Measuring Financial Sustainability of Reliance Industries Limited by using 'Z'- Score Model

Dr. Sarika Lohana
Asstt. Director (T&P)
Matoshri Pratishthan Group of Institutions
Nanded.

ABSTRACT

Financial ratios are analysis tools, applied to financial data, which are used to identify positive and negative trends, strengths and weaknesses, investment attributes, financial health 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 predicate 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. Reliance Industries is such a unique industry which shown its deep routed evolvement and commitment for the welfare of the country men on a big an scale it has clear cut target of improving the standard of living of millions of citizens of India's and thus this industry is in forward with a banner of success and economic prosperity. The study attempts to assess the financial Sustainability of the Reliance Industries in terms of retained earnings to total assets, networking capital position, equity and debt position, Return on total assets position, and net sales turnover position of the company. The study has been done through data from the Reliance Industries financial statements for the period of 5 years i.e. 2003-04 to 2007-08

Keywords: *viability, leverage, investment attributes, financial health, Sustainability*

INTRODUCTION:

For determining the financial health of a company, the financial analysts take initial steps to analyze a company's financial statements. 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 t o 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 predicate 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.

ABOUT RELIANCE INDUSTIRES

The role of the Private Industries in a country with democratic step up is very significant because the government policy encourage full –fledge development of private industries provides necessary help for the full nourishment and stimulation of private industries because these industries through their products and margin of benefit help to faster national income. These industries do help ever the consumers by providing to them items of daily consumption so that the life of citizen consumer became smooth, these industries also have, rather indirectly to raise the standard of life of the people. These industries help in providing employees to the thousands of eligible employees. This is not, in integrated less significant because to provide job to the needy is the more essential aspects of have life happy and to survive better.

Reliance Industries is such a unique industry which shown its deep routed evolvement and commitment for the welfare of the country men on a big an scale it has clear cut target of improving the standard of living of millions of citizens of India's and thus this industry is in forward with a banner of success and economic prosperity. The industries chief objectives are the people of India. The people are benefited as consumers and also as the workers in a very large establishment.

Reliance Industry is most successful history of thieving organization, which not only developed itself but generated most potential capacity to develop the nation, employed, productivity, communication and so many branches of human welfare activities through helping society by actually producing essential commodities of daily. It has thus established itself as a unique industry in respect of its own economic growth along with welfare of the people at national level. So, it is unique in itself in its vital contribution to human welfare at large. Besides its own historic economic achievements with positive public will it has help our country now a days is the strength of the nation. In this respect, Reliance industry has helped our nation to become strong in terms industrial products.

REVIEW OF LITERATURE

M. Kannadhasan (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

Mansur.A Mulla, (2002) "Use of Z score analysis for Evaluation of financial health of Textile Mills-A case Study", in his article made a study in Textile mill with the help of Z score model for evaluating the financial health with five weighted financial ratios

Selvam, M., Vanitha, S., & Babu (2004), " A study on financial health of cement industry-"Z score analysis" had revealed about Cement industry's financial health with special reference to India Cements Limited.

Krishna Chaitanya V (2005), "Measuring Financial Distress of IDBI Using Altman Z –Score Model" have study financial analysis used Z model to measure the financial distress of IDBI and concluded that IDBI is likely to become insolvent in the years to come.

OBJECTIVES

The study attempts to assess the financial health of the Reliance Industries in terms of retained earnings to total assets, networking capital position, equity and debt position, Return on total assets position, and net sales turnover position of the company.

RESEARCH METHODOLOGY

The study has been done through data from the Reliance Industries financial statements for the period of 5 years i.e. 2003-04 to 2007-08

HYPHOTHESIS

H_0 (1): There is no significant relationship between Working capital and total assets

H_1 (1): There is significant relationship between Working capital and total assets.

H_0 (2): There is no significant relationship between Retained Earnings and Total assets

H_1 (2): There is significant relationship between Retained Earnings and Total assets

H_0 (3): There is no significant relationship between EBIT and Total Assets

H_1 (3): There is significant relationship between EBIT and Total Assets

H_0 (4): There is no significant relationship between Value of Equity and total debts

H_1 (4): There is significant relationship between Value of Equity and total debts

H_0 (5): There is no significant relationship between Sales and Total assets

H_1 (5): There is significant relationship between Sales and Total assets

Measuring Financial Health through 'Z' Score

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

Where:

Z= Discriminate function score of a firm

X_1 = Working capital/ total assets

X_2 = Retained earnings/total assets

X_3= Earnings before interest and taxes/ total assets

X_4= Market value of equity/ book value of total liabilities

X_5= Sales/ total assets

Altman Guidelines, the overall financial health of Reliance Group of Industries is measured during the study period with the Z-score ingredients of X1, X_2, X3, X4, and X_5 The overall efficiency achieved by the companies in the management of working capital. Working capital turnover ratio indicates the velocity of utilization of net working capital

Altaman Guidelines

Situation	Z-score	Zones	Remark
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 fall

EMPERICAL ANALYSIS

Table 1

Working Capital To Total Assets (X1) of Reliance Company

Year	Working capital	Total assets	Ratio (in Times)
2003-04	9,754.55	71152	0.14
2004-05	11,320.00	80586	0.14
2005-06	8,119.95	93095	0.08
2006-07	11,334.95	117353	0.09
2007-08	18,847.75	149792	0.12
Sources: annual report of the RGI 2003-04 to 2007-08			

The table 1 is the calculation if the variable of the Z score model X1 i.e. Working capital and total assets ratio of the Reliance Group of Industries. It shows the relationship working capital to total asset for the research period. It is clearly form that the ratios fluctuated throughout the years of the study period. It is highest in 2003-05 at 0.014 for two years and the lowest in the year 2005-06, at 0.08. The mean ratio of working capital to total assets was 0.114 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 no 2.19.

The working capital of the Reliance Company was fluctuating from 2005-06 onwards to 2007-08 simultaneously the current ratio also reflect in the table A high net working capital to total asset ratio shows the company's ability to match its account payable obligations on time. Suppliers prefer to strike relationships with such companies, who would make payments on time.

The reason for a high working capital-total assets ratio could be the company realizing revenue from sales much quicker than it makes payments for raw materials and other services. The reason could, however, also be the company not utilizing its cash reserves optimally. The money blocked as working capital usually receives a very low rate of return, and as such, companies seek to minimize working capital levels, with the concept of zero working capital, trying to do away with working capital altogether.

During period of 2005-06 to 206-07 the Reliance Group of Industries was observed with a low working capital to total assets ratio, usually indicates serious cash flow difficulties for the company, with the company unable to make payments to its suppliers and creditors, even when it makes profit and has assets to cover its liabilities. It could be a predictor for an imminent bankruptcy or disaster, as the reason for the low ratio could be consistent operating losses by slow sales that eat into working capital reserves, causing it to shrink relative to total assets. A low or negative ratio could however also indicate adoption of a zero working capital initiative.

Year	**Retained Earnings**	**Total assets**	**Ratio (in Times)**
2003-04	4,427	71152	0.06
2004-05	6,527	80586	0.08
2005-06	7,676	93095	0.08
2006-07	10,503	117353	0.08
2007-08	17,827	149792	0.11
Average			0.082
Source: computed from published annual report of the company from 2003-04 to 2007-08			

Table 2 exhibits the relationship between the retained earnings to total assets ratio of the Reliance Group of industries during the study period. It is clear from the above analysis that the ratios are constant for 3 years i.e. from 2004-07, at 0.08. It was recorded highest in 2007-08, at 0.11 and lowest 2003-04, at 0.06. The mean ratio of working capital to total assets was 0.082.

Table 2.

Retained Earnings To Total Assets (X2) of Reliance Company

Table 3

EBIT To Total Assets (X3) of Reliance Company

Year	EBIT	Total assets	Ratio (in Times)
2003-04	7736	71152	0.11
2004-05	10537	80586	0.13
2005-06	11581	93095	0.12
2006-07	15710	117353	0.13
2007-08	24088	149792	0.16
Average			0.13
Source: computed from published annual report of the company from 2003-04 to 2007-08			

Table 3 reveals the relationship between the retained earnings to total assets ratio of the Reliance Group of industries during the study period. It is clear from the above analysis that the ratios are fluctuating throughout the study period. It was recorded highest in 2007-08, at 0.16 and lowest 2003-04, at 0.11. The mean ratio of working capital to total assets was 0.13.

Table 4

Value of Equity To Total debts (X4) of Reliance Company

Year	Value of Equity	Total debts	Ratio (in Times)
2003-04	19293.68	34,453	0.50
2004-05	18585.38	40,403	0.46
2005-06	21913.76	49,804	0.44
2006-07	28145.48	63,967	0.44
2007-08	36652.05	81,449	0.45
Average			0.472
Source: computed from published annual report of the company from 2003-04 to 2007-08			

Table 4 shows the relationship between the retained earnings to total assets ratio of the Reliance Group of industries during the study period. It is clear from the above analysis that the ratios are constant for 2 years i.e. from 2005-07, at 0.44. It was recorded highest in 2003-04, at 0.50 and lowest 2005-06 and 2006-07, at 0.44 respectively. The mean ratio of working capital to total assets was 0.472.

Table 5

Sales To Total Assets (X5) of Reliance Company

Year	Sales	Total assets	Ratio (in Times)
2003-04	56247	71152	0.79
2004-05	73164	80586	0.91
2005-06	89124	93095	0.96
2006-07	118354	117353	1.00
2007-08	139269	149792	0.93
Average			0.92
Source: computed from published annual report of the company from 2003-04 to 2007-08			

Table 5 indicates the relationship between the Sales to total assets ratio of the Reliance Group of industries during the study period. It is clear from the above analysis that the ratios are fluctuating throughout the study period. It was recorded highest in 2006-07, at 1.00 and lowest 2003-04, at 0.79. The mean ratio of working capital to total assets was 0.92.

Table 6

Reliance Group of Industries of X in "Z" score Ingredients

Ingredients	**Financial Ratio**	**2003-04**	**2004-05**	**2005-06**	**2006-07**	**2007-08**	**Mean**
X1,	Working capital / assets	0.14	0.14	0.08	0.09	0.12	0.114
$X_{2,}$	Retained Earnings / Total assets	0.06	0.08	0.08	0.08	0.11	0.082
X_3	EBIT/ Total Assets	0.11	0.13	0.12	0.13	0.16	0.13
$X_{4,}$	Value of Equity / total debts	0.56	0.46	0.44	0.45	0.45	0.472
X_5	Sales / Total assets	0.79	0.91	0.96	1.00	0.93	0.92
Z score	--------	1.741	1.895	1.828	1.913	2.026	1.8806

It is concluded that 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 Table 6 shows the "Z" score value of the Reliance Company. As per the Altman's guidelines, the Z-score value of the Reliance Company was 1.741, the score was in not healthy zone. The average Z- score value of the study period was 1.8806, the score is healthy zone. Hence the researcher concludes the Reliance Group of Industries, It is financial viable and is considered as healthy firm. But the company has to work out on this parameter of the financial check to sustain in the next coming years.

Hypothesis Testing

Step: 1

H_0 **(1):** There is no significant relationship between Working capital and total assets

H_1 **(1):** There is significant relationship between Working capital and total assets.

Step: 2 Calculation of t-test:

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$

$$t = \frac{0.83}{\sqrt{1-0.83^2}} \times \sqrt{5-2}$$

$$t = 1.490 \times 1.732$$

$$t = 2.580$$

Step: 3 Calculation of degree of freedom

= n-2

= 5-2

=3

Level of Significance = 5 percent

T- Tabulated value = 2.353

Step: 4 Result

For 3 d.f. at 5 % level of significance on the basis of table value is 2.353 which less than the calculated value of t- value= 2.580 therefore the hypothesis, which biased one is rejected at 5 % level of significance. The null hypothesis (H_0) is rejected, Alternative hypothesis (H_1) is accepted. It can be concluded that there is any significant difference between working capital and assets.

Step: 1

H_0 **(2):** There is no significant relationship between Retained Earnings and Total assets

H_1 **(2):** There is significant relationship between Retained Earnings and Total assets

Step: 2 Calculation of t-test:

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$

$$t = \frac{0.99}{\sqrt{1-0.99^2}} \times \sqrt{5-2}$$

$$t = 7.02 \times 1.732$$

$$t = 12.160$$

Step: 3 Calculation of degree of freedom

= n-2

= 5-2

=3

Level of Significance = 5 percent

T- Tabulated value = 2.353

Step: 4 Result

For 3 d.f. at 5 % level of significance on the basis of table value is 2.353 which less than the calculated value of t- value= 12.160 therefore the hypothesis, which biased one is rejected at 5 % level of significance. The null hypothesis (H_0) is rejected, Alternative hypothesis (H_1) is accepted. It can be concluded that there is any significant difference between Retained Earnings and Total assets.

Step: 1

H_0 (3): There is no significant relationship between EBIT and Total Assets

H_1 (3): There is significant relationship between EBIT and Total Assets

Step: 2 Calculation of t-test:

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$

$$t = \frac{0.99}{\sqrt{1-0.99^2}} \times \sqrt{5-2}$$

$$t = 7.02 \times 1.732$$

$$t = 12.160$$

Step: 3 Calculation of degree of freedom = n-2

= 5-2

=3

Level of Significance = 5 percent

T- Tabulated value = 2.353

Step: 4 Result

For 3 d.f. at 5 % level of significance on the basis of table value is 2.353 which less than the calculated value of t- value= 12.160 therefore the hypothesis, which biased one is rejected at 5 % level of significance. The null hypothesis (H_0) is rejected, Alternative hypothesis (H_1) is accepted. It can be concluded that there is any significant difference between EBIT and Total Assets

Step :1

H_0 (4): There is no significant relationship between Value of Equity and total debts

H_1 (4): There is significant relationship between Value of Equity and total debts

Step: 2 Calculation of t-test:

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$

$$t = \frac{0.98}{\sqrt{1-0.98^2}} \times \sqrt{5-2}$$

$$t = 4.989 \times 1.732$$

$$t = 8.572$$

Step: 3 Calculation of degree of freedom = n-2

= 5-2

=3

Level of Significance = 5 percent

T- Tabulated value = 2.353

Step: 4 Result

For 3 d.f. at 5 % level of significance on the basis of table value is 2.353 which less than the calculated value of t- value= 8.572 therefore the hypothesis, which biased one is rejected at 5 % level of significance. The null hypothesis (H_0) is rejected, Alternative hypothesis (H_1) is accepted. It can be concluded that there is any significant difference between Value of Equity and total debts

Step:1

H_0 **(5): There is no significant relationship between Sales and Total assets**

H_1 **(5): There is significant relationship between Sales and Total assets**

Step: 2 Calculation of t-test:

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$

$$t = \frac{0.98}{\sqrt{1-0.98^2}} \times \sqrt{5-2}$$

$$t = 4.989 \times 1.732$$

$$t = 8.572$$

Step: 3 Calculation of degree of freedom

= n-2

= 5-2

=3

Level of Significance = 5 percent

T- Tabulated value = 2.353

Step: 4 Result

For 3 d.f. at 5 % level of significance on the basis of table value is 2.353 which less than the calculated value of t- value= 8.572 therefore the hypothesis, which biased one is rejected at 5 % level of significance. The null hypothesis (H_0) is rejected, Alternative hypothesis (H_1) is accepted. It can be concluded that there is any significant difference between Sales and Total assets

Table 7

Reliance Group of Industries summary of T- Distribution Inferences

Relationship	**R**	**Calculated value**	**Degree of Freedom**	**Table value @ 5% confidence**	**Remark**
Correlation between Working capital and total assets	0.83	2.580	3	2.353	Significant
Correlation between Retained Earnings and Total assets	0.99	12.160	3	2.353	Significant
Correlation between EBIT and Total Assets	0.99	12.10	3	2.353	Significant

Correlation between Value of Equity and total debts	0.98	8.572	3	2.535	Significant
Correlation between Sales and Total assets	0.98	8.572	3	2.353	Significant

FINDINGS AND CONCLUSION

It seem from the analysis that working capital of the Reliance Group of Industries was fluctuating during the period study. Whereas, total assets was increasing during the study period which shows that the company more concentrated on the investment in fixed assets. The efficiency of Reliance Group of Industries in the matter of working capital management helps the company to maintain the good financial health, but the same was recorded satisfactory and not effective and sound.

Conventionally, retained earnings to total assets ratio, the research study shows the ratio of the Reliance Group of Industries was averagely close to 0.082, which indicates that growth has been financed through debt and not by retained earnings. If the company maintains the same trend, the sustainable growth this company is not assured.

The operational performance and earning power could be assessed through EBIT to total asset, which leads to the analysis of business success or failure. During the study the ratio shows fluctuation, averagely recorded 0.13. Its correlation was positive, which was tested through hypothesis.

The value of equity to total debt fluctuated every year during the study period. The correlation co-efficient between market value of equity and the total liabilities were positive.

The sales and total assets ratio was recorded at increasing trend, averagely recorded 0.92 of Reliance Group of Industries. It shows the company has the capacity to increase their sales over period but not to the desired level. To be concluded, that the overall performance based on statistical variables of the Reliance Group of Industries are satisfactory.

References:

Journals

Abbasn Maleki, 2001, India's Energy security: The Oil & Gas Dimension (http://www.caspianstudies.com/article/maleki-delhi.html)

Albert A. Cannella, Jr. and Martin J. Monroe, "Contrasting Perspectives on Strategic Leaders: Toward a More Realistic View of Top Managers," Journal of Management 1997 vol. 23: pp. 213 - 237.

Allen C. Amason and Harry J. Sapienza, "The Effects of Top Management Team Size and interaction Norms on Cognitive and Affective Conflict," Journal of Management, Aug 1997; vol. 23: pp. 495 - 516.

Altman, E., "Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy," Journal of Finance, September 1968.

Altman, E., and A. C. Eberhart, "Do Seniority Provisions Protect Bondholders' Investments?" Journal of Portfolio Management, Summer 1994.

Altman, E., J. Hartzell, and M. Peck, "Emerging Markets Corporate Bonds: A Scoring System," Salomon Brothers Inc, New York, 1995.

Altman, E., R. Haldeman, and P. Narayanan, "ZETA Analysis: A New Model to Identify Bankruptcy Risk of Corporations," Journal of Banking and Finance, June 1977.

Krishna Chaitanya V (2005), "Measuring Financial Distress of IDBI Using Altman Z –Score Model" The Icfai University Journal of Bank Management. VOL IV; Part 3, pages 7-17

M. Kannadhasan (2007), "Measuring Financial Health of A Public Limited company using 'Z' Score Model – A case study" in The Management Accountant, June, p.470.

Mansur, A Mulla (2002), "Use of Z score Analysis for Evaluation of Financial Health of Textil Mills-A Case Study"Abhigyan,Jan-March Vol.XIX,No.4.pp.37-41.

Selvam, M. Vanitha, S. Babu, M. (2004), A study on financial health of cement industry - "Z" score analysis, MANAGEMENT ACCOUNTANT - CALCUTTA-, VOL 39; PART 7, pages 591-593

Books

Agrawal R.N., "Sugar Industry ofn India", My Recollection, Bombay, 1952.
Bhalla V.K., "Financial Management and Policy", Third Revised and Enlarged Edition, New Delhi, Anmol Publication Pvt. Ltd., 2002.
C.R.Kothari, (2006), Research Methodology Method & Techniques, New Age International (P) MTD. Publishers
Chakravathy.S.K., "Financial Management, Theory and Practise," Tata MsGraw Hill Publication Company Ltd. - 1989
Chandra P., "Financial Management Theory and Practice", 2nd Ed., New delhi, Tata McGRaw Hill Publishing Company Ltd. - 1989.
Childs, John F., *"Long-term financinf"*(Prentice Hall, Inc, Englewo
DewettK.K.K.J.K. Varma and M.L.Sharma., "Indian Economy", Ch

Websites

www.relianceinfo.com
www.ril.com
www.indianexpress.com
www.economicstimes.com
www.thehindu.com
www.rediffmail.com