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**MEASURING FINANCIAL STRENGTH OF A TEXTILE COMPANY BY 'Z' SCORE MODEL: A CASE STUDY**

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**ABSTRACT**

Finance is the significant facet of every business. Financial analysis is an aspect of the overall business finance function that involves examining historical data to gain information about the current and future financial health of a company. Financial analysis can be applied in a wide variety of situations to give business managers the information they need to make critical decisions. Therefore it is important to monitor the financial position and strength of a company through its financial statement, which throws light on the operational efficiency and financial position of the company. The prediction and prevention of financial distress is one of the major factors, which will help to avoid bankruptcy. Ratio analysis is widely used tool in assessing the performance of a firm in respect of liquidity, profitability and growth. This study was undertaken with a view to assess the financial strength of Siyaram Silk Mills Ltd for five financial years 2007-08 to 2011-12 through the method of ratio analysis. The Z score model has been adopted for analysing the financial strength of the company. The study reveals that financial strength of Siyaram Silk Mills Ltd is healthy and future in this situation is uncertain to predict as per Altman guidelines of Z score.

**KEYWORDS**

Liquidity, Profitability, Sustainability, t-test and Z-Score.

**INTRODUCTION**

Finance is the significant facet of every business. Both excessive as well as inadequate finance positions are dangerous from the business point of view. Therefore finance is the back bone of any business. The financial analyst is responsible to monitor the financial position of the business regularly. As there is an increasing competition from other global players, the management has to initiate appropriate steps to assess the financial strength of the company. Financial strength will provide valuable insights into its financial performance. Financial soundness of a firm is reflected through various financial parameters. By establishing a close relationship between variables, a firm can analyse its financial performance in terms of liquidity, profitability, viability and sustainability. Distress prediction model will assist a manager to keep track of a company's performance and help in identifying important trends. An attempt has been made in the present study to have an insight into the examination of financial strength of the selected company.

**REVIEW OF LITERATURE**

The need for reliable financial statement data and the importance of financial ratios for analysis and prediction is well established in the literature. Beginning with Beaver's (1966) contention that standard financial ratios can predict the financial performance of firms, many subsequent studies have attempted to demonstrate the predictive value of various techniques for estimating actual business performance.

Altman, (1968), "Financial ratio discriminate analysis and prediction of corporate Bankruptcy" analyzed the bankruptcy with five financial ratios for predicting the risk of failure and developed a model as 'Z' score.

Altman used multiple discriminate analyses (MDS) in his effort to find out a bankruptcy prediction model. He selected 33 publicly traded manufacturing bankrupt companies between 1946 and 1965 and matched them to 33 firms on a random basis. The result of MDS exercise yielded equations called 'Z' score that correctly classified 94% of the bankrupt companies and 97% of the non bankrupt companies a year prior to bankruptcy. This percentage dropped when trying to predict bankruptcy two or more years before it occurred. The ratios used in Altman model are working capital over total assets, retained earnings over total assets, earnings before interest and taxes over total assets market value of the equity over book value of total liabilities and sales over total assets.

Fieldsend, Longford and McLeay, (1987) explained how financial ratios can also give mixed signals about a company's financial health, and can vary significantly among companies or industries over a time. Other factors should also be considered such as a company's products, management, competitors, and vision for the future.

Gupta attempted a refinement of Beavers method with the objective of building a forewarning system of corporate sickness. A sample non parametric test for measuring the relative differentiating power of various financial ratios was used. The study, among 728 textile and non textile group of industries, revealed that earnings before depreciation, interest and taxes to sales and operating cash flows to sales had higher degree of sickness. The analysis is based on logistic regression, where the bankrupt event is explained by accounting and market based variables. In accordance with the literature, the liquidity and profitability ratios turned out to be the most important variable in forecasting default followed by the company size and its activity.

J.R.Raiyani and Dr. R.B. Bhatasna (2011) "A study on Financial Health of Textile Industry In India; A Z – Score Approach". Concluded that predictive viability of a company's financial health by using financial ratios ultimately predicts a score and determine the financial performance of an industry.

Perttunen and Martikainen, (1990) explained some listing of ratios to be aware of in analyzing a Company's balance sheet and income statement. They expressed that these ratios fall into four categories — liquidity, profitability, asset management (efficiency), and debt management (leverage).

Zavgren (1985), using a sample of 45 bankrupt and 45 non bankrupt firms, identified seven variables that were used to predict the future financial performance of businesses.

Deakin (1972) advanced the research of Beaver and Altman by including the fourteen important ratios identified by Beaver with the multivariate methodology of Altman. Using a sample of 32 failed and 32 non failed firms, Deakin found that cash flow coverage to total debt was important for predicting bankruptcy.

Kannadhasan(2007) in his study analysed the financial health of a public limited company using 'Z' score model and found that the company's financial position is healthy, management of working capital was satisfactory, and correlation coefficient of the financial ratios are positive.

Suriyamurthi and velavan .M (2010) tested the sample units through Z score and finally concluded that predictive viability of company's financial health using a combination of financial ratio ultimately predicts a score which can be used to determine the financial health of company.

**IMPORTANCE OF THE STUDY**

It is important to measure the financial sustainability and growth in this competitive world for existence and to grow further. If the company monitors the financial strength at regular interval, it can identify the sign of financial distress and thereby avoid bankruptcy. It is also helps to monitor the entry of new players in this field. All the above reviews show the significance of measurement of financial strength. The present study made an attempt to measure the financial strength along with liquidity, solvency with the help of Z score model of selected textile company in India.

**STATEMENT OF PROBLEM**

The textile industry holds significant status in the Indian Economy. Textile industry provides one of the most fundamental necessities of the people. It generates massive potential for employment in the sectors from agricultural to industrial. The textile industry is the second largest employer, after agriculture. Sickness

and inter-sector contradictions that are regular features of the industry have to be solved through a wise approach and well-calibrated steps, to ensure healthy growth. Therefore the sectors should be analysed to identify the weakness and find solution for the same.

**ABOUT THE COMPANY**

The company Siyaram Silk Mill Ltd was incorporated in the year 1978 and went on silk public in the year 1980. For over three decades Siyaram Silk Mills Ltd has been delivering blended high fashion shirting and suiting fabrics. It is today the largest Indian manufacturer of blended fabrics and the products are available through an unparalleled network of over 0.1 million outlets spread across India.

**OBJECTIVES OF THE STUDY**

1. To assess the overall financial performance of Siyaram Silk Mills Ltd.
2. To measure the efficiency in financial operations of Siyaram Silk Mills Ltd.
3. To predict the financial health and viability of Siyaram Silk Mills Ltd.

**HYPOTHESIS**

- H<sub>0</sub> (1) No significant relationship between working capital (WC) and total assets (TA)
- H<sub>0</sub> (2) No significant relationship between Retained earnings (RE) and total assets (TA)
- H<sub>0</sub> (3) No significant relationship between Earnings before Interest and Tax (EBIT) and total assets (TA)
- H<sub>0</sub> (4) No significant relationship between Market value of equity (MV) and total liabilities (TL)
- H<sub>0</sub> (5) No significant relationship between sales and total assets (TA)
- H<sub>0</sub> (6) No significant difference between the 5 years average of 'Z' – Score ratio of the standard.

**RESEARCH METHODOLOGY**

The study is concerned with Siyaram Silk Mills Ltd from textile industry listed in stock exchange. This study was based on the data obtained from the Annual reports of Siyaram Silk Mills Ltd for five financial years (2007-08 to 2011-12). The collected data was analyzed with the help of ratio analysis and the Z score model. Financial distress is the event of special interest. Beaver was first to use statistical techniques to predict corporate failure. He found that financial ratios for failed companies deteriorated markedly as failure approached. In similar type of study Edward I Altman, an economist developed the Z score model for predicting the financial health of a company. This model uses five financial ratios that combine to form a number. This number called the Z score is a general measure of the corporate financial health. Altman's Z score Model is based on Multiple Discriminate Analyses (MDA); the model predicts a company's financial health based on a discriminate function of the firm. The specific variable used is explained below and the interpretation of 'Z' score value is presented in Table 1. In addition the study used statistical tools like mean, standard deviation, correlation and t- test.

$$Z = 0.012X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5$$

X<sub>1</sub> = Working capital/total assets.

X<sub>2</sub> = Retained earnings/total assets.

X<sub>3</sub> = Earnings before interest and taxes/total assets.

X<sub>4</sub> = Market value of equity/book value of total liabilities.

X<sub>5</sub> = Sales/total assets.

**TABLE 1: ALTMAN GUIDELINE**

|               | Z score               | Zones       | Remarks   |
|---------------|-----------------------|-------------|---|
| Situation I   | Below 1.80            | Bankruptcy  | Failure is certain & extremely likely & would occur probably within a period of two years.              |
| Situation II  | Between 1.80 and 2.99 | Healthy     | Financial viability is considered to be healthy. The failure in this situation is uncertain to predict. |
| Situation III | 3.00 And above        | Too Healthy | Its Financial health is viable and not to fall.   |

**LIMITATIONS OF THE STUDY**

The study is limited to five years only.

The study is limited to one company.

The data for this study is taken from the published Annual reports only.

Research was based on secondary data and historical in nature.

**RESULTS AND DISCUSSION**

**TABLE 2: 'Z' SCORE INGREDIENTS AND ITS VALUE**

| Ingredients | Financial Ratios | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 | Mean  | Correlation |
|-------------|------------------|---------|---------|---------|---------|---------|-------|-------------|
| X1          | WC/TA            | 45.12   | 40.97   | 31.06   | 11.63   | 17.22   | 29.20 | -0.774      |
| X2          | RE/TA            | 1.01    | 1.28    | 2.47    | 7.76    | 12.28   | 4.96  | 0.975       |
| X3          | EBIT/TA          | 4.76    | 6.93    | 12.70   | 14.64   | 14.50   | 10.71 | 0.927       |
| X4          | MV/BVTL          | 23.49   | 11.76   | 47.13   | 49.21   | 36.81   | 33.68 | 0.756       |
| X5          | SALES/TA         | 1.01    | 1.17    | 1.37    | 1.29    | 1.26    | 1.22  | 0.944       |
|             | Z Score          | 1.86    | 1.97    | 2.48    | 2.31    | 2.34    | 2.19  |             |

Source: Computed Data

**TABLE 3: 't' DISTRIBUTION INFERENCES**

| Relationship                 | Calculated Value | Degree of freedom | Table Value of @5% Confidence | Remarks         |
|------------------------------|------------------|-------------------|-------------------------------|-----------------|
| Correlation between WC/TA    | -2.1158          | 3                 | 2.353                         | Not Significant |
| Correlation between RE/TA    | 7.6461           | 3                 | 2.353                         | Significant     |
| Correlation between EBIT/TA  | 4.2694           | 3                 | 2.353                         | Significant     |
| Correlation between MV/BVTL  | 1.9974           | 3                 | 2.353                         | Not significant |
| Correlation between Sales/TA | 4.9534           | 3                 | 2.353                         | significant     |

Source: Computed Data



TABLE 4: 't' TEST FOR 'Z' SCORE (5 YEARS AVERAGE OF Z SCORE VALUES TO THE STANDARD)

| Year      | X(z Score) | $x = (X - \bar{X})$ | $X^2$  |
|-----------|------------|---------------------|--------|
| 1         | 1.86       | 0.1454              | 0.0211 |
| 2         | 1.97       | 0.1182              | 0.0140 |
| 3         | 2.48       | 0.2886              | 0.0833 |
| 4         | 2.31       | -0.2189             | 0.0479 |
| 5         | 2.34       | -0.3340             | 0.1111 |
| $\bar{X}$ | 2.19       |                     | 0.2775 |
|           |            | $\sigma_s =$        | 0.2634 |

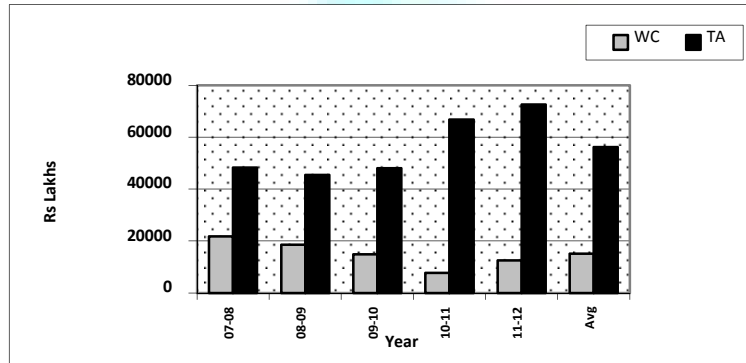
$t = [\bar{X} - \mu H_0] / \{[\sigma_s] / \sqrt{n}\} = -2.48$

As the observed value of 't' (i.e., -2.48) is in the acceptance region (less than the table value of 2.132 at 5% with degree of freedom of 4), we accept  $H_0$  at 5 % level and conclude that there is no significant difference between the 5 years average of 'Z' – Score ratio of the standard as per table 4.

**WORKING CAPITAL (WC) TO TOTAL ASSETS (TA)**

Working capital is the difference between current assets and current liabilities. This ratio considers liquidity of the company. A company with consistent operating losses will have shrinking current assets in relation to total assets.

GRAPH 1: WC TO TA OF SIYARAM SILK MILLS LTD



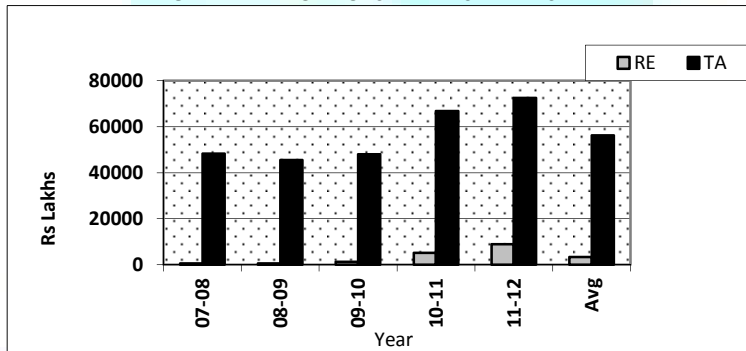
Sources: Annual Reports of Siyaram Silk Mills Ltd 2007-08 to 2011-12.

It may be seen from the above graph 1 that the working capital of the company is fluctuating during the study period; whereas the total assets increased year by year without any proportion to working capital. The correlation coefficient between WC and TA is tested through the hypothesis and the result are indicated in the table 3.

**Retained Earnings (RE) to Total Assets (TA)**

This ratio measures the cumulative profitability over the life of the company. Significant retained earnings means a history of profitable operation and ability to withstand periods of losses.

GRAPH 2: RE TO TA OF SIYARAM SILK MILLS LTD



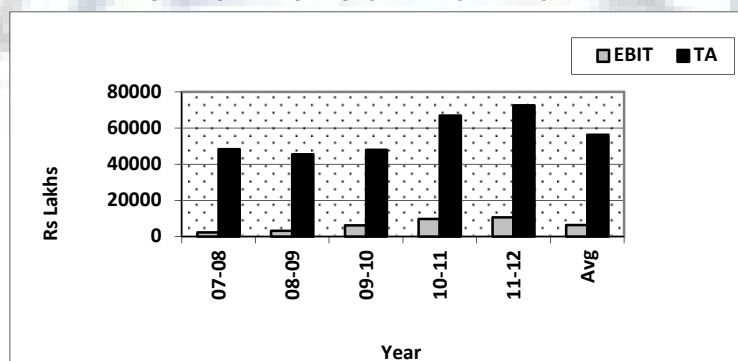
Sources: Annual Reports of Siyaram Silk Mills Ltd 2007-08 to 2011-12

The graph 2 shows that the Retained earnings to Total asset are very less compared to the conventional ratio of 1:1. The correlation between RE and TA was positive which was tested through the hypothesis and the result is shown in the table 3.

**EARNINGS BEFORE INTEREST AND TAX (EBIT) TO TOTAL ASSETS (TA)**

This ratio measures the productivity of capital or the earning power of the company. The survival of a company depends on its earnings power. EBIT to TA shows the operational performance and earning power of the company.

GRAPH 3: EBIT TO TA OF SIYARAM SILK MILLS LTD

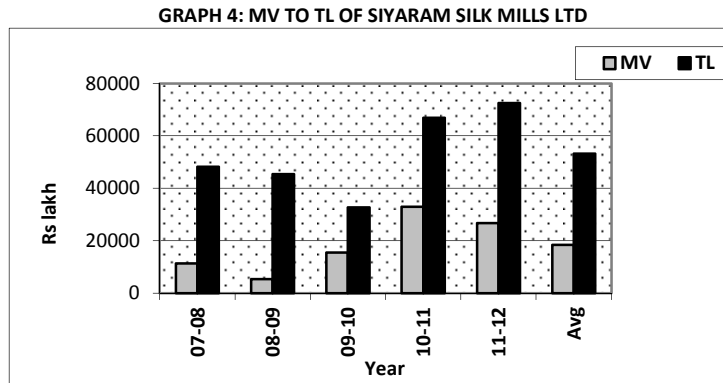


Sources: Annual Reports of Siyaram Silk Mills Ltd 2007-08 to 2011-12

Graph 3 depicts that the EBIT and TA increased year by year during the study period but not at the same proportion. The correlation between EBIT to TA tested through the hypothesis and the result was indicated in the table 3.

**MARKET VALUE OF EQUITY (MV) TO TOTAL LIABILITY (TL)**

A significant market value of equity signifies investors’ belief on the earning power of the company and its solid financial position. Moreover, a company that has significant market capitalisation can issue new shares to mobilize funds to circumvent temporary financial difficulties.

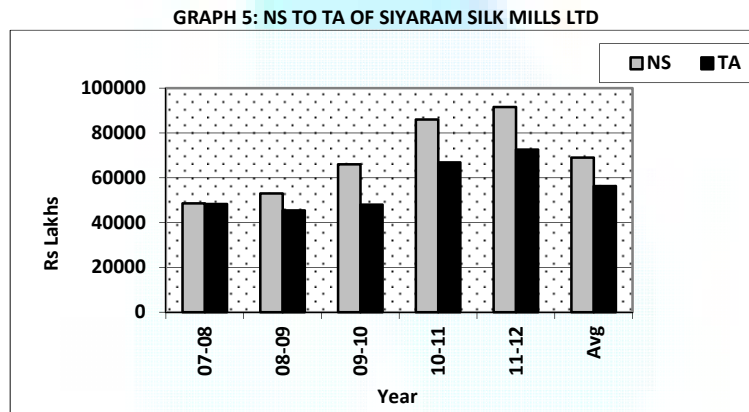


Sources: Annual Reports of Siyaram Silk Mills Ltd 2007-08 to 2011-12

According to graph 4 the market value of equity and total assets were fluctuating over the period. The correlation between MV to TA tested through the hypothesis and the result was indicated in the table 3.

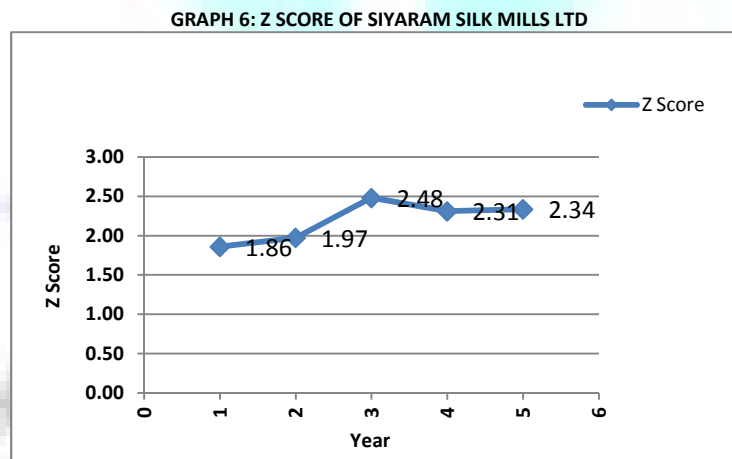
**NET SALES (NS) TO TOTAL ASSETS (TA)**

This ratio measures how efficiently the company uses its assets to generate sales. It measures the capability of the company in dealing with competitive conditions.



Sources: Annual Reports of Siyaram Silk Mills Ltd 2007-08 to 2011-12.

It is clear from the graph 5 that sales to total asset were increased in the same trend during the study period. The correlation between Sales to TA tested through the hypothesis and the result was indicated in the table 3.



Sources: Calculated as per Annual Reports of Siyaram Silk Mills Ltd 2007-08 to 2011-12

The graph 6 shows the Z score value of the Company. As per Altman’s guideline, the Company’s financial viability is considered to be healthy. The failure in this situation is uncertain to predict. The correlation of Z score for 5 years average was tested through the hypothesis and the result is indicated in the table 4.

**FINDINGS**

- As mentioned above, the study had made an attempt to analyse the financial strength of Siyaram Silk Mills Ltd by Z score model. It is clear that the financial strength is healthy. In the initial years of the study period, the financial strength showed improvement and in later years it shows stagnation. Therefore, it is difficult to predict the future in such situations.
- The efficiency in the matter of working capital management helps the company to maintain the good financial health. The working capital management of the selected company was only average till 2010-11, but it shows improvement in the year 2011-12.
- If the EBIT and TA are moving in the same direction, it will adversely affect the financial health of the company.

- Working capital to total assets ratio has been fluctuating during the study period. One of the reasons may that the company is not capable of collecting materials on credit and has less credit worthiness in the market.
- Investment in fixed assets has increased year by year. These are positive signs. The cause maybe, that the company has taken expansion programme.
- In spite of high sales, its net profit position is not very high. This may be due to higher fixed operating expenses and low rate of gross margin.

### RECOMMENDATION/SUGGESTIONS

Since increasing sales of the company had been yielding sufficient earnings to meet the obligation, additional debt will not remain unpaid. The management should depend on low cost debt capital to finance its investment programme. As operating leverage depends on techniques of production it is difficult to change the production system. If market is available cost should be reduced and gross margin is to be improved. The company should try to minimize its cost of goods sold, enhance working capital and convert debt capital into equity capital.

### CONCLUSION

Financial strength of the company is a matter of concern for every stakeholder. In this arena Altman's Z score plays an important role in judging the financial soundness of the company. The present study was conducted to analyse the financial strength of the company selected. The study reveals that financial strength of Siyaram Silk Mills Ltd is healthy and future in this situation is uncertain to predict as per Altman's guidelines. If the healthy condition is to be sustained in the years ahead it has to strive for improved productivity and optimal utilisation of all the resources by following the growth path that it has set for itself.

### ACKNOWLEDGEMENTS

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### APPENDIX

#### APPENDIX 1

| MEASURING FINANCIAL STRENGTH OF A TEXTILE COMPANY BY Z SCORE MODEL-A CASE STUDY |          |          |          |          |          |          |
|---|----------|----------|----------|----------|----------|----------|
| Source of Data: Siyaram Silk Mills Ltd. Annual Reports                          |          |          |          |          |          |          |
| PARTICULARS   | Units    | 2011-12  | 2010-11  | 2009-10  | 2008-09  | 2007-08  |
| Fixed Assets  | Rs.Lakhs | 26499.72 | 25304.18 | 22874.53 | 20681.26 | 20653.73 |
| Current Assets  | Rs.Lakhs | 46062.19 | 41543.04 | 25140.21 | 24757.7  | 27606.78 |
| Total Assets  | Rs.Lakhs | 72561.91 | 66847.22 | 48014.74 | 45438.96 | 48263.51 |
| Retained Earnings   | Rs.Lakhs | 8910.19  | 5186     | 1184.4   | 582.42   | 486.87   |
| Profit Before Tax   | Rs.Lakhs | 8121     | 8284     | 4899.85  | 1464.22  | 1225.03  |
| Interest  | Rs.Lakhs | 2401.86  | 1505.73  | 1196.77  | 1682.78  | 1072.17  |
| Earnings Before Interest and tax  | Rs.Lakhs | 10522.86 | 9789.73  | 6096.62  | 3147     | 2297.2   |
| Shareholders fund   | Rs.Lakhs | 26712.26 | 21988.29 | 20661.05 | 37503.88 | 40684.12 |
| Non Current Liabilities   | Rs.Lakhs | 12283.45 | 11089.89 | 1829.14  | 1795.14  | 1745.14  |
| Current Liabilities   | Rs.Lakhs | 33566.2  | 33769.89 | 10224.55 | 6139.94  | 5831.25  |
| Total Liabilities   | Rs.Lakhs | 72561.91 | 66848.07 | 32714.74 | 45438.96 | 48260.51 |
| Sales   | Rs.Lakhs | 91554.06 | 85954.52 | 65972.72 | 53011.57 | 48609.62 |
| Working Capital   | Rs.Lakhs | 12495.99 | 7773.15  | 14915.66 | 18617.76 | 21775.53 |
| Market Price per Share  | Rs.      | 285      | 351      | 164.5    | 57       | 120.95   |
| Number of Equity Shares   | Numbers  | 9372048  | 9372048  | 9372048  | 9372048  | 9372048  |

## APPENDIX 2

## 't' TEST OF RATIOS FOR ASCERTAINING THE LEVEL OF CONFIDENCE

| Sl.  | Particulars   | Working Capital/<br>Total Assets | Retained<br>Earnings/ Total<br>Assets | EBIT/ Total<br>Assets | Market Value of EQ /<br>Book Value of Total<br>Liabilities | Sales/ Total<br>Assets |
|--|---|----------------------------------|---------------------------------------|-----------------------|--|------------------------|
|  |   | X <sub>1</sub>                   | X <sub>2</sub>                        | X <sub>3</sub>        | X <sub>4</sub>   | X <sub>5</sub>         |
|  | $t = r \times \sqrt{[(n-2) / (1-r^2)]}$                                   |                                  |                                       |                       |  |                        |
|  | Where, n= 5   |                                  |                                       |                       |  |                        |
| (a)  | $(n-2) / (1-r^2)$   | 7.4768                           | 61.4625                               | 21.2279               | 6.9894   | 27.5362                |
| (b)  | Square root (a)   | 2.7344                           | 7.8398                                | 4.6074                | 2.6438   | 5.2475                 |
| (c)  | Calculated Value 't' =  | -2.1158                          | 7.6461                                | 4.2694                | 1.9974   | 4.9534                 |
|  | Degree of Freedom =   | (n-2)=3                          | (n-2)=3                               | (n-2)=3               | (n-2)=3  | (n-2)=3                |
| (d)  | Assuming Confidence Level = 5%<br>Table Value at 5% Confidence Level<br>= | 2.353                            | 2.353                                 | 2.353                 | 2.353  | 2.353                  |
| (e) = (c)-(d)  | Difference =  | -4.4688                          | 5.2931                                | 1.9164                | -0.3556  | 2.6004                 |
|  | Remarks   | Not Significant                  | Significant                           | Significant           | Not Significant  | Significant            |
| <b>(If the calculated value of 't' is more than the table value, then there is significant difference)</b> |   |                                  |                                       |                       |  |                        |

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