

CSR Initiatives and Firm efficiency of TATA Group of Companies in India - A Variance Analysis

V.L. Govindarajan

Assistant Professor,
Department of Commerce,
DRBCCC Hindu College,
Pattabiram, Chennai

Abstract

The present paper aims to study the influence level of CSR initiatives on the financial efficiency of the Tata group of companies in India. BSE 200 listed TATA group companies were selected for the study and applied content analysis. Secondary collected data from Annual reports, moneycontrol.com and BSE websites. Edward Altman's "Z" score was treated as modern financial performance and calculated for the period from 2009-10 to 2014-15. CSR Cost variance, CSR Budget variance and CSR Volume variance were calculated through standard costing technique under management accounting principles. The standard cost process is mostly used to control the operating task of the organization. All the parameters have been analyzed with one sample t test, Karl Pearson's correlation for its validity. The coefficient of determination has also been tested through linear regression analysis and the author found that the relationship between CSR variables and the ancient financial variables EPS, Book Value, Return on Equity and Operating Profit were positively correlated and also found that Operating profit influencing to the extent of 95.9%, but the modern financial variable of Altman Z score not influencing the actual CSR contribution of Tata group of companies during the study period.

Keywords: CSR Initiative, CSR Budget, CSR recovery, Standard Costing Technique, Altman's Z score and Tata group

Introduction

The process of globalization and the need for CSR is now changing the way in present economy and nations at large. Now a day's every organization are rendering continuous commitment to socially and ethically responsible business practices. Everyone realized that Society and its people are always directly or indirectly related to production and economy of the nation and world at large. CSR has been incorporated in the various religious laws where a part of one's earnings are donated for the benefit of the poor and community welfare. The Hindus call it 'Dharmmada', the Muslims 'Zakatah', the Sikhs 'Dashaant'; call it by different names, but the concept has been seen in the society from the very beginning. As individuals joined hands to form organizations, the same concept became embedded in the corporations or organizations (Baxi, et al 2005). In the Bhagavad-Gita, the key principles of Vedic philosophy is re-cemented in the Indian mind on the basic moral understandings required to achieve salvation through transcendental knowledge, the obedience to law of

karma, self-realization, and the performance of actions under the framework of Vedic sciences. The Bhagavad-Gita is accepted as a universal body of knowledge and remains as a lifelong scientific and spiritual model for mankind. It triggers the search for self-realization and appropriate right action in the material driven world. Sri Krishna says in the Bhagavad-Gita (3– 13), that all sorrows from the society would be removed if socially conscious members of a community feel satisfaction in enjoying the remnants of their work performed in yagna spirit (selfless welfare of others). In short, the Indian philosophy on business management is to inculcate Corporate Social Responsibilities. J.R.D. Tata, Founder of Tata Group (2012) stated that whole of that wealth is held in trust for the people and used exclusively for their benefit. The cycle is thus complete; what came from the people has gone back to the people many times over. Ratan J. Tata, Chairman, Tata Group (2012) stated that the developing world has two options. The first is to sit back and react only when the problems arise. The second is to act as conscious citizens and rise above our vested interests for the sake of future generations, so that history does not record that we deprived them of their livelihood. Dr. Abdul Kalam, Former President of India (2012) stated that the Sustainable development refers to a mode of human development in which resource use aims to meet human needs while preserving the environment so that these needs can be met not only in the present, but also for the generations to come. The proponents of CSR claims that CSR leads to improved financial performance, enhanced brand image and reputation, increased sales and customer loyalty, increased productivity and quality, increases the ability to attract and retain employees, leads to reduced regulatory, reduces risk thereby facilitating easier finance i.e. access to capital among other benefits in the long term. The opponents of CSR argue that it takes away precious times of Firm's CEO and other top executives and the important is expenditure to the organization. The Corporate Profitability is necessary for the implication of Corporate Social Responsibility.

New Company Bill 2013 on Corporate Social Responsibility

Very recently the new Company bill has passed by both the parliament houses. SEBI issued Circular on August 13, 2012, mandated the inclusion of Business Responsibility Report (BRR) as a part of Annual Report for top 100 listed entities based on their market capitalization on BSE Limited and National Stock Exchange of India Limited as on March 31, 2012. Under Companies Act, 1956 there is no provision for Corporate Social Responsibility but the Companies Bill, 2012 incorporates a provision of CSR under Clause 135. This Clause states that every company having net worth of Rs. 500 crore or more, or turnover of Rs. 1,000 crore or more or net profit of Rs. 5 crore or more during any financial year,

shall constitute a CSR Committee of the Board consisting of three or more Directors, including at least one Independent Director, to recommend activities for discharging Corporate Social Responsibilities and the company would spend at least 2 per cent of its average net profits of the previous three years on specified CSR activities (India CSR, 2013). With the new legislation, India would possibly become the first country to have Corporate Social Responsibility spending through a statutory provision. The aim of Social responsibility is to create higher and higher standard of living, while preserving the Profitability of the organizations, for peoples within and outside the organizations. (Ref :Hopkins, Social responsibility Journal, Volume – 3, No -4(2007) Corporate Social Responsibility is the basic idea that businesses have to meet society's expectations in the practices. Business has traditionally focused on "Growth and Profits". The United Nations focuses its energies on Peace, Poverty Reduction and Human Rights, titled as Environmental, Social and Governance (ESG).

Edward Altman published formulae to access the probability that a organisation can measure its financial health through "Z score" which includes five easily derived business ratios, weighted by coefficients. Edward Altman's Z score was calculated and used as modern financial performance parameter. ($Z \text{ score} = 1.20 X_1 + 1.40X_2 + 3.30X_3 + 0.60X_4 + 0.99X_5$, where X_1 is working capital / Total Assets, X_2 is Retained earnings/Total Assets, X_3 is EBIT/Total Assets, X_4 is Market Capitalization/ Total Value of Liability and X_5 is Sales /Total Assets). According to ICMA terminology Standard Costing as "the preparation and use of standard costs, their comparison with actual costs and the analysis of variance to their causes and points of incidence" Standard costing is a control device. The standard cost process is mostly used to control the operating task.

Review of Literature

Indian ancient proverb by AVVAIYAR stated that 'Aaram Seya Virumbu' which means desire to spend for the welfare of the society out of excess revenue. Singh and Ahuja (1983) conducted a study in India on CSR of 40 Indian Public sector companies for the years 1975-76 and found that 40 percent of the companies disclosed more than 30 percent of total disclosure items included in their survey. This study concluded that the Indian companies placed emphasis on product improvements and development of human resources. Ramya Sathish (2008) defined Corporate Social Responsibility as "the ethical behavior of a company towards the society" to manifest itself in the form of such noble programs initiated by for profit organizations. CSR has become increasingly prominent in the Indian corporate scenario because organizations have realized that besides

growing their business it is also vital to build trustworthy and sustainable relationships with the community at large. Jain Neeta et al (2010) stated about stakeholder theory, Social contract theory and legitimacy theory, and 440 companies were randomly taken from rating list of 2009 by Karmayog CSR ratings of Indian companies. The authors studied the relationship between CSR ratings with firm characteristics, such as Sales, Number of Employees, Profit before Tax and the Age of the organizations and analyzed through Correlation and Regression analysis and concluded that Sales volume and Number of employees as significant variables of CSR ratings and these variables has positive impact on CSR rating. Ruchi Tewari (2010) examined the contribution of CSR of the Information and Technology sector in India. The author has chosen 25 companies as sample- the top 5 companies according to their market standing in five sectors into consideration – Cement, Steel, Oil, Banking and IT and applied the comparative analysis to find the sector that is involved most in the CSR initiative and the dimensions classified as Community development, Environmental management and workplace management and analyzed by applying CSR ratings by Karmayog to the respective company which belongs to that industry, their disclosures in annual reports, the budget allocation and activities coverage as variables and applied cumulative ranking of the five sectors on the selected four parameters concluded that IT sector distinctly as a champion in not only adopting CSR but also in managing it. Richa Gautam et al. (2010) examined India's top 500 companies view, and conduct their CSR, identifies key CSR practices and maps these against GRI standards and used content analysis technique to access CSR practices of companies operating in India, a list of 500 companies taken by Karmayog from Dun Bradstreet's 2006 edition of India's top 500 companies. Karmayog measured based on the reported aspects against the 18 GRI social aspects which are globally accepted, and scored various levels of CSR activity rating with special provisions, rated these companies on a '0-5' scale based on information from the company's website and latest annual report. The authors concluded that during 2007, out of 500 companies. 229 companies got a '0' rating and thus were filtered out for not showing any CSR activity or producing cigarettes/tobacco products and liquor. The end result being that all activities undertaken in the name of CSR are mainly philanthropy or an extension of philanthropy. Sanjay Prathan, Akilesh Ranjan (2010), explored CSR practices in the context of Rural development and evaluates impacts of CSR actions on the socio-economic development of rural people by selecting 14 public and private Indian companies and firms from different industrial sector and relied on web based secondary data and used content analysis through thematic areas of Education, Livelihood, Health, Environment and Infrastructure based CSR disclosures in relation with rural development activities by applying

percentage analysis and concluded that CSR is an important business issue on Indian companies irrespective of Size, sector and business goal. Therefore, CSR actions have positive impact not only on development of rural community but in their business. Sumanta Dutta et al. (2011) stated that corporate all around the globe wants to consider applying a corporate sustainability plan by addressing their 'Triple Bottom Line Reporting' which includes paying close attention to their economic(financial factors), environmental (risk and requirement factors) and social (human factors) issues and attempted to highlight how the TBLR implementation is taking place in India in that direction with special reference GRI initiative as well as Karmayog rating by selecting 30 Indian companies under the GRI status as on 2010 and compared Karmayog ratings for the year 2007 and 2009 of selected 500 companies and concluded that CSR in reality is the alignment of business operations with social values and the reporting initiative in India is in a premature stage by showed the result that 128 companies scored 0 level, 147 companies at level1, 146 companies at level2, 66 companies at level 3, 13 companies at level4 and no a company under the level 5 and resulted that there is considerable improvement in the status level 0 from 2007 to 2009. Yaghoub Alavi Matin et al. (2011) examined the relationship between CSR and the financial performance of companies manufacturing pharmaceutical products. The authors concluded that there is no positive relationship between CSR variables with firm financial performance. Dr. D P Singh (2012) examined working capital management and profitability in the IT and Telecom industry in India by using Working capital ratio, Sales to Total Asset ratio, Cash conversion cycle and selected 11 companies in India and applied Karl Pearson's coefficient correlation and Regression analysis based on pooled observations and concluded that working capital turnover ratio, Sales to Total Assets ratio and ROCE has positive significant relationship with profitability of both IT and Telecom Industry in India and also observed that Telecom industry is operating below average so far as working capital management concerned. Babalola et al (2012) examined the relationship between CSR and Firm's Profitability in Nigeria, and the study employs econometric method in formulating a regression model based on the financial theories on the connection between corporate social performance and firm financial profitability and found that the sample firms invested less than Ten percent of their annual profit to social responsibility and 85% of the respondents said that there is an awareness of CSR in Nigeria but without significant actions. John Mahon et al (2012) studied the relationship between Corporate Social Performance and overall organizational performance and access how customer stakeholders and financial stakeholders measured and evaluate Corporate Reputation in an Industry context. Authors selected 5-8 companies in

each of nine leading industries across 3-years time span. (56 companies for each year) and developed a measurement tool labeled “CSP Profiling” consists of Business Motivations, Business Actions and Business Social Impacts and the authors attempt to move the discussion of CSP away from the dominance of Financial performance- Social performance research and focused on the existence and attempts to explain casualty and recognized that results are not statistically significant. Dr. Satish Kumar (2012) explored CSR initiatives by 30 BSE listed Companies. The study concluded that CSR initiatives of the companies under study are independent of the level of revenue, type of ownership and the type of public and private sector. Gujarat Former Chief Minister Shri Narendra Modi (2013) stated

that funds for CSR usually go for development of hospitals, making dams or other purposes, Current Prime Minister also stated that, "I think some percentage of CSR funds should directly go towards promoting Research and Development and innovation. We will try and start from the state PSUs like GNFC on how they can contribute in setting up a capital fund to promote innovation", while addressing an Innovation Symposium as a part of the Vibrant Gujarat summit. Mr Modi said, "An idea can change things dramatically, and scientific way of doing things can bring about a change." There are over a dozen PSUs of which six - GNFC, GMDC, GFSC, GIPCL, GACL, GSPL are listed companies of the Gujarat government on bourses and a few of them have been among the top tax payers from the state .

Table 1: CSR initiatives of the selected companies in India during the study period

S No	Company Name	CSR Thurst Area
01	Tata chemical	Poverty alleviation , Promoting health care including preventive healthcare, Sanitation and making available clean drinking water Promoting education , Employment enhancing vocation skills , Livelihood enhancement projects , Promoting gen der equality, empowering women and Affirmative action for the socially and economically backward groups
02	Tata Communication	Entrepreneurship promotion, Education and Life Skills Development, Education, Social Development and Environment concerns, Health care support and Social Consciousness.
03	Tata Global Beverages	Education and Vocational Training , Healthcare, Social and Physical Infrastructure, Community development and Livelihood Support.
04	Tata Motors	Health, Employability, Education and Environmental Protection and community development.
05	Tata Power	Primary education system for Girls, Strengthening Healthcare activities including Safe drinking water, Enhancing programs on livelihood and Employability, Building social capital infrastructure and Nurturing sustainability for inclusive growth.
06	Tata Steel	Healthcare, Drinking water, Education, Livelihood, Environment protection Ethnicity and Promotion of sports.
07	TCS Limited	Education, Health and Environment.

Statement of the Problem

This study was descriptive in nature and expands the knowledge in the area of CSR contribution by selected companies to the society and its disclosures in their annual reports through Business Responsibility Report (BRR) have significant impact on financial performance is the considerable attention. Many studies linked CSR initiatives with ROCE, RONW, and Operating profit. Jain Neeta et al 2010, Yaghoub Alavi Matin et al.2011, John Mahon 2012, Bbalola et al 2012 and Dr.D.P Singh 2012. Edward Altman's Z score is used as modern financial variable in this study.

Objectives of the study

This study aims to identify whether CSR initiatives influences the financial performances of selected companies of TATA group in India.

1. To study the nature and extent of CSR disclosure through BRR in the annual report.
2. To examine variance analysis of CSR contributions through standard costing techniques
3. To calculate the modern financial measure of Altman Z score.
4. To verify the cause and effect relationship between CSR contribution and financial performance.

Methodology

The present study is mainly based on the secondary data and the data is collected from the annual report of selected company and websites of moneycontrol.com, BSE.com etc for the period of three years, which ended on 31st March. The period of the study is 2009-10 to 2014-15. CSR budget,

CSR Actual amount spent and CSR Recovery of the selected company were used for variance analysis under standard costing techniques. CSR Budget is calculated at two percent on past three year's average profit. CSR actual is taken from BRR report. CSR recovery is calculated at two percent on current year's profit. Zero was considered when there is loss. Edward Altman's Z score was used as modern financial variable instead of other financial variables like eps, Book

value per share, Return on Equity, Return on Asset and operating profit ratio. (Suwaidan 2004), Adam Lindgreen et al (2008), Jain Neeta et al, Zhi Tang et al (2010) Md Abdur Rouf (2011) and Yaghoub Alavi Matin et al.2011). For the analysis Mean, Standard Deviation, on sample t test, Correlation coefficients and regression analysis have been applied for its validity.

Analysis and Interpretations

Table-1 CSR Contribution and Variance Analysis

Company Name	year	CSR Contribution			Variance Analysis		
		Budget	Actual	Recovery	CSR Cost Variance	Budget Variance	Volume Variance
Tata Chemicals	2012-13	09.53	9.02	12.86	03.84(F)	0.51(F)	03.33(F)
	2013-14	10.92	12.76	08.72	04.04(A)	01.84(A)	02.20(A)
	2014-15	11.10	6.10	12.76	06.66(F)	05.00(F)	01.66(F)
Tata Communication	2012-13	05.44	2.00	09.50	07.50(F)	03.44(F)	04.06(F)
	2013-14	05.38	1.53	10.84	09.31(F)	03.85(F)	05.46(F)
	2014-15	07.92	5.31	13.50	08.19(F)	02.61(F)	05.58(F)
Tata Motors	2012-13	35.28	19.21	06.04	13.17(A)	16.07(F)	29.24(A)
	2013-14	22.37	17.33	06.69	10.64(A)	05.04(F)	15.68(A)
	2014-15	12.52	18.62	00.00	18.82(A)	06.10(A)	12.52(A)
Tata Power	2012-13	20.40	07.88	20.49	12.61(F)	12.52(F)	00.09(F)
	2013-14	20.90	15.28	19.08	03.80(F)	05.62(F)	01.82(A)
	2014-15	20.98	04.26	04.26	00.00	16.72(F)	16.72(A)
Tata Steel	2012-13	124.05	170.76	101.26	69.50(A)	46.71(A)	22.79(A)
	2013-14	124.16	212.00	128.24	83.76(A)	87.84(A)	04.08(F)
	2014-15	121.14	171.46	128.78	42.68(A)	50.32(A)	07.64(F)
TCS Limited	2012-13	161.09	71.60	255.72	184.12(F)	89.49(F)	94.63(F)
	2013-14	208.87	93.60	369.50	275.90(F)	115.27(F)	160.63(F)
	2014-15	281.58	254.00	385.14	131.14(F)	27.58(F)	103.56(F)

(CSR Cost Variance = Recovered Overhead – Actual Overhead, CSR Exp Variance = Budgeted Overhead – Actual Overhead and CSR Volume Variance = Recovered Overhead – Budgeted Overhead)

Table - 2 Descriptive Statistics

Variables	Mean	Std Deviation	Skewness	
			Statistic	Std.error
Z Score	05.11	02.81	2.193	0.427
Earnings Per Share	31.11	27.90	0.757	0.393
Book Value Per Share	250.10	76.78	0.877	0.393
Return On Equity	12.74	14.71	0.351	0.393
Operating Profit	5027.60	6044.00	1.279	0.393

Table 3 The result of One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
CSR Cost Variance	2.744	17	0.014	49.2000	11.37	87.04
CSR Budget Variance	3.280	17	0.004	27.58	9.84	45.39
CSR Volume Variance	2.581	17	0.019	27.31	04.98.2145	49.65

Table 3 shows that the variances of CSR cost, CSR budget and CSR volume variances were significantly different with each other at 5% levels.

Table – 4: The result of the Karl Pearson's Test for hypothesis testing

Variable		1. CSR Actual	2. CSR Budget	3. CSR Recovery	Results		
					1	2	3
Altman; Z Score	Correlation	-0.493	-0.452	-0.442	No	No	No
	Significance	0.062	0.091	0.099			
Earnings Per Share	Correlation	0.918	0.817	0.913	Yes	Yes	Yes
	Significance	0.000	0.000	0.000			
Book Value Per Share	Correlation	0.356	0.674	0.237	No	Yes	No
	Significance	0.147	0.002	0.343			
Return On Equity	Correlation	0.753	0.458	0.823	Yes	No	Yes
	Significance	0.000	0.056	0.000			
Operating Profit	Correlation	0.976	0.820	0.962	Yes	Yes	Yes
	Significance	0.000	0.000	0.000			

Null Hypothesis results : Yes – Rejected, No – Accepted

Table 4 shows that the Karl Pearson's coefficient of correlation relationship between Altman Z score and the CSR variables has no any significant relationship. Earnings per share and Operating Profit have the significant relationship with CSR variables. Book value per share has

no any relationship with CSR actual, CSR budget has no any significant relationship with Return on Equity and CSR recovery has no any significant relationship with Book value per share.

Table-5 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.979 ^a	.959	.936	11.46322

a. Predictors: (Constant), Operating Profit, Return on Equity, Z Score, Book Value Per Share, Earnings Per Share

Table -6: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27625.653	5	5525.131	42.046	0.000
	Residual	1182.648	9	131.405		
	Total	28808.301	14			

a. Predictors: (Constant), Operating Profit, Return on Equity, Z Score, Book Value Per Share, Earnings Per Share

b. Dependent Variable: CSR Actual

Table-7 : Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.181	8.989		0.131	0.898
	Z Score	1.297	1.385	0.107	0.937	0.373
	Earnings Per Share	-0.040	1.122	-0.021	-0.036	0.972
	Book Value Per Share	0.013	0.108	0.064	0.124	0.904
	Return on Equity	-0.621	0.599	-0.145	-1.038	0.326
	Operating Profit	0.010	0.002	1.043	5.348	0.000

a. Dependent Variable: CSR Actual

Findings and Conclusion

The degree of determination shows the extent to which the financial variables influence the CSR actual expenses of the Tata group of companies during the study period. ANOVA table shows that the significant value is 0.000, which means the dependent variable of CSR actual expenses is significantly predicted. Table 7 shows that the Operating profit is influencing CSR actual expenses at 1% significant levels. So author concluded that the Altman Z score, Earning per share, Book value per share and Return on Equity not influencing the CSR actual contributions of the selected companies, but Operating profit influencing CSR actual contribution (to the extent of 95.9%) of selected Tata group of companies. In this study Tata Global Beverages Ltd was not considered for analysis due to insufficient financial information (Business Responsibility Report) and at the same time Altman Z score of Tata Consulting services Ltd was Ab-normal, (very high soundness) hence not considered for analysis.

References

- Akinmulegun Sunday Ojo (2012), 'The effect of financial leverage on Corporate Performance of some selected companies in Nigeria', *Journal of Canadian Social Sciences*, vol-8, no-1, pp84-90.
- Babalola, Yisau Abiodun, (2012) "The impact of CSR on Firm's Profitability in Nigeria", *European Journal of Economics, Finance and Administrative Sciences*, Issue : 45, 2012 The Effect of CSR on Stock Performance: New Evidence for the USA and Europe Working Paper 08/85 CER-ETH - Center of Economic Research at ETH Zurich
- R Daniel silberhorn and Richar C Warren, "Defining CSR: A view from big companies in Germany and UK", *European Business review*, Vol-19, No-5, 2007
- Gunjan (2008), "Corporate Social Responsibility – A study of selected Companies in India" - Summary of PhD Thesis)
- Jain Neeta and Mishra Shyam Sunder, NIMS University, "Firm Characteristics and CSR rating: Empirical evidence from India", Maratha Maindir's Babasaheb Gaede Institute of Management Studies publications
- John Mahon et al (2012). Steven L. Wartick, "Corporate Social Performance Profiling: Stakeholders perceptions to assess Corporate Reputation", *Journal of Public Affairs*, Vol-12, Issue1, 2012, pp12-28
- Dr D P Singh, "Working Capital Management and Profitability in the IT and Telecom Industry in India", *Indian Journal of Finance*, March 2012, pp 54-61
- Richa Gautam and Anju Singh (2010), "CSR Practices in India: A study of top 500 Companies", *Global Business and Management Research ; An International Journal*, Vol.2; No.1, pp.41-55.
- Sumanta Dutta, Prof. Uttam Kumar Dutta and Prof. Saja Das (2011), "Triple Bottom Line Reporting: An Innovative Accounting Initiative", *International Journal for Business, Strategy and Management*, Vol.1, No.1, pp- 1-13.
- Ruchi Tewari (2010), 'Information and Technology sector – A champion in CSR; Myth or Reality', *Journal of Great Lakes Herald*, Vol-4, No-1, pp 14-30
- Sanjay Prathan and Akhilesh Ranjan (2010), "CSR in rural development sector: Evidences from India", *School of Doctoral Studies (European Union) Journal – 2010*, pp; 139-147
- Satish Kumar (2012), "Application of Chi Square to analyse Corporate Social Responsibility: A Study of BSE SeseX (30) based Companies", *Journal of IPEM*, Vol.: 6, No.: 1, Jan, pp 1-11
- Shruti Gupta (2011), "Consumer stakeholder view of CSR: A Comparative analysis from USA and India", *Social responsibility Journal*, Vol.7, No.3, pp363-380.
- Sumanta Dutta, Prof. Uttam Kumar Dutta and Prof. Saja Das (2011), "Triple Bottom Line Reporting: An Innovative Accounting Initiative", *International Journal for Business, Strategy and Management*, Vol.1, No.1, pp- 1-13.

Annexure-1: Details of Variables of selected companies for the study period

Company	Year	EPS	Book Value	ROE	Operating Profit (in Cr)
Tata Chemicals	2009-10	17.87	175.74	10.17	872.78
	2010-11	16.03	186.09	08.61	893.10
	2011-12	23.03	196.94	11.88	1023.75
	2012-13	25.25	208.33	12.12	1046.37
	2013-14	17.12	223.79	07.64	927.87
	2014-15	25.04	237.22	10.55	1038.83
Tata Communication	2009-10	06.01	255.47	06.63	750.61
	2010-11	05.70	245.88	02.31	856.00
	2011-12	16.95	250.42	02.40	987.97
	2012-13	16.68	263.73	06.32	1000.21
	2013-14	19.03	276.69	06.87	997.94
	2014-15	23.67	293.05	08.07	1027.97
Tata Motor	2009-10	39.26	259.03	15.15	4032.85
	2010-11	28.55	315.36	09.05	4665.14
	2011-12	3.91	61.77	06.33	4177.55
	2012-13	0.95	59.91	01.57	1708.31
	2013-14	01.04	59.51	01.74	-911.75
	2014-15	-14.72	46.10	-31.93	-1237.48
Tata Power	2009-10	39.93	443.83	8.99	1,886.62
	2010-11	29.67	470.93	8.42	1,518.36
	2011-12	4.93	50.39	9.78	1,784.63
	2012-13	4.32	51.67	8.35	2,024.06
	2013-14	4.02	55.32	7.26	2,290.75
	2014-15	3.74	58.15	6.42	2,113.72
Tata Steel	2009-10	56.37	418.94	13.45	8,905.59
	2010-11	71.58	487.55	14.86	11,482.29
	2011-12	68.95	541.81	12.72	11,536.77
	2012-13	52.13	568.46	09.17	11,126.24
	2013-14	66.02	629.60	10.48	12,816.90
	2014-15	66.30	686.40	09.65	10,008.80
TCS	2009-10	28.62	76.72	37.30	6,667.17
	2010-11	38.62	99.53	38.80	8,771.82
	2011-12	55.97	126.49	44.24	11,385.72
	2012-13	65.23	165.86	39.32	14,306.27
	2013-14	94.17	224.90	41.87	21,533.72
	2014-15	98.31	231.87	42.40	21,028.20

Annexure-2: Detailed Variables of selected companies for the study period (in crores)

Company	Variables	2014-15	2013-14	2012-13	2011-12	2010-11	2009-10
Tata Chemicals	WC	2,431	2,447	1,753	706	661	486
	RE	5,788	5,446	5,053	4,681	4,485	4,032
	EBIT	1,233	913	1,243	1,199	964	961
	Mkt Cap	10,233	10,438	9,246	8,831	8,620	7,951
	Total Debt	2,716	3,035	2,457	2,459	2,709	2,946
	Sales	10,082	8,726	8,530	7,996	6,332	5,412
	Total Asset	8,759	8,736	7,765	7,395	7,449	7,223
Tata Communication	WC	343	1,277	790	1,244	1,555	2,527
	RE	8,067	7,601	7,231	6,852	6,722	6,513
	EBIT	1,747	1,543	1,539	1,167	1,025	751
	Mkt Cap	11,790	10,920	8,745	7,698	7,540	8,437
	Total Debt	526	941	775	951	1,406	2,639
	Sales	4,319	4,376	4,416	4,092	3,611	3,218
	Total Asset	8,877	8,827	8,291	8,088	8,413	9,919
Tata Motor	WC	(3,867)	(6,361)	(6,739)	(8,912)	(5,189)	(7,343)
	RE	14,196	18,510	18,473	18,967	19,351	14,208
	EBIT	240	2,382	3,380	4,166	4,941	5,253
	Mkt Cap	135,810	158,053	112,867	74,208	67,149	38,267
	Total Debt	20,081	14,515	14,269	11,012	14,638	16,626
	Sales	36,295	34,288	44,766	54,306	47,088	35,373
	Total Asset	34,920	33,669	33,380	30,614	34,627	31,430
Tata Power	WC	4,388	1,647	3,778	3,515	3,252	3,578
	RE	15,458	12,890	12,023	11,720	11,003	10,296
	EBIT	3,138	2,947	2,746	2,768	2,082	2,184
	Mkt Cap	18,094	23,517	23,844	23,932	31,570	32,573
	Total Debt	12,060	10,255	11,125	9,133	6,764	5,963
	Sales	8,678	8,627	9,567	8,496	6,918	7,104
	Total Asset	27,788	23,383	23,386	21,090	18,004	16,495
Tata Steel	WC	(8,575)	(10,162)	(2,895)	(1,392)	9,110.49	1,422
	RE	65,692	60,177	54,238	51,650	45,807	36,281
	EBIT	12,482	13,463	11,354	12,934	12,659	10,147
	Mkt Cap	23,727	46,036	45,878	45,686	59,519	56,130
	Total Debt	26,210	26,127	25,911	23,694	26,148	25,239
	Sales	41,785	41,711	38,199	33,933	29,396	24,940
	Total Asset	92,874	87,275	81,121	76,315	73,093	62,408
TCS	WC	31,565	29,332	19,533	13,801	9,325	3,557
	RE	45,221	43,856	32,266	24,561	19,284	14,821
	EBIT	26,023	24,648	16,537	14,071	9,258	6,849
	Mkt Cap	466,587	479,692	300,000	228,760	231,715	152,790
	Total Debt	250	90	163	96	42	36
	Sales	73,578	64,673	48,426	38,858	29,275	23,044
	Total Asset	45,666	44,141	32,725	24,953	19,616	15,152

Annexure -3: Edward Altman's Z score of Tata Group of companies in India

Company Name	Year	X ₁	X ₂	X ₃	X ₄	X ₅	Z Score
Tata Chemicals	2009-10	0.067	0.558	0.133	2.70	0.75	3.67
	2010-11	0.088	0.602	0.129	3.18	0.85	4.13
	2011-12	0.095	0.633	0.162	3.59	1.08	4.75
	2012-13	0.225	0.650	0.160	3.76	1.09	5.06
	2013-14	0.280	0.623	0.104	3.44	0.99	4.60
	2014-15	0.278	0.660	0.140	3.77	1.15	5.12
Tata Communication	2009-10	0.255	0.656	0.080	03.19	0.324	3.71
	2010-11	0.185	0.799	0.122	05.36	0.429	5.39
	2011-12	0.153	0.848	0.144	08.09	0.505	7.21
	2012-13	0.095	0.872	0.186	11.28	0.532	9.24
	2013-14	0.144	0.861	0.175	11.61	0.496	9.41
	2014-15	0.038	0.908	0.197	22.41	0.486	15.90
Tata Motors	2009-10	-0.23	0.45	0.167	2.30	1.13	3.41
	2010-11	-0.15	0.56	0.143	4.58	1.36	5.18
	2011-12	-0.29	0.62	0.134	6.73	1.77	6.77
	2012-13	-0.20	0.55	0.103	7.91	1.34	6.96
	2013-14	-0.18	0.55	0.071	10.89	1.02	8.31
	2014-15	-0.11	0.40	0.007	6.74	1.04	5.53
Tata Power	2009-10	0.22	0.62	0.13	5.46	0.43	5.27
	2010-11	0.18	0.61	0.12	4.66	0.38	4.65
	2011-12	0.17	0.56	0.13	2.62	0.40	3.38
	2012-13	0.16	0.51	0.12	2.14	0.41	2.99
	2013-14	0.07	0.55	0.13	2.29	0.39	3.04
	2014-15	0.16	0.56	0.11	1.50	0.31	2.54
Tata Steel	2009-10	0.02	0.58	0.16	2.22	0.40	3.09
	2010-11	0.12	0.63	0.17	2.28	0.40	3.35
	2011-12	-0.02	0.68	0.17	1.93	0.44	3.09
	2012-13	-0.04	0.67	0.14	1.20	0.47	2.56
	2013-14	-0.12	0.69	0.15	1.76	0.48	2.87
	2014-15	-0.09	0.71	0.13	0.90	0.45	2.31
TCS	2009-10	0.23	0.98	0.45	4244	1.53	AbNormal
	2010-11	0.48	0.98	0.47	5517	1.49	AbNormal
	2011-12	0.55	0.98	0.56	2383	1.56	AbNormal
	2012-13	0.60	0.98	0.51	1840	1.50	AbNormal
	2013-14	0.66	0.99	0.56	5330	1.46	AbNormal
	2014-15	0.69	0.99	0.57	1866	1.61	AbNormal