A STUDY ON MEASURING THE FINANCIAL HEALTH OF BHEL (RANIPET) USING Z SCORE MODEL

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Abstract *Financial health of the company is foremost important in the global competition. If the company fails to maintain the financial position in long run it cannot survive in the market. This paper analyzes the financial health of the company with the help of Z score model. Sever studies has shows that Altman model has predicted the business failures in time, it will be very helpful for the management to take corrective action.*

Keyword: *Altman, Working Capital, Retained Earnings, Total Assets, EBIT.*

It is very difficult to perform well in the market due to global competition. In order to survive and continue to do better in the business, an organization must successfully manage its financial position. The financial position of the company must be sufficient to meet the short term and long term requirement of the company. So it is the duty of financial analyst to monitor the financial position of the company on regular basis. Both excessive and inadequate financial position is dangerous to the business. Ineffective management in one of the most important factor causing industrial sickness. Many variables are available to indicate the industrial sickness. Therefore it is important to monitor the financial position and health of the company through financial statement.

Business people compete with one another in order to capture the market share, it is the duty of the financial manager to monitor the financial health of the company particularly the profitability positions, sales position, solvency positions, utilization of capital and assets efficiently. An attempt has been made in this study the analyze the financial position of the company with the help of Z score model.

REVIEW OF EARLIER STUDIES

Multivariate prediction of bankruptcy as established by using univariate analysis of bankruptcy predictors was initially developed by Beaver (1967, 1968) who found that a number of indicators could discriminate between matched samples of failed and non-failed firms for as long as five years prior to failure. Altman (1968) defines five predicted factors and sets the base for other researchers to examine the validity of multivariate models. Following to the Beaver and Altman research seems to verify the validity of Altman models, but their prediction ability is found gradually lower. Begley et.al (1996) examines the Altman z-model and concludes that the model performs better in US data during the 1980s than during the period 1990-1995. Similar are the findings of Grice and Ingram (2001), who also find better performance for manufacturing companies.

Nikam G.A. (1986) attempted to analyze the financial strength of four co-operative sugar mills situated in Aurangabad district. He has suggested that since the co-operative sugar sector is a recent origin particularly in Marathawada and hence the unit has been set up at a high block cost as compared to other private sugar mills.

Narassiah (1996) analyzed the cash position of Kovur co-operative sugar mills Ltd. Nellore. The result shows that the current ratio is below the standard norms of 2, and the major portion of current assets is inventory. The net cash flow coverage ratio of the mill was negative because of the inconsistent cash flow and insufficient maintenance of liquidity.

Dheenadhayalan V (1997) predicts that Z score remains below the grey area from 1997 – 2007 but in the year 2001-2002, the Z score is – 0.29. After 2001 Z score decreases, it indicates that the whole sample is not financially sound and health.

Edward I Altman (2000) assessed the effect of financial problems with the application of Z score mode and ZETA credit risk model. These include linear vs. quadratic analysis for the original and holdout samples, introduction of prior probabilities of group membership and costs of error estimates into the classification rule, and comparison of the model's results with naïve bankruptcy classification strategies. The potential applications of the ZETA bankruptcy identification

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model are in the same spirit as previously developed models. These include credit worthiness analysis of firms for financial and non-financial institutions, identification of undesirable investment risk for portfolio managers and individual investors and to aid in more effective internal and external audits of firms with respect to going-concern considerations, among others.

Thirunarayanaswamy (2006) in his study states that the sickness in co-operative sugar mills increase year after year. The study found that accumulated losses, absolute technology, mis-management in finance and production factors were the important causes for sickness in the mills.

M.Kannadhasan (2007) examines the financial health of a watch company in India by using Z score model. The study concluded that the company overall financial health was good.

Objective of the study

1. To analyze the financial performance of the company.
2. To study the efficiency in the financial operations
3. To study the financial health and viability of the company.

RESEARCH METHODOLOGY

They study is based on the secondary data obtained from the year 2005-06 to 2008-09 of BHEL, Ranipet. The data were analyzed with the help of Working capital to Total assets ratio, Retained earnings to Total assets ratio, EBIT to Total assets ratio, Reciprocal of Debt-Equity ratio, Sales to Total assets ratio and Z score model

Limitation of the study

The following are the limitation of the study

1. The study was limited to 5 years only.
2. The result of the study cannot be generalized to other company.
3. The study is based on BHEL,Ranipet only.
4. The study is fully based on the figure from the published annual reports.

Measuring the Financial health through Z-Score Ingredients

The most well-known quantitative model for predicting bankruptcy is Altman's Z-score, which was developed in 1968 by Edward I. Altman, professor at Stern School of Business. The Z-score is a set of financial ratios in a multivariate context, based on a multiple discriminated model, for the firms where a single measure is unlikely to predict the complexity of their decision making or the scope of their entire activities.

Altman examined a list of twenty two possible ratios, and finally has chosen five that had the best results when they were applied together were selected after numerous tests for the discriminant function. This model was later modified to the Altman (1993) model that uses the same variables multiplied by different, however, factors.

The discriminant function is:

$Z = 1.2X1 + 1.4X2 + 3.3X3 + .06 X4 + 1.0X5$

Where

Z = Discriminant functions score of a firm.

X1 = Working capital /Total assets

X2 = Retained earnings/Total Sales

X3 = EBIT/Total assets

X4 = Market Value of Equity/Total Liability

X5 = Sales/Total assets

The Z-Score is calculated by multiplying the following accounting ratio, which is efficient in predicting bankruptcy.

1. X1 (Working Capital/Total Asset)

Working capital compares current assets to current liabilities, and serves as the liquid reserve \ available to satisfy contingencies and uncertainties. A high working capital balance is mandated if the entity is unable to borrow on short notice. The ratio indicates the short-term solvency of a business and in determining if a firm can pay its current liabilities when due.

Working capital = Current Assets - Current Liabilities

2. X2 (Retained earnings/Total Sales)

It indicates the amount reinvestigated, the earnings or losses, which reflects the extend of the company's leverage. Those firms with high retained, independent earnings to total assets have financed their assets through retention of profits and have not utilized as much debt.

3. X3 (EBIT/Total assets)

It is the measure of the company's operating performance and it also indicates the earning power of the company. In addition this is a measure of the productivity of the firm's assets, independent of any tax on advantage factors.

4. X4 (Market Value Of Equity/Total Liability)

It is the measure of the long term solvency of a company. While debt includes both, current and long term liabilities, this measure shows how much assets of an enterprise can

decline in value before the liabilities exceeds the assets and the concern becomes insolvent.

5. X5 (sales/total assets)

This is a standard turn over measure. Unfortunately it varies greatly from one industry to another. In addition to this it will reveal the sales generating capacity of the company's. assets and measure of management's capacity to deal with competitive conditions.

GUIDELINESS: ALTMAN GUIDELINESS FOR HEALTHYZONE

With the help of Altman guidelines, the overall financial health of BHEL is measured -

Situation	Z-score	Zones	Remarks
1	Below 1.8	Not Healthy	Its failure is certain and extremely likely and would occur probably within a period of 2 years
2	Between1.8 and 2.99	Healthy	Financial viability is considered healthy. The failure in this situation is uncertain to predict.
3	3.0 and above	Too Healthy	Its financial health is viable and there is no risk of a fall

Analysis and Interpretation

Table 1: Working Capital to Total Asset Ratio (X1) Bharat Heavy Electrical Ltd.

Year	Working Capital	Total Asset	Ratio
2005-06	333791.2	805377.2	0.41
2006-07	359233.7	834839.7	0.43
2007-08	408784.6	1042470	0.39
2008-09	489708	1334298	0.36
2009-10	601075.7	1633078	0.36
Average			1.95

The above table shows the relation between working capital and total assets ratio. The above table shows that the Total asset of the company is increasing year by year, it shows that the company focus on the investment in fixed assets. But the working capital of the company also increases and not effective and sound. It is clear from the above analysis that the ratios are fluctuating throughout the study period. It is highest in the year 200607 and lowest in the year 2008-09 & 2009-10.The mean ratio of working capital to total assets was 1.95 during the study period

Table 2: Retained Earnings to Total Assets Ratio (X2) Bharat Heavy Electrical Ltd.

Year	Retained earnings	Total Sales	Ratio
2005-06	422485	728662.5	0.579
2006-07	455891	748222	0.60
2007-08	505118	866247	0.583
2008-09	578213.38	1033639.7	0.559
2009-10	705661.8	1452549	0.485
Average			2.806

The above table shows that retained earnings to total assets ratio. If the ratio is near 1:1 indicates that growth has been financed through profit and not through debt. The above table shows that it has not crossed 0.6, reflects that company is financed its capital expenditure through 40% of debt borrowing. The company has to take steps to increase this ration in order to attain the sustainable growth. It is clear from the above analysis that the ratios are fluctuating throughout the study period. It was at its highest in the year 2006-07 and lowest in the year 2009-10. The mean ratio of working capital to total assets was 2.806 during the study period.

Table 3: EBIT to Total Assets Ratio (X3) Bharat Heavy Electrical Ltd.

Year	EBIT	Total Asset	Ratio
2005-06	46794.65	805377.2	0.0581
2006-07	44451.27	834839.7	0.0831
2007-08	65815.16	1042470	0.063
2008-09	106008.9	1334298	0.079
2009-10	167916.1	1633078	0.102
Average			0.3852

Table 3 indicates the relation between the EBIT and the Total Asset ratio during the study period. The operational performance and earning power could be assessed through this ratio in order to know the success or failure of the business. It is clear from the above analysis that the ratio are fluctuating throughout the study period. It was at its highest in the year 2009-10 and lowest in the year 2005-06. The mean ratio of working capital to total assets was .3852.If the company maintain the same ratio in future its financial position will be affected.

Table 4: Market Value Of Equity (X4) Bharat Heavy Electrical Ltd.

Year	Market Value Of Equity	Total Liabilities	Ratio
2005-06	244.76	471586	0.000519
2006-07	244.76	475606	0.00051
2007-08	244.76	633685.3	0.000386
2008-09	244.76	844589.4	0.00028
2009-10	244.76	1032002	0.00023
Average			0.001925

The above table indicates the relationship between equity and debt during the study period. The ratio is reciprocal of debt about equity ratio. The highest ratio was in the year 2005-06 and lowest was in the year 2009-10. The mean ratio of value of equity to value of debts was .001925

Table 5: Sales To Total Assets (X4) Bharat Heavy Electrical Ltd.

Year	Sales	Total Asset	Ratio
2005-06	728662.5	805377.2	0.904
2006-07	748222	834839.7	0.896
2007-08	866247	1042470	0.830
2008-09	1033639.7	1334298	0.774
2009-10	1452549	1633078	0.889
Average			4.293

The above table indicates the relationship between sales to total assets during the study period. The ratio varies from year to year it is in between 0.774 and 0.904, it shows that company has not increased the sales up to the desired level. The ratio was highest in the year 2005-06 and the lowest ratio was in the year 2008-09. The mean ratio of sales to total assets was 4.293

Table 6: Bharat Heavy Electrical Ltd. "Z"-Score

Ingredients	Financial Ratios	2005-06	2006-07	2007-08	2008-09	2009-10	Mean
X1	Working Capital/Total assets	0.492	0.516	0.468	0.432	0.432	0.468
X2	Retained Earnings/Total sales	0.810	0.84	0.8162	0.782	0.679	0.785
X3	EBIT/ Total assets	0.1917	0.2742	0.2079	0.2607	0.3366	0.254
X4	Value Of Equity/Total liabilities	0.000311	0.000306	0.000231	0.000168	0.000138	0.00023
X5	Sales/Total assets	0.904	0.896	0.830	0.774	0.889	0.8586
Z-Score		2.398	2.526	2.322	2.248	2.336	2.365

The above table shows that Z score ranges between 2.248 to 2.526. As per the Altman guidelines if the Z score in between 1.8 to 2.99 the financial viability is considered healthy. So for all the study periods financial viability of the BHEL is considered to be healthy. It is also concluded that in this situation failure is uncertain to predict.

CONCLUSION

The financial health of the company of the entire sample was tested with the help of Z score model. As per the Altman guidelines the result shows that financial health of the company was healthy and financial viability is healthy. But the management has to take steps so that Z score may cross 3. This zone is considered as no risk zone and Financial positions is too healthy.

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