



Evaluation of Financial Health of Select Cement Unit by using Z-Score Model – A Study of Sagar Cements Limited

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Abstract

Maintaining good financial health is very crucial for any business organization as it affects business' ability to meet its financial obligations. Financial health also impacts a firm's profitability, growth and market standing. Financial health of a firm can be observed from detailed examination of its financial data with the help of some important techniques. In this research paper, Altman Z-score model is used for assessing the financial health of Sagar Cements Limited, a cement manufacturer from Telangana, a state in India. The select firm's financial data for five years has been collected and used in computing Z-scores. It is found that the firm was in safe zone for three years of the study period and in gray zone for the remaining two years. It is advised to focus on improving the financial health of the select unit.

Key Words: Z-score, Profitability, Financial Health, Total Assets

Introduction

Financial health can be defined as a firm's ability to meet its short term and long term financial obligations without any hassles. It reflects the firm's sufficient liquidity position to ensure cash outflows when they are required. It is indicated by the strength of a company's balance sheet and connected with company's equity, assets, debt, cash flows and importantly profits. In a nutshell, financial health can be seen as a firm's ability to control capital, meet its expenses, make investments, and create profits. Financial health results in managing financial well being of a firm. Improper management of finances may lead a firm into failure resulting in liquidation or closure. Financial health is very important for long term sustainability of a company. It also affects the firm's ability to gain profits and grow business.

Financial ratios are very important metrics to gauge financial health of a firm. At the same time, examining financial ratios individually may not give a comprehensive picture of a firm's financial health. For this purpose, four important areas namely liquidity, solvency, profitability, and operating efficiency are to be evaluated. In this context, to examine financial health of a firm, Altman Z-score comes in handy. It is designed by Prof.

Edward Altman as a measure of financial health and stability of an organization. It is a numerical measurement useful for predicting the probability of a business becoming insolvent in the next two years. It takes into consideration of five ratios in the areas of liquidity, solvency, profitability, and operating efficiency for calculating the final Z-score.

Review of literature

Dr.S.Nirmala and Dr.R.Karpagavally (2012) did an assessment on financial health of Asian Paints by using Z-score model and found that the firm's financial performance was very good. In another similar study conducted by N.R.V. Ramana Reddy et al. (2013) on financial status of select sugar manufacturing units, it was seen that only one company was financially healthy while the remaining three were in financial distress. In a Z-score analysis conducted on Indian logistic industry by Vikas Tyagi (2014), it was observed that all the logistic firms selected for the study were financially healthy during the study period of 2005-2012. Nandini, A Satya et al. (2018) conducted a post-hoc assessment of ITI Ltd. after its bankruptcy. They performed Z-score analysis on its financial data for 22 years before its closure and found that the firm was in grey zone during that period. The study highlighted the importance of Z-score model for predicting long term stability of an organization.

In a study by Diep Thanh Tung and Vo Thi Hoang Phung (2019) on 180 multi industries, Z-score analysis was found to be useful to measure and predict the bankruptcy risk and also help identify business with potential risks in order to timely formulate the management policies. In a study by Gnana Sugirtham and S. Gowri, M. (2022), it was indicated that the Z Scores of most of the companies in Indian aviation sector have been below 1.8 for the five consecutive years of the study period. This implies higher risk of bankruptcy in Indian Aviation Sector.

Need for the Study

Indian cement industry is facing many challenges at present. Some of them include over capacity, heavy competition, fluctuation of fuel costs, increase in logistics charges, entry of global players to name a few. At the same time, the industry has scope for enormous growth in the near future due to increased demand for housing, increased incomes, and governments spending more on basic infrastructure in the country. In this context, it is imperative for the companies to enhance their financial performance for long term sustainability and increased profitability. They have to focus on continuous evaluation of their financial health. In the above backdrop, it is thought relevant to examine the financial health of Sagar Cements Limited, a cement company operating in the state of Telangana, India. For this purpose, the financial data of the select company for five years from 2017-18 to 2021-22 has been analyzed with the help of Altman Z-score analysis to predict its vulnerability to bankruptcy.

Objectives of the Study

The objectives of the study are as follows.

- To briefly review the available literature related to Altman Z-score model and
- To examine the financial health of select company by using Altman Z-score model.

Methodology

The study is related to examining the financial health of Sagar Cements Limited. For this purpose, the financial data of this company was collected for a time period of five years i.e. from the year 2017-18 to the year 2021-22. The required financial ratios are computed. The Z-score is calculated with the help of following formula.

$$\text{Altman Z-Score} = (1.2 * X_1) + (1.4 * X_2) + (3.3 * X_3) + (0.6 * X_4) + (1.0 * X_5)$$

Where:

- X_1 is Working Capital / Total Assets
- X_2 is Retained Earnings / Total Assets
- X_3 is Earnings Before Interest and Tax / Total Assets
- X_4 is Market Value of Equity / Total Liabilities
- X_5 is Total Sales / Total Assets

A Z-score of below 1.8 indicates distress zone i.e. the firm is most likely to become bankrupt in next two years. A score between 1.8 to 2.99 indicates gray zone which means there is a moderate possibility of firm becoming insolvent. A score of 3.00 or above is considered as safe zone. It reflects that the firm is financially strong.

Data Analysis

The Altman Z-score model involves computation of five financial ratios. The details of these ratios along with components required for calculating them and final Z-scores for the five years of the study period are presented under the following sub heads.

1. Working Capital to Total Assets Ratio (X_1)

Working capital is the difference between a firm's current assets and current liabilities. The working capital to total assets ratio compares net liquid assets with total assets of the firm. It reflects the firm's short term solvency position as this ratio indicates the percentage of remaining liquid assets compared to the total assets. The details of working capital, total assets and the working capital to total assets ratio are shown in the following Table 1.

Table – 1 Working Capital to Total Assets Ratio (X₁) (Rs. in Crores)			
Year	Working Capital	Total Assets	X ₁
2017-18	164.62	1216.90	0.135
2018-19	20.16	1314.30	0.015
2019-20	(35.09)	1502.10	(0.023)
2020-21	(66.88)	1676.10	(0.040)
2021-22	24.60	1909.30	0.013
Mean	21.48	1523.74	0.020
<i>Source: Annual Reports of Sagar Cements Limited</i> <i>Figures in brackets indicate negative values</i>			

It is observed that the working capital of the select firm has decreased from Rs. 164.62 Crores in the year 2017-18 to Rs. 24.60 Crores in the year 2021-22 with an average of Rs. 21.48 Crores. In fact, in two years, i.e. in 2019-20 and 2020-21, it was negative. At the same time, the total assets increased from Rs. 1216.90 Crores to Rs. 1909.30 Crores in the same period averaging Rs.1523.74 Crores. Similarly, the working capital to total assets ratio also reduced from 0.135 to 0.013 in the study period with an average of 0.020.

2. Retained Earnings to Total Assets Ratio (X₂)

Retained earnings or reserves & surplus are the accumulated profits not distributed as dividend and included in equity. Retained earnings to the total assets ratio is one of the profitability ratios. It helps in knowing the extent to which a company relies on debt or leverage. If the ratio is low, it implies that the firm is depending more on debt to fund its assets which can increase the risk of bankruptcy. In this backdrop, the relevant details are shown in Table 2.

Table – 2 Retained Earnings to Total Assets Ratio (X₂) (Rs. in Crores)			
Year	Retained Earnings	Total Assets	X ₂
2017-18	764.07	1216.90	0.628
2018-19	803.43	1314.30	0.611
2019-20	881.29	1502.10	0.587
2020-21	1010.20	1676.10	0.603
2021-22	1222.80	1909.30	0.640
Mean	936.36	1523.74	0.610
<i>Source: Annual Reports of Sagar Cements Limited</i>			

It can be inferred from the data in the above Table that the retained earnings have increased from Rs. 764.07 Crores in the year 2017-18 to Rs.1222.80 Crores in the year 2021-22 with a mean of Rs. 936.36 Crores. There was a slight increase in retained earnings to total assets ratio from 0.628 to 0.640 in the study period averaging 0.610.

3. EBIT to Total Assets Ratio (X_3)

This ratio compares the firm's operational income with its total assets for a specific accounting period. The ratio measures the firm's effectiveness in using its assets for generating earnings. Details pertaining to the ratio are presented in the following Table 3.

Table – 3 EBIT to Total Assets Ratio (X_3)			
(Rs. in Crores)			
Year	EBIT	Total Assets	X_3
2017-18	54.49	1216.90	0.045
2018-19	105.82	1314.30	0.081
2019-20	70.29	1502.10	0.047
2020-21	80.15	1676.10	0.048
2021-22	267.64	1909.30	0.140
Mean	115.68	1523.74	0.072

Source: Annual Reports of Sagar Cements Limited

The Earnings before interest and tax (EBIT) of the firm increased from Rs. 54.49 Crores to Rs. 267.64 Crores averaging Rs. 115.68 Crores in the study period. Similarly, the EBIT to total assets ratio also improved from 0.045 to 0.140 in the same time with an average of 0.072.

4. Market Value of Equity to Total Liabilities Ratio (X_4)

Market value of a firm's equity is known as market capitalization. It is calculated by multiplying its present share price with its total number of outstanding shares. The comparison of market value of the firm with its total liabilities will give the investors a clear picture of financial position of the firm and helps them in investment decisions. The Table 4 contains this ratio and relevant details.

Table – Market Value of Equity to Total Liabilities Ratio (X_4)			
(Rs. in Crores)			
Year	Market Value of Equity	Total Liabilities	X_4
2017-18	1621.80	432.47	3.750
2018-19	1884.96	490.47	3.843
2019-20	1334.16	600.39	2.222
2020-21	679.54	643.63	1.056
2021-22	1645.00	662.97	2.481
Mean	1433.09	565.99	2.670

Source: Annual Reports of Sagar Cements Limited

It is found that the market value of the firm equity has changed very little from Rs. 1621.80 Crores to Rs. 1645.00 Crores during the five year study period. Its average was Rs. 1433.09 Crores for the period. There was erosion in market capitalization of the firm during two years i.e. 2019-20 to 2020-21. At the same time, substantial increase was seen in total liabilities which grew from Rs. 432.47 Crores to Rs. 662.97 Crores in the same period with an average of Rs. 565.99 Crores. The market value of equity to total liabilities ratio also decreased from 3.750 to 2.481 in the study period with many fluctuations at an average of 2.670.

5. Total Sales to Total Assets Ratio (X_5)

The total sales to total assets ratio is an indicator of a firm's efficiency in utilizing its assets in generating sales. It reflects the value of sales in relation with value of total assets. The particulars of this ratio along with relevant details are shown in the following Table 5.

Year	Total Sales	Total Assets	X_5
2017-18	620.00	1216.90	0.509
2018-19	776.01	1314.30	0.590
2019-20	902.01	1502.10	0.600
2020-21	819.60	1676.10	0.489
2021-22	976.49	1909.30	0.511
Mean	818.82	1523.74	0.540

Source: Annual Reports of Sagar Cements Limited

The sales of the firm have increased from Rs. 620.00 Crores to Rs. 976.49 Crores in the study period with an average of Rs. 818.82 Crores. At the same time, very negligible change was found in total sales to total assets ratio from 0.509 to 0.511 averaging around 0.540 for the study period.

6. Altman Z-scores of Sagar Cements Limited

The final Z-scores of the select company for the total study period are presented in the following Table 6.

Year	$X_1*1.2$	$X_2*1.4$	$X_3*3.3$	$X_4*0.6$	$X_5*1.0$	Z-score
2017-18	0.16	0.88	0.15	2.25	0.51	3.95
2018-19	0.02	0.86	0.27	2.31	0.59	4.05
2019-20	(0.03)	0.82	0.15	1.33	0.60	2.87
2020-21	(0.05)	0.84	0.16	0.63	0.49	2.07
2021-22	0.02	0.90	0.46	1.49	0.51	3.38

Source: Computed from Annual Reports of Sagar Cements Limited
Figures in brackets indicate negative values

It can be inferred from the data present in the above Table that the Z-score values of Sagar Cements Limited were 3.95 and 4.05 in the first two years of the study period indicating that the company was in safe zone during that time. But, in the succeeding two years i.e., in 2019-20 and 2020-21, its Z-scores were in gray zone with values of 2.87 and 2.07 respectively. It can be understood that there was a moderate chance of firm becoming insolvent in these years. In the final year of study, the firm could recover and enter into safe zone recording a Z-score of 3.38.

Conclusion

It can be concluded that Sagar Cements Limited was moderately vulnerable to insolvency for two years out of the five year study period. The company faced the problem due to negative operating profits recorded in these two years. It is advised that the firm should monitor its operations in an efficient manner to avoid fluctuations. It is also suggested that the firm should continuously evaluate its financial health and take required steps to maintain it for improved profitability and long term sustainability.

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