63 indicating the credit sales of the company decreased year by year in the study period.

Mahindra Ugrine

The inventory turnover ratio increased from 4.68 to 16.20 during the study period, indicating that there is a gradual increase of cost of good sold . The Debtors turnover ratio is fluctuating during the study period and varied from 5.55 to 7.11 increase of the indicating the credit sales of the company increased year by year in the study period.

Welspun

The inventory turnover ratio increased from 3.12 to 4.31 during the study period, indicating that there is a gradual increase of cost of good sold . The Debtors turnover ratio is fluctuating during the study period and varied from 5.55 to 7.11 increase of the indicating the credit sales of the company increased year by year in the study period.

SOLVENCY TEST

The detection of a firm's operating and financial difficulties is a subject which has been particularly amenable to analysis with financial ratios. To detect signs of looming bankruptcy, analysts calculate and analyse all kinds of financial ratios, viz., working capital ratios, debt levels, profitability and liquidity. The problem in each ratio is unique and tells a different story about a firm's financial health. Many a time, they even appear to contradict with each other. Having to rely on a bunch of individual ratios, the analyses may find it confusing and difficult to know when a stock to the wall.

Table.3 shows the Working Capital to Total Assets ratios, Retained Earnings to Total Assets ratios, EBIT to Total Assets ratios, Equity to Total Liabilities, Sales to Total Assets ratios, of six selected companies of the study.

TABLE 3.1
SOLVENCY RATIOS

YEAR	TATA STEEL					JSW					SAIL				
	WC/TA	RE/TA	EBIT/TA	EQ/TA	S/TA	WC/TA	RE/TA	EBIT/TA	EQ/TA	S/TA	WC/TA	RE/TA	EBIT/TA	EQ/TA	S/TA
2004-2005	0.13	0.22	1.08	0.01	0.94	2.65	0.11	0.69	0.01	0.78	0.08	0.25	1.12	0.08	1.07
2005-2006	0.18	0.19	0.92	0.01	0.88	0.02	0.08	0.46	6.00	0.57	0.12	0.12	0.62	0.07	0.99
2006-2007	0.22	0.14	0.66	0.02	0.60	0.07	0.11	0.56	6.00	0.69	0.26	0.19	0.89	0.06	1.11
2007-2008	0.61	0.08	0.46	6.00	0.39	0.12	0.08	0.46	0.06	0.59	0.32	0.19	0.89	0.05	1.08
2008-2009	5.30	0.07	0.39	6.00	0.38	0.18	0.01	0.16	5.23	0.52	0.34	0.12	0.56	0.04	0.88
2009-2010	0.01	0.07	0.39	6.00	0.34	0.15	0.81	3.96	4.80	6.21	0.34	0.09	19.0	0.3	0.62
2010-2011	0.12	0.08	0.39	6.00	0.31	0.06	0.05	0.26	6.00	0.59	0.28	0.07	0.29	0.3	0.59
2011-2012	0.01	0.07	0.39	6.00	0.37	0.08	0.02	0.19	3.36	0.67	0.15	0.04	0.23	0.3	0.59
2012-2013	0.02	0.05	0.29	5.71	0.40	0.01	0.02	0.23	3.12	0.63	0.12	0.01	0.13	0.02	0.51
2013-2014	0.10	0.05	0.33	5.24	0.40	0.01	0.01	0.19	2.65	0.65	0.07	0.01	0.13	0.02	0.49

TABLE 3.2
SOLVENCY RATIOS

YEAR	FERRO ALLOYS CORPORATION					MAHINDRA UGINE					WELSPUN CORPORATION				
	WC/TA	RE/TA	EBIT/TA	EQ/TA	S/TA	WC/TA	RE/TA	EBIT/TA	EQ/TA	S/TA	WC/TA	RE/TA	EBIT/TA	EQ/TA	S/TA
2004-2005	0.24	0.02	0.36	0.06	1.01	0.32	0.14	0.85	0.06	1.97	0.10	0.02	0.29	0.01	0.68
2005-2006	0.24	0.05	0.29	0.06	0.87	0.38	0.14	0.89	0.04	1.79	0.14	0.02	0.33	0.01	0.81
2006-2007	0.27	0.09	0.56	0.06	1.09	0.28	0.07	0.42	0.03	1.44	0.18	0.04	0.36	0.01	0.85
2007-2008	0.39	0.29	1.35	0.05	1.50	0.34	0.02	0.33	0.02	1.51	0.12	0.08	0.39	0.01	0.77
2008-2009	0.46	0.15	0.72	0.04	1.32	0.27	0.02	0.29	0.02	1.69	0.13	0.02	0.23	0.06	0.77
2009-2010	0.36	0.05	0.33	0.04	1.39	0.28	2.56	0.19	0.02	1.49	0.27	0.09	0.49	0.06	0.99
2010-2011	0.33	0.14	0.62	0.03	1.52	0.27	10.1	0.19	0.02	1.75	0.12	0.04	0.26	0.06	0.77
2011-2012	0.36	1.98	0.13	0.02	1.20	0.13	0.05	0.33	0.01	0.79	0.02	0.07	0.06	0.06	0.51
2012-2013	0.28	0.07	0.33	0.02	1.21	0.33	0.08	0.46	0.03	1.50	0.03	0.06	0.09	0.06	0.62
2013-2014	0.36	0.08	0.42	0.01	1.34	0.52	0.56	1.88	0.11	1.52	-0.09	-0.02	0.13	0.06	0.80

Tata steel ltd

The ratio of working capital to total assets of the company is varied from 0.01 to 5.30 during the study period, showing efficient mobilization of working capital. The ratio of retained earnings to total assets is varied from 0.05 to 0.22 during the study period, indicating that the retained earnings increased year by year. The ratio of EBIT is positive and low and increasing from 0.29 to 1.08. The portion of equity to total assets is also varied from 0.01 to 6.00 during the study period. It shows the interest of shareholders is high due to financial health of the company. The sales to total assets ratio is varied from 0.38 to 0.94 during the study period indicating that the sales of the company. Overall, the solvency position of the company is good.

JSW Steel

The ratio of working capital to total assets of the company is varied from 0.01 to 2.60 during the study period, showing efficient mobilization of working capital. The ratio of retained earnings to total assets is varied from 0.01 to 0.11 during the study period, indicating that the retained earnings mobilization is high. The ratio of EBIT to total assets is varied from 0.16 to 3.96 shows that the earnings of the company is good. The portion of equity to total assets is increased from 0.01 to 6.00 during the study period. It shows the interest of shareholders is high due to financial health of the company. The sales to total assets ratio is varied from 0.59 to 6.21 during the study period indicating that the sales of the company is high overall, the solvency position of the company is good.

SAIL

The ratio of working capital to total assets of the company is varied from 0.07 to 0.34 during the study period, showing efficient mobilization of working capital. The ratio of retained earnings to total assets is varied from 0.01 to 0.25 during the study period, indicating that the retained earnings mobilization is increase. The ratio of EBIT to total assets varied between 0.56 to 9.0 shows that the operating profit of the company is positive, i.e., the company in a position to meet the financial obligations like interest and tax payments of the company. The portion of equity to total assets is also low and varied from 0.02 to 0.08 during the study period. It shows the interest of shareholders is high. The sales to total assets ratio is varied from 0.49 to 1.11 during the study period indicating that the sales of the company is low compared to total assets. Overall, the solvency position of the company is not poor.

Ferro Alloys Corporation

The ratio of working capital to total assets of the company is varied from 0.24 to 0.46 during the study period, showing efficient mobilization of working capital. The ratio of retained earnings to total assets is varied from 0.01 to 0.25 during the study period, indicating that the retained earnings of the company increased year by year. The ratio of EBIT to total assets is increasing from 0.13 to 1.35. The portion of equity to total assets is low and varied from 0.01 to 0.06 during the study period. It shows the interest of shareholders increased year by year. The sales to total assets ratio is varied from 0.87 to 1.52 during the study period indicating that the sales of the company is low to compare total assets invested by the company. Overall, the solvency position of the company is not poor.

Mahindra Ugine

The ratio of working capital to total assets of the company is varied from 0.13 to 0.52 during the study period, showing efficient mobilization of working capital. The ratio of retained earnings to total assets is varied from 0.02 to 10.1 during the study period, indicating that the retained earnings mobilization is high. The ratio of EBIT to total assets is varied from 0.19 to 1.88, indicating that the operating profit of the company is positive, i.e., the company in a position to meet the financial obligations like interest and tax payments of the company. The portion of equity to total assets varied from 0.01 to 0.11 during the study period. It shows the interest of shareholders is increased year by year. The sales to total assets ratio is varied from 0.79 to 1.97 during the study period indicating that the sales of the company is low to compare total assets of the company. Overall, the solvency position of the company is satisfactory.

Welspun Corporation

The ratio of working capital to total assets of the company is varied from 0.03 to 0.27 during the study period, showing efficient mobilization of working capital. The ratio of retained earnings to total assets is varied from 0.02 to 0.09 during the study period, indicating that the retained earnings mobilization is high. The ratio of EBIT to total assets is varied from 0.06 to 0.29 shows the earnings of the company. The portion of equity to total assets is also low and varied from 0.01 to 0.06 during the study period. It shows the interest of shareholders is increasing year by year. The sales to total assets ratio is varied from 0.51 to 0.99 during the study period indicating that the sales of the company is low to compare total assets of the company. Overall, the solvency position of the company is not poor.

Z- SCORE ANALYSIS

To test the financial health of the selected companies of the study, we consider Altman's Z-score model. The z-score formula is a measurement of the financial health of company and is a powerful diagnostic tools that forecasts the probability of a company entering bankruptcy.

$$Z = 1.2 X_1 + 1.4 X_2 + 3.3 X_3 + 0.6 X_4 + 0.9 X_5$$

Where,

Z = Discriminant function score of a firm

X₁ = Working Capital / Total Assets

X₂ = Retained Earnings / Total Assets

X₃ = Earnings before interest and taxes / Total Assets

X₄ = Market Value of Equity / Book value of Total Liabilities

X₅ = Sales / Total Assets

Measurement of Financial Health

According to Altman the following three situations are considered for studying financial health of selected companies of steel industry in India.

- Below 'Z' Score of 1.8, the company is considered to be in the bankruptcy Zone. Its failure is certain and extremely likely and would occur probably within a period of two years.

- If a company has a 'Z' Score between 1.8 and 2.99, its financial viability is considered to be healthy. The failure in this situation is uncertain to predict.
- Above 'Z' Score of 2.99, the company is in a too healthy zone. Its financial health is very viable.

Financial health of the selected Iron and steel companies - Comparison.

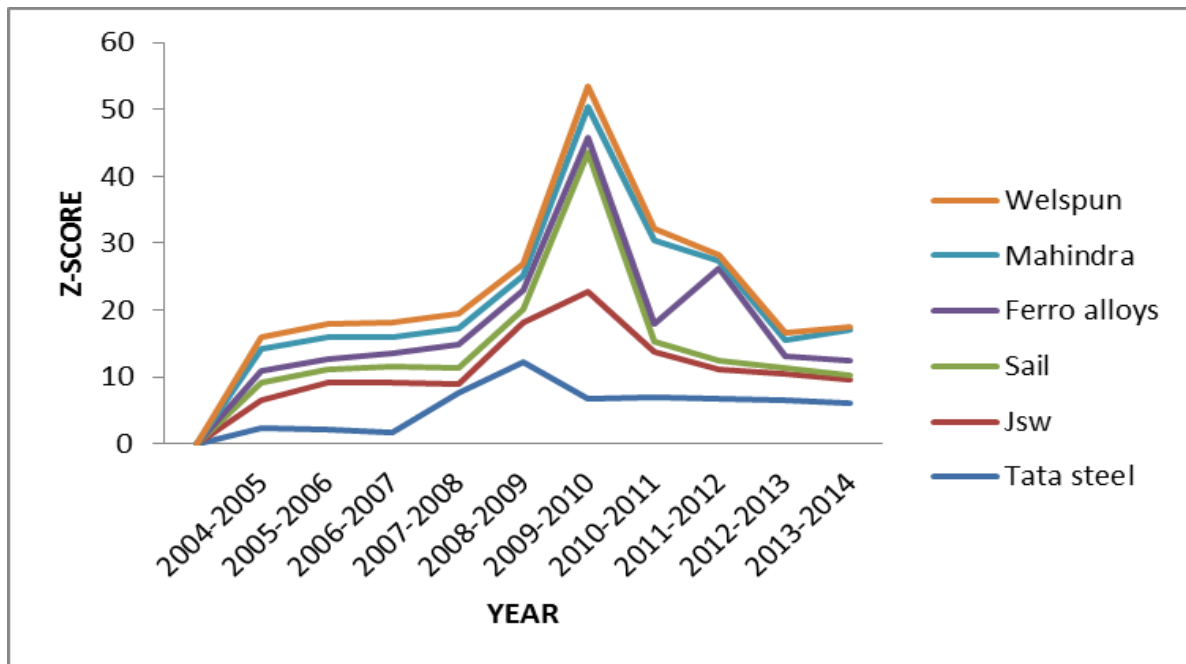
The final Z- score of the six steel companies from 2004 – 2005 to 2013-2014 are separately analysed to compare the financial health of the selected steel companies from 2004- 2005 to 2013-2014. The z-score of the six companies for the above said period are shown in Table – 4.

TABLE 4
Z-SCORE VALUE

Year	Tata steel	JSW	Sail	Ferro alloys	Mahindra ugin	Welspun
2004-2005	2.38	4.24	2.6	1.69	3.34	1.78
2005-2006	2.1	7.13	1.92	1.51	3.24	2.09
2006-2007	1.64	7.43	2.51	2.07	2.24	2.30
2007-2008	7.54	1.31	2.53	3.58	2.22	2.31
2008-2009	3.69	6.1	1.94	2.69	2.29	1.74
2009-2010	6.81	4.55	3.54	2.17	4.54	3.08
2010-2011	6.9	6.96	1.53	2.64	5.34	1.86
2011-2012	6.84	4.32	1.31	3.69	1.31	0.86
2012-2013	6.47	4.01	0.79	1.91	2.4	1.07
2013-2014	6.12	3.51	0.72	2.21	4.59	0.26

It is inferred from table 4 that the financial health of JSW was better than others since its score were greater than 2.99 in 9 years out of the total period of the study which consists of 10 years. The next best company according to financial health analysis is Tata steel whose financial health had been good for 7 years out of 10 years. In Mahindra ugin steel company, the financial health had been good for 5 years out of 10 years. In Ferro alloys corporation ., the financial health had been good for 3 years but for 5 years the financial health was likely to be sick. In SAIL, Welspun, the financial health was moderate for 4 years, 7 years, 5 years respectively. The worst situation was noticed in welspun where the financial health was very poor during the period of study, since Z-score were less than 1.8.

FIGURE 1
Z-SCORE CHART



CONCLUSION

Financial health of the company is very much important for smooth functioning. In this study six steel industries were selected and analysed its progress. The operating profit of the select companies shows the Jsw industry rank I and its followed by Tata steel, Mahindra uGINE, Ferro Alloys, and Sail shows an average profit except Welspun company. The poor performing companies may study the financial structure of good performing industry and apply the same to re-structure its financial area to gain good financial health.

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