Measuring Financial Health Of E.I.D Parry Sugar Limited Using 'Z' Score Model- A Case Study

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INTRODUCTION

In the changing scenario, every business strives hard for survival in the present day's era of core competence. Survival of the business in the modern world is possible, only when, apart from other things, it has sufficient finance. The financial requirements of a business must be sufficient to meet its long-term and short-term commitments. To meet long-term commitment, it needs permanent capital and for short-term commitment, it needs working capital. Thus, Finance is a significant facet of every business. Both excessive as well as inadequate finance position are dangerous from the business point of view. In other words, finance is the backbone of any business. Any business without finance is a wingless bird. Therefore, the financial analyst is responsible to monitor the financial position of the business regularly. The performance of the company is judged by its financial statements, which throws light on the operational efficiency and financial position of the company. Due to intense competition, among the business community, everyone is doing something better than the other to capture the business, therefore , monitoring the financial health of a company by checking its sales and profit growth is not sufficient today. It is necessary to benchmark the efficiency of utilization of capital and assets, return to shareholders as well as predicting financial distress. The prediction and prevention of financial distress is one of the major factors, which will help to avoid bankruptcy. Several indicators and information sources can help in the prediction and prevention of financial distress. Financial statement analysis is one of the methods that can be used in predicting financial distress, which focuses on financial variables.

To evaluate the financial conditions and performance of a company, the financial analysis needs certain yardsticks. Among the variables, tools are employed in analyzing the financial information contained in the financial statements. Ratio analysis is a widely used tool, which is relevant in assessing the performance of a firm in respect of liquidity position, long-term, solvency. In addition to this, it helps to predict the financial distress of the business. An attempt has been made in the present study to have an insight into the examination of financial health of the organization.

PRESSURE TO MONITOR FINANCIAL HEALTH

The pressure to monitor financial health of a company arises today, for:
❀ Determining the sustainability and growth of the company in the competitive world.
❀ Identifying the sign of financial distress and thereby avoid the bankruptcy.
❀ Entry of the new players in the market.
❀ The integrated financial market brings investors from foreign countries.
❀ Reluctance to invest due to political uncertainty and coalition politics.

OBJECTIVES OF THE STUDY

The objectives of this analysis using 'z' score are as follows:
❀ To assess the overall financial performance of the company.
❀ To know the efficiency in financial operations.
❀ To predict the financial health and viability of the company.

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HYPOTHESIS OF THE STUDY

Keeping the above objectives in mind, the following hypothesis were framed and tested during the study period.

NULL HYPOTHESIS (H_o)

Ho (1) : There is no significant relationship between working capital and total assets.

Ho (2): There is no significant relationship between Retained earnings and total assets.

Ho (3) : There is no significant relationship between EBIT and total assets.

Ho (4) : There is no significant relationship between market value of equity and total liabilities.

Ho (5) : There is no significant relationship between sales and total assets.

Ho (6) : There is no significant difference between the 10 years average of 'z'-score ratio of the standard.

RESEARCH METHODOLOGY

The study was concerned with sugar manufacturer and it has been confined to only one public limited viz. E.I.D. Parry (India) Limited. The study was on the secondary data, which was obtained from the published sources i.e. Annual reports for the period of 10 years from, 1998-99 to 2007-08. The collected data was analyzed with the help of ratio analysis. The many accounting ratios used to predict the financial performance of the company, gives a warning only when it is too late to take corrective action. Keeping the above view in mind, the "Z" score analysis has been adopted to monitor the financial health of the company to predict as well as to avoid business failure and subsequent bankruptcy. In addition to that, the study used statistical tools like mean, standard deviation, correlation and t-test.

LIMITATIONS OF THE STUDY

The following are the limitations of the study.

❀ The study was limited to 10 years.

❀ The study was limited to one company.

❀ The data of this study has been primarily taken from published annual reports only.

ABOUT THE COMPANY
INTRODUCTION

EID Parry Sugars Limited was established in the year 1788; Parry is presently engaged in a wide galaxy of diversified activities. It became a member of the Murugappa group in the year 1981 and thereafter, the story has been one of turn around and of steady growth. E.I.D. Parry has evolved into one of the largest business groups in the country. It is engaged in the manufacture and marketing of a wide-range of products that can be broadly divided into the following groups:

❀ Sugar - comprising of Sugar Alcohol, Co-generation etc.,

❀ Bio-pesticides

❀ Nutraceuticals'

A strong sense of commitment and adherence to business ethics has helped E.I.D. Parry succeed in bringing to life the larger picture and to 'Go Beyond'.

VISION

To be India's No. 1 integrated sugar complex company with an increasing presence in Asia and other export markets and be an excellent organization.

THE FAST CHALLENGING DYNAMICS

India can become a global sugar power house as:

❀ It is the Largest consumer of sugar.

❀ 2nd Largest Producer of sugar.

❀ WTO opening up opportunities and India is well positioned to participate.

❀ EID is strategically placed to take advantage of the merging scenario.

CORPORATE ENVISION

Today	Vision 2015
TN units-Maximise Sugar Production.	Units all over South India-maximize profitability from multiple product lines.
Only one Integrated Complex.	All Units as Integrated Complex.
Commodity market in Tamil Nadu and Kerala (mainly).	Commodity market of South Central India.
Sugar in factory Godowns.	Sugar near the markets.

SUGAR BUSINESS PROCESSES

❋**Manufacturing**-Managing Multi products units to: **a)** Maximize profit and not sugar production alone and **b)** Be a low cost producer.

❋**Cane Operation And Extension Services** : First private sector R&D with own cane varieties.

❋**Trading** : Leverage international trading partners for imports and exports as and when required.

❋**People** : **a)** For growth **b)** Multi-Cultural diversity to have international outlook.

IN 1998, WE ENVISIONED

1998	2008
180 days of crushing	240 days of crushing
Water Savings	Water Export
Energy Conservations	Energy Export
Manual Processes	Automated Processes
Batch Operations	Continuous Operation
Commodity market in Tamil Nadu and Kerala	National and Global Markets, Commence Branding.

THROUGH CONTINUOUS IMPROVEMENT

❋Increasing land productivity by: **a)**Better waste management, **b)**Yield improvement - vertical & horizontal growth, and **c)**Adoption of latest agricultural and harvesting technologies.

❋Breeding right varieties-high sucrose, high fiber etc.

❋Better Ratoon management.

❋ Cane crushing using efficient technologies-happening only in some parts of India.

AWARDS

EID Parry has always been a pioneer -be it in developing and introducing quality products in the market or confirming to environmental standard even before they become mandatory. The following paragraphs list the achievements of the organization and some of the prestigious awards won by the company.

SUGAR DIVISION

Nellikuppam has been recognized as a **Zero-waste plant** with a strict adherence to quality and high productivity. They have been the recipients of several awards and certifications in course of time.Some of the most significant **achievements** by the company are:

❋ISO 14001 certification in Pudukottai & Nellikuppam.

❋The recipients of the Green Tech Award on Safety.

❋Instrumental in organising a SHE event at the Murugappa Group level.

NEUTRACEUTICALS

The company is among the very few neutraceutical manufacturers to have the highest number of international

certifications. Parry Neutracetical is the only Spirulina producer in the world to get the prestigious US Pharmacopeia certification for consistent product quality and the first and only one in India to get USP certification in the entorye dietary supplement / herbal product category.

❀All Parryware manufacturing plants at Ranipat, Alwar & Dewas have been accorded **ISO14001:1996** Environmental Management system certifications by British Standards Institute (BSI)- an internationally renowned certification agency incorporated in UK by Royal Charter.

❀With this certification, the entire Parryware & Johnson Pedder ranges of sanitary ware manufactured by EID Parry (India) Limited are to be manufactured in plants that follow environmentally responsible practices.

❀Parryware's environmental management system policy commits the business to prevention of pollution, optimal utilization of resources and reduction in generation of wastes.

❀ The quality management system certification is an assertive statement of their intent to become a more customer focused, responsive & learning organization.

HERITAGE AND MILESTONES

YEAR	ACHIEVEMENT
1788	On July 17, Thomas Parry, one of the first British traders reached India and established his business on piece goods and banking.
1819	Parry and Dare was founded in 1819 with Thomas Parry and John William Dare as partners. Dare's knowledge of shipping and naval matters played a considerable role in the fortunes of Parry from the time he joined as a partner.
1824	In March 1823, Thomas Parry's (56 years old) health took a turn for the worse and he succumbed to Cholera while on an inspection trip in August 1824. His body was carried to Cuddalore and buried in the nave of the church where he used to worship.
1845	The Nellikuppam sugar factory was established in 1845-46 and its distillery was licensed in 1848. Presently, the Nellikuppam sugar factory is one of the largest and most technically efficient sugar factories in India.
1952	The Parry factory at Ranipet launched 'Parryware' its gleaming vitreous sanitaryware collection that makes bathroom decoratives ·
1975	Independence in 1947 hastened the process of Indianisation of Parrys and in 1948, Parry and Company Limited became a Public Limited Company. In 1972, the Board resolved to apply to the Government of India for conversion of the company into an Indian company and finally it became an Indian company in 1975.
1981	In 1981, after acquiring the financial clout that he insisted was necessary, Mr. Arunachalam took the chair at Parry after the Murugappa Group's New Ambadi Estates bought stake in the company.
1988	Having been absorbed into the Murugappa awning in 1981, Parrys celebrated its bi -centenary under the leadership of Mr. A Runachalam and Mr. Subbiah.
2000	Poised on the threshold of its third century, Parry has managed to maintain to arrive at a fine blend of the traditions established by the founder and adapt to a changing ethos, better suited to the competitive markets of a fast developing nation.
2004	18 November 2004 marks yet another milestone in the 216 -year-old history of E.I.D. Parry. The day marks the first -ever launch of branded refined sugar by a South Indian company. The day marks the launch of Parry's pure refined sugar.

REVIEW OF LITERATURE

Review of literature is necessary since it familiarizes the researcher with concepts and conclusions already evolved by earlier analysts. It also enables the present researcher to find out the scope for further study and to frame appropriate

objectives for the proposed evaluation. Since the proposal of the study is to measure the financial health of EID Parry (India) Limited, the previous studies made in this area of research are briefly reviewed. It also includes the opinions expressed by various authors in leading articles, journals and books.

Nikam G.A[1] (1986) attempted to analyze the financial strength of the four co-operative sugar mills situated in Aurangabad district.He has suggested that 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. Because of high block cost, the financial problems are altogether different from those, which are age old. Working result of these units is showing continuous losses. He has designed to locate short-term and long-term financial strength and weakness of these sugar mills.

Ram Vichar Sinha[2] (1986), in his book *"Sugar Industry in India"* has concentrated on the economics of sugar mills in India. This book covers the historical aspects of sugarcane, by-product utilization and labour relation in sugar mills.

Ghuman B.S and Anil Mongia[3] (1987) have examined the condition of co-operative sugar mills in Punjab. The study comprehends the performance through issues related to management, finance and physical activities. It is clear that the Co-operative sugar mills in Punjab are running into losses due to internal and external factors. They have come out with suggestions to strengthen the existing sugar mills. The suggestions are made firstly, to minimize the political interference in co-operative sugar mills, secondly, to enhance the scale of installed crushing capacity, thirdly, to minimize the inventory using the modern material management techniques, and lastly, to improve the sugar content.

Gopalan M and K.Miniraj[4] (1992) in their article on *"Financial Management of Co-operative Sugar Mills"* have dealt with certain issues for improving operational efficiency in financial affairs of Dharmapuri Co-operative sugar Mill. This study is based on case study method.

Manohar Rao P. J[5] (1996) in his article on *"Development of Indian Sugar Industry - Historical"* has studied the origin of sugarcane and it development. He has covered the area of cane production, utilization of sugarcane, sugar licensing policy, quality of sugar, various development schemes and suggestions offered by committees, sugar distribution, buffer stock, international sugar trade etc.

Narassiah A. and K. Jayachandran[6] (1996) have studied the cash management of Kovur Co-operative Sugar Mills Ltd., Nellor, and Andhra Pradesh. They have suggested that the current ratio is maintaining below the standard norm, and the inventory is occupied as a major item in current assets in the co-operative sugar mills. The net cash flow coverage ratio of the mill was negative because of the inconsistent cash flow and insufficient maintenance of liquidity. They have measured only the liquidity position.

Kanaga Anbuselvam and Namasivaym[7] (2005) in their article analyzed the emerging trends in sugar industry and suggested that lending banks have to come forward to provide adequate cash credit limits to sugar industries, as they were the valuable customers of Banks. This measure would enable the industries not only to fund buffer stock adequately, but also to minimize the process loss of sugar and to minimize the wage index per bag of sugar by utilizing the sophisticated information technologies. They strongly formed the view that the twin objectives of agricultural development and industrialization in India could be achieved only by the successful operation of sugar industry.

Thirunarayansamy[8] (2006) in his study analysed Co-operative sugar mills in Tamil Nadu and concluded that the sickness in co-operative sugar mills was found to increase year by year. It is reflected by Altman's Z-Score. The accumulated losses, Absolute technology, mismanagement in finance and production factors were the important causes for sickness in the mills. The deviation from HCL (High Level Commission) norms was due to the above-

[1] G. A.Nikam, *"Financial strength of Sugar Co-operatives - A Ratio Analysis Approach,"* Indian Co-operative Review, NCUI, New Delhi, Vol. xxiii, No.3, January-1986, P. 224-254.

[2] Ram Vichar Sinha; sugar Industry in India, Deep and Deep publication, New Delhi, 1986.

[3] B.S.Ghuman and Anil Mongia., *"Performance of co-operative sugar mills in Punjab,"* Indian Co-operative review, NCUI, New Delhi, Vol. xxv, No.1, July-1987, p. 29-37.

[4] M. Gopalan, co-operatives, TCU, Chennai, Vol.78, April-1987, P. 412.

[5] P. J. Manohar Rao., *"Development of Indian Sugar Industry Historical"* Indian CO-operative review, NCUI, New Delhi, Vol. xxxii, No.7, March 1996, P. 152-160.

[6] A.Narassiah and K. Jayachandran, *"Cash Management in a co-operative Sugar Factory A Case Study"* Indian Co-operative Review, NCUI, New Delhi, Vol. xxiii, No.3, January-1996, P. 268-274.

[7] S. P. Kanaga Anbuselvam and N. Namasivayam, June 2005. *Emerging Trends in Sugar Industry, Southern Economist,* and PP.25-26

[8] M.Thirunarayanasamy, December 2006, *Co-operative Super Mills in Tamil Nadu an Analysis of Sickness and Revival Measures,* Unpublished Ph.D Thesis, Annamalai University.

mentioned factors, which clearly revealed the weak position of the mills. The officials opined that there was little scope for reviving the sick mills. However, for recovery from sickness, HCL norms in production and related aspects have to be followed. The study concluded that better management practices and strict implementation of HCL norms would produce better results.

Dheenadhayalan V. and Mrs R. Devianabrasi[9] **(2007)** had suggested that the "Z"- score of the sample units remain below the grey area from 1997-07 but in the year 2001-02, the "Z"- score is -0.29. After 2001-02, the decreases in the score indicate that the sample unit is not financially sound and healthy. The sample units need to put in efforts to increases the score. This will help the sample unit to avoid any damage to its liquidity and solvency positions, thereby avoiding financial distress and bankruptcy.

M. Kannadhasan[10] **(2007)** made an attempt to have an insight into the examination of financial health of a watch company in India. To evaluate the financial conditions and performance of a company, this study used the Z- score model, which captured the predictive viability of a company's financial health by using a combination of financial ratios that ultimately predicted a score, which can be used to determine the financial health of a company. The study concluded that the company's overall financial health was good.

Singh N.P[11] **(2007)** - The sugar industry is a major agro-based industry of Uttar Pradesh, where cropping pattern is largely subsistence- oriented and sugarcane is one of the important cash crops. During 2001-02, the state had 20.35 lakh ha area under sugarcane out of the total 4403 lakh ha area under sugarcane in the country. The sugar industry has shown considerable instability in the level of production because of inter-dependence and inter-relationship between sugarcane, gur, khansari and white sugar leading to fluctuations in the production of sugarcane as well as sugar. These fluctuations emanated from the presence of various processing sectors and the different government policies. Such uncertainties of affairs is neither conducive to sound growth of the industry nor the growers. In view of this scenario, it was felt necessary to carry out an investigation, which can reveal the present state of sugar industry in items of its efficiency in operations. The study has revealed that most of the mills were in the efficiency range of 60-80 percent. Efficiency was higher in the private sector (81%) followed by the public (73%) and co-operative (66%) sectors. Though this study has advocated the continuation of partial decontrol policy, it has urged the policy makers to streamline strategies that promote stabilization of sugarcane economy and make the state a credible supplier of sugar in the international market, benefiting growers, and processors.

MEASURING FINANCIAL HEALTH THROUGH RATIO ANALYSIS

For determining the financial health of a company, the financial analysts takes initial steps to analyze a company's financial statement. It provides a clear picture of the financial soundness of a business and provides a roadmap outlining the direction the business is heading to. Ratio analysis is a widely used tool for financial analysis. Financial ratios are analysis tools, applied to financial data, which are used to identify positive and negative trends, strengths and weaknesses, investment attributes, and other trends, which measure the viability of the business. Ratio analysis is typically used to measure liquidity, leverage ,activity, profitability and growth. No single ratio calculation can provide a meaningful complete picture of a company's financial position. Keeping the above point in mind, this study uses 'Z'- score model, which captures the predictive viability of a company's financial health by using a combination of financial ratios that ultimately predicts a score, which are used to determine the financial health of a company.

'Z' SCORE

About 40 years ago, Edward I. Altman, a financial economist at New York University's Graduate School of Business, developed a model for predicting the likelihood that a company would go bankrupt. This model uses five financial ratios that combine in a specific way to produce a single number. This number, called the Z-score, is a general measure of corporate financial health. The most famous failure prediction model is Altman's Z-Score Model. Based on

[9] Dr. V. Dheenadhayalan and Mrs. R. Devianabrasi, "*Financial Health Of Co-operative Sugar Mills A Case Study Of NPKRR Co-operative Sugar Mills Ltd.*, New Delhi, January -2007, P. 192-197.

[10] M.Kannadhasan, "*Measuring Financial Health Of A Public Limited Company Using "Z"- Score Model- A Case Study*, the Management Accountant, June-2007, p. 469-479.

[11] N.P.Singh (2007) *Sugar Industry In Uttar Pradesh: Efficiency Still Honey The Key*, Agricultural Economic review, Year-2007, Vol. 20, issue-1.

Multiple Discriminate Analysis (MDA), the model predicts a company's financial health based on a discriminate function of the firm.

$$Z = 1.2 \ X_1 + 1.4 \ X_2 + 3.3 \ X_3 + 0.6 \ X_4 + 1.0 \ X_5$$

Where:

Z = Discriminant function score of a firm

X_1 = Working Capital / total assets

X_2 = Retained earnings / total sales

X_3 = Earnings before interest and taxes / total assets

X_4 = Market value of equity / book value of total liabilities or reciprocal of debt-equity ratio.

X_5 = Sales / total assets.

The Z-score model (developed in 1968) was based on a sample composed of 66 manufacturing companies' with 33 companies in each of two matched-pair groups. Altman subsequently developed a revised Z-score model (with revised co-efficient and Z-score cut-offs) which dropped variables X_4 and X_5 (above) and replaced them with a new variable X_4 = net worth (book value) / total liabilities. The X_5 variables were allegedly dropped to minimize potential industry effects related to assets turnover.

'Z'-SCORE INGREDIENTS

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

1) X_1 (Working Capital / Total Assets) = This ratio expresses the liquidity position of the company towards the total capitalization. Working capital is defined as the difference between current assets and current liabilities. Liquidity and size characteristics are explicitly considered.

2) X_2 (Retained Earnings / Total Sales) = It indicates the amount reinvested, the earnings or losses, which reflects the extent of the company's leverage. In other words, the extent assets, which have paid by company profits. Those firms with high Retained Earnings to Total Assets have financed their assets through retention of profits and have not utilized as much debt. It also highlights either the use of internally generated funds for growth (low risk capital) Vs OPM (other people's money) - high risk capital. This is a measure of cumulative profitability over time and leverage as well.

3) X_3 (Earnings Before Interest And Taxes / 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. Since a firm's ultimate existence is based on the earning power of its assets, this ratio appears to be particularly appropriate for studies dealing with credit risk.

4) X_4 (Market Value Of Equity / Book Value Of Total Liabilities) = It is the measure of the long-term solvency of a company. It is reciprocal of the familiar debt-equity ratio. Equity is measured by the combined market value of all shares. 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 exceed the assets and the concern becomes insolvent.

5) X_5 (Sales / Total Assets) = This is a standard turnover 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.

GUIDELINES : ALTMAN GUIDELINES FOR HEALTHY ZONE

With the help of Altman guidelines, the overall financial health of EID Parry is measured during the study period

Table 1 : Altman Guidelines

Situation	Z- score	Zones	Remarks
I	Below 1.8	Not Healthy	Its failure is certain and extremely likely and would occur probably within a period of two years.
II	Between 1.8 And 2.99	Healthy	Financial Viability is considered healthy. The failure in this situation is uncertain to predict.
III	3.0 and above	Too Healthy	Its financial health is viable and there is no risk of a fail.

with the Z-score ingredients of X_1, X_2, X_3, X_4, and X_5. They are calculated in Table 1 (Source : www.google.com).

The working capital to total assets ratio of EID Parry Sugars Limited is calculated in Table 2. Table 2 shows the relation between working capital and total assets ratio of EID Parry Sugars Limited during the study period. It is clear from the above analysis that the ratios are fluctuating throughout the study period. It was at its highest in the year 2005-06, at 0.209 and the lowest in the year 1999-00, at 0.044. The mean ratio of working capital to total assets was 0.134 during the study period. It is one of the ingredients of Z-score value to evaluate the financial health of the company during the study period and it is shown in the Table 8. The retained earnings to total assets ratio of EID Parry Sugars Limited is calculated in Table 3.

Table 2 : Working Capital To Total Assets Ratio (X_1) Of EID Parry Sugars Ltd. (₹ In Crore)

Year	Working Capital	Total Assets	Ratio(In Times)
1998-99	48.64	952.75	0.051
1999-00	40.06	902.62	0.044
2000-01	92.03	826.52	0.111
2001-02	92.06	878.24	0.105
2002-03	78.90	1048.32	0.075
2003-04	164.01	1152.75	0.142
2004-05	141.84	770.96	0.184
2005-06	166.56	798.10	0.209
2006-07	271.57	990.41	0.274
2007-08	182.71	1199.63	0.151
Average			**0.134**
Source: Computed from published annual reports of the company from 1998-99 to 2007-08.			

Table 3 : Retained Earnings To Total Assets Ratio (X_2) Of EID Parry Sugars Ltd. (₹ in Crore)

Year	Retained Earnings	Total Assets	Ratio (In Times)
1998-99	237.50	952.75	0.25
1999-00	282.30	902.62	0.31
2000-01	294.50	826.52	0.36
2001-02	322.50	878.24	0.37
2002-03	332.60	1048.32	0.32
2003-04	380.64	1152.75	0.33
2004-05	323.15	770.96	0.42
2005-06	401.59	798.10	0.50
2006-07	469.43	990.41	0.47
2007-08	518.84	1199.63	0.43
Average			**0.38**
Source: Computed from Published Annual Reports of the company from 1998-99 to 2007-08.			

Table 3 indicates the relation between the retained earnings to total assets ratio of EID Parry Sugars Limited during the study period. It is clear from the above analysis that the ratios are fluctuating throughout the study period. It was at its highest in the year 2005-06, at 0.50 and lowest in the year 1998-99, at 0.25. The mean ratio of working capital to total assets was 0.38 during the study period. It is one of the parameter of Z -score to evaluate the financial health of the company, which is shown in the Table 8.

The EBIT to total assets ratio of EID Parry Sugars Limited is calculated in the following Table 4.

Table 4 : EBIT To Total Assets Ratio (X₃) Of EID Parry Sugars Ltd. (₹ In Crore)

Year	EBIT	Total Assets	Ratio (In Times)
1998-99	52.12	952.75	0.05
1999-00	50.16	902.62	0.05
2000-01	48.32	826.52	0.05
2001-02	49.32	878.24	0.05
2002-03	69.53	1048.32	0.06
2003-04	74.00	1152.75	0.06
2004-05	64.41	770.96	0.08
2005-06	132.44	798.10	0.17
2006-07	151.69	990.41	0.15
2007-08	181.18	1199.63	0.15
Average			0.08
Source: Computed from Published annual reports of the company from 1998-99 to 2007-08.			

Table 4 indicates the relation between the EBIT to total assets ratio of EID Parry Sugars Limited during the study period. It is clear from the above analysis that the ratios are fluctuating throughout the study period. It was at its highest in the year 2005-06, which was 0.17 and the lowest in the year 1998-99-2001-02, at 0.05. The mean ratio of working capital to total assets was 0.08 during the study period. It is one of the ingredients of Z-score value to evaluate the financial health of the company, which is shown in the Table 8.

The reciprocal of debt-equity ratio of EID Parry Sugars Limited calculated in the following Table 5.

Table: 5 Reciprocal Of Debt-Equity (X₄) Ratio Of EID Parry Sugars Ltd.(₹ In Crore)

Year	Value of Equity	Total Debts	Ratio (In Times)
1998-99	291.32	668.81	0.44
1999-00	300.12	655.52	0.46
2000-01	312.32	658.63	0.47
2001-02	340.32	664.93	0.51
2002-03	350.42	768.74	0.47
2003-04	398.46	757.16	0.53
2004-05	341.00	433.46	0.77
2005-06	419.44	381.25	1.10
2006-07	487.28	504.78	0.97
2007-08	536.69	663.48	0.81
Average			0.653
Source: Computed from Published annual reports of the company from 1998-99 to 2007-08.			

Table 5 indicates the correlation relationship between equity and debt during the study period. This ratio is the reciprocal of debt-equity ratio. The highest ratio was in the year 2005-06, at 1.10, and the lowest ratio was in the year 1998-99, at 0.044. The mean ratio of value of equity to value of debts of EID Parry sugars Ltd. was 0.65. It is one of the ingredients of Z-score to measure the company's financial health during the study period and it is shown in the Table 8. The sales to total assets ratio of EID Parry Sugars Limited is calculated in the following Table 6.Table 6 indicates the relationship between sales to total assets of EID Parry Sugars Limited during the study period. This ratio varies from 0.49 to 1.33 during the study period. The highest ratio was in the year 1999-00 at 1.33 and the lowest ratio was in the year 2007-08 at 0.49. The mean ratio of sales to total assets of EID Parry Sugars Ltd. was 0.99. It is one of the parameters of Z-score to evaluate the financial health of the company and is shown in the Table 8. The ingredient value

of Z-score and Z-score (arrived at using the weighted factors) of EID Parry Sugars Limited is shown in the Tables 7 and 8. The summary of T-distribution inferences is shown in the Table 9.

Table 6 : Sales To Total Assets (X_5) Of EID Parry Sugars Ltd.(₹ In Crore)

Year	Sales	Total Assets	Ratio (In Times)
1998-99	890.12	952.75	0.93
1999-00	1200.45	902.62	1.33
2000-01	971.32	826.52	1.18
2001-02	912.35	878.24	1.04
2002-03	1121.46	1048.32	1.07
2003-04	1345.93	1152.75	1.17
2004-05	609.51	770.96	0.79
2005-06	766.42	798.10	0.96
2006-07	978.46	990.41	0.99
2007-08	583.23	1199.63	0.49
Average			**0.99**
Source: Computed from Published annual reports of the company from 1998-99 to 2007-08.			

TESTING THE SIGNIFICANCE OF CORRELATION CO-EFFICIENT

Keeping the above objectives in mind, the following hypothesis were framed and tested during the study period.

NULL HYPOTHESIS (H_o)

Ho (6) : There is no significant relationship between working capital and total assets.

Ho (7): There is no significant relationship between Retained earnings and total assets.

Ho (8): There is no significant relationship between EBIT and total assets.

Ho (9): There is no significant relationship between value of equity and total liabilities.

Ho(10) : There is no significant relationship between sales and total assets.

Ho(11): There is no significant difference between the 10 years average of 'z'-score ratio of the standard.

Table 9 : EID Parry Sugars Ltd. Summary Of "T"- Distribution Inferences

Relationship	Calculated Value	Degree of freedom	Table Value @5% confidence	Remark
Correlation between Working Capital and Total Assets	0.769	8	2.306	Not Significant
Correlation between Retained Earnings and Total Assets	1.80	8	2.306	Not Significant
Correlation between EBIT and Total Assets	1.36	8	2.306	Not Significant
Correlation between value of Equality and value of Total Debts	-0.648	8	2.306	Not Significant
Correlation between sales and Total Assets	0.765	8	2.306	Not Significant
10 Years average of Z score Value to the standard	2.20	10	2.228	Not Significant

The above-furnished ingredients (variables) are the indicators of the financial health of the company. The results of the variables are tabulated in Table 8.

Table 7 : EID Parry Sugars Limited Value Of X In "Z"- Score Ingredients

Ingredients	Financial Rations	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2000-08	Mean	r
X_1	Working Capital / Total Assets	0.051	0.044	0.111	0.105	0.075	0.142	0.184	0.209	0.274	0.151	0.135	0.262
X_2	Retained Earnings / Total Assets	0.25	0.31	0.36	0.37	0.32	0.33	0.42	0.50	0.47	0.43	0.376	0.538
X_3	EBIT / Total Assets	0.05	0.05	0.05	0.05	0.06	0.06	0.08	0.17	0.15	0.15	0.087	0.435
X_4	Value of Equity / Total debt	0.44	0.46	0.47	0.51	0.47	0.53	0.77	1.10	0.97	0.81	0.65	-0.218
X_5	Sales / Total Assets	0.93	1.33	1.18	1.04	1.07	1.17	0.79	0.96	0.99	0.49	0.99	0.261

Source: Computed from Z-Score ingredients of Xs

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Table 8 : EID Parry Sugars Ltd. "Z"- Score (Arrived At By Using The Weighted Factors)

Ingredients	Financial Ratios	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2000-08	Mean
X_1	Working Capital / Total Assets	0.06	0.053	0.133	0.126	0.094	0.170	0.221	0.251	0.329	0.181	0.162
X_2	Retained Earnings / Total	0.35	0.434	0.504	0.518	0.448	0.462	0.588	0.70	0.658	0.602	0.526
X_3	EBIT / Total Assets	0.165	0.165	01.65	0.165	0.198	0.198	0.264	0.561	0.495	0.495	0.287
X_4	Value of Equity / Total debt	0.264	0.276	0.282	0.306	0.282	0.318	0.462	0.66	0.582	0.486	0.392
X_5	Sales / Total Assets	0.93	1.33	1.18	1.04	1.07	1.17	0.79	0.96	0.99	0.490	0.99
Z - Score		1.769	2.258	2.264	2.155	2.093	2.318	2.325	3.132	3.054	2.254	2.362

Source: Computed from Z-Score ingredients of Xs

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INTERPRETATION
❀ WORKING CAPITAL TO TOTAL ASSET
It may be seen from the above table 2 that the working capital of the EID Parry Sugars Ltd. was increasing during the study period except in the year 2007-08 (Current ratio was increasing every year and it was below the conventional norm as well as the industry average. It indicates the company will strengthen the liquidity position), whereas, total assets were fluctuating year by year which shows the company concentrated more on the investments in fixed assets. The efficiency of EID Parry Sugars Ltd. in the matter of management of working capital helps the company to maintain the good financial health, but the working capital management of this company was satisfactory and not effective and sound. The correlation between working capital and total assets was positive, which was tested through the hypothesis and the result was depicted in the table 9.

❀ RETAINED EARNINGS TO TOTAL ASSETS
Conventionally, retained earrings to total assets ratio near 1:1 (100%), which indicates that growth has been financed through profit, not increasing debt. The research study (Table: 3) shows that the ratio of EID Parry Sugars Ltd. was close to 0.40 (40%), which reflects that the company is financing more capital expenditure through debt borrowings rather than retained earnings. If this company maintains the same trend, the sustainable growth of this company is not assured. The correlation co- efficient between retained earnings and total assets was tested through the hypothesis and the result was presented in Table 9.

❀ EARNINGS BEFORE INTEREST AND TAXES TO TOTAL ASSETS
The operational Performance and earning power could be assessed through EBIT to total asset, which leads to the analysis of business success or failure. The EBIT and total assets of the company were fluctuating every year during the study period and not at the same level of proportion, which leads the ratio of these companies to range between 0.05 and 0.17. If the EBIT and total assets move in the same direction, it will adversely affect the financial health of the company. The correlation co-efficient between EBIT and total assets was positive, which was tested through the hypothesis and the result was depicted in Table 9.

❀ RECIPROCAL OF DEBT-EQUITY RATIO
The Table 5 shows that the value of equity and total debts fluctuated every year during the study period The correlation co-efficient between market value of equity and total liabilities was positive which was tested through the hypothesis and the result was depicted in Table 9.

❀ SALES TO TOTAL ASSETS
The Table 6 shows that the sales and total assets ratio was fluctuating from 0.49 to 1.33 in EID Parry Sugars Ltd. It shows the companies have the capacity to increase their sales over periods but not to the desired level. The correlation co-efficient between sales and total assets was positive, which was tested through the hypothesis and the result depicted in Table 9.

❀ "Z"- SCORE VALUE
For determining the financial health of the company, the study used the "Z"- score model, which provides the financial soundness of the business and a road map outlining the direction in which the business is heading . The Tables 7 and 8 show the "Z"- score value of the company. As per the Altman's guidelines, the Z-score value of the EID Parry Sugars Limited was calculated. The Z-score is in the healthy zone from the year 1999-00 to 2007-08. In the year, 1997-98 the score was 1.769. The average Z-score value of the study period was 2.362. In the year 2005-06 and 2006-07, the score was in Too Healthy zone. Based on the guidelines, the researcher concludes that the financial health of the EID Parry Sugars Limited during the study period is healthy.

CONCLUSION
As per the Altman guidelines, the financial health of the sample units were tested through Z-score, and finally, it was

concluded that the financial health of EID Parry Sugars Limited was good (healthy) and financial viability is healthy.

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