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Measures of Sustainable Development and Financial Performance

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I. INTRODUCTION

Businesses Need to Incorporate the Climate of Change is basically to sustain in the long run in the business. There are wide variety of factors that compel businesses to adopt sustainability measures. According to Mr Sumit Rana, Customer Manager Support at Tata Motors Mumbai the most important factors that drive businesses to change their policies and procedures towards the green aspect are Meeting stringent government norms, Corporate Social Responsibility, competitive edge for business excellence. The factors that compel the corporate to do so is given in the diagram below:

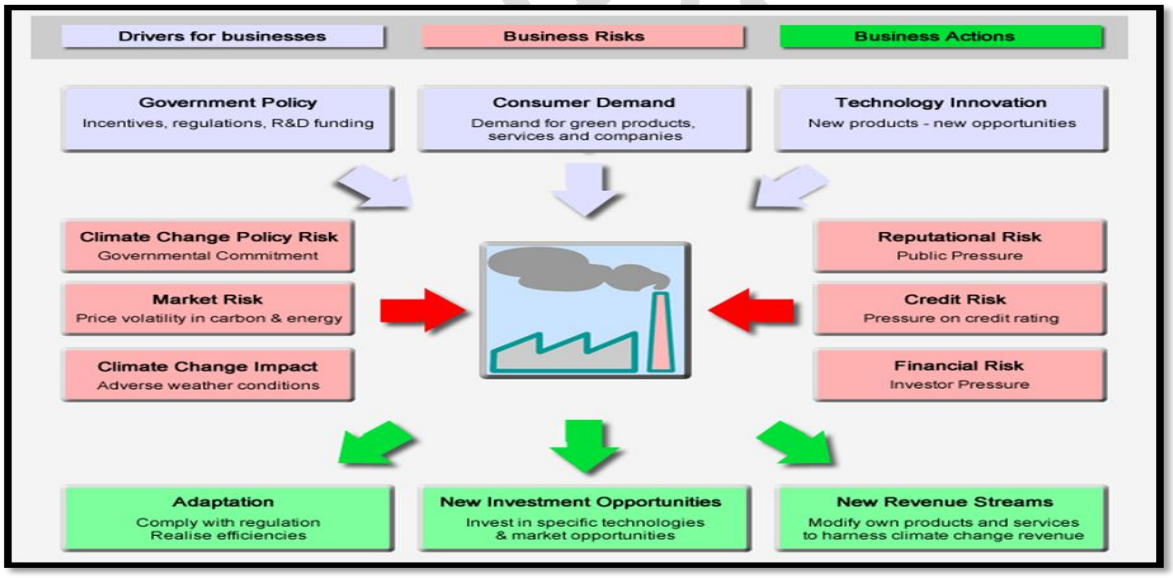

Figure 1: Business Need to Change

Source: (Energy, 2012)

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II. OBJECTIVES

1. To determine the superiority of the financial performance of Green companies with respect to the traditional ones.
2. To find out how the impact of carbon emissions and green ratings on market capitalization in terms of global IT scenario.

III. METHODOLOGY

In the first stage a sample of 12 companies was taken based on the Newsweek Green Ranking 2011 which ranks a company on the basis of its Green score which is calculated by measuring the environmental footprint, management of that footprint, and transparency practices. The Green Score is a weighted average of an Environmental Impact Score (45 %), an Environmental Management Score (45 %), and an Environmental Disclosure Score; weighted at 45 percent, 45 percent, and 10 percent, respectively. These twelve companies were the Global Top 12 Green IT firms based on the Newsweek ranking. The complete list is given in table 1 below.

TABLE1

GLOBAL NEWSWEEK RANKING LIST OF IT

2011	
Rank	Company
2	IBM
7	Tata Consultancy Services
8	Infosys
20	SAP
31	Accenture
35	Wipro
51	Cognizant Technology
91	Microsoft
114	Oracle
138	Capgemini
134	Google
251	Automatic Data Processing

There was a need felt to compare all the above-mentioned companies for company risk, credit worthiness and see if there is a relation with the green score. For this, The Altman Z-Score as the financial indicators used in this model are proxies for the fundamental valuation of a company such as growth potential, risk, assets and revenue stream. These indicators are Working Capital, Retained Earnings, Earnings before Interest Taxes Depreciation and Amortization, Sales, Total Liabilities and Total Assets. Two versions of Altman Z-Score Model were applied as shown below:

Original Altman Model

Original Altman model is as given model

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.999X_5$$

,

Where $X_1 \equiv$ working capital/total assets, $X_2 \equiv$ retained earnings/total assets, $X_3 \equiv$ EBIT/total assets, $X_4 \equiv$ market value of equity/book value of total debt, and $X_5 \equiv$ sales/total assets.

Revised Altman Model by Other Researchers (Designed for Private Firms)

$$Z' = 0.717X_1 + 0..847X_2 + 3.10X_3 + 0.42X_4 + 0.998X_5$$

,

Where $X_1 \equiv$ working capital/total assets, $X_2 \equiv$ retained earnings/total assets, $X_3 \equiv$ EBIT/total assets, $X_4 \equiv$ Shareholders' equity / Liabilities and $X_5 \equiv$ sales/total assets.

In the second stage impact analysis is done. To determine the effect of carbon emissions on firm value, green score of the top 12 global IT firms was taken from (News_Week_Green_Rankings, 2011) . Moreover, the data of carbon emissions was taken from Carbon Disclosure Project report (Coopers, 2011) . For this analysis, the following hypothesis

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was assumed:

- *Null Hypothesis* (H_0): Carbon Emissions and Green Score don't impact firm value.
- *Alternative Hypothesis* (H_1): Carbon Emissions and Green Score impact firm value significantly.

In addition, independent variables were selected based on secondary researches (research papers, financial journals) that have an effect on firm value. The list of selected independent variables is given as follows:

- Assets
- Liabilities
- EBIT
- Green Score
- Carbon Emissions
- Retained Earnings
- Working Capital
- Shareholder's Equity
- Sales

TABLE 4
IMPACT ANALYSIS

Million USD	Accenture 31 Aug 2011	COGNIZANT TECHNOLOGY 31 DEC 2011	MICROSOFT US- 30 JUNE 2011	ORACLE US - 31 may	GOOGLE US-31 DEC	IBM US - 31 DEC	Automatic Data Processing US - 30 June	TCS India	WIPRO India- MARCH 11	Infosys India-Mar 31 2011	SAP AG 31 dec	Capgemini France 31 dec 2011
Working Capital	3,564.594	2875.801	46144	24982	43845	8805	1796.7	2291	2947.538	4501	4403.142	2392.399
Retained Earnings	6,281.517	3582.526	-6332	22581	37605	104857	11803.9	5031.5	4549.015	5294	16129.76	-348.059
EBITDA	4,040.278	1293.324	30837	15015	14177	26229	2313.1	2571.5	1309.132	2235	7252.31	1013.124
Sales	27,352.914	6121.156	69943	35622	37905	106916	9879.5	8186.8	6950.358	6041	18416.08	12541.77
Total Assets	15,731.510	5507.933	108704	73535	72574	116433	34238.3	7308.2	8313.406	7010	30050.83	14251.01
Shareholders Equity	4,350.872	3952.886	57083	39776	58145	20138	6010.4	5762.7	5379.834	6122	16441.59	5541.774
Market Cap	34,536.129	19510.11	218160	171984.1	166617	212102.6	25843.54	51799.77	26762.53	41532.38	64911.17	4866.444
EBIT	3,527.022	1169.149	28071	12219	12326	21414	1941.3	2394.7	1290.689	2046	6315.526	769.8705
Liabilities	11,380.638	1555.047	51621	33290	14429	96294	28227.9	1545.5	2933.572	888	13609.24	8709.241
Current Assets	11,471.183	4085.506	74918	39174	52758	50928	28583.5	3702.6	5199.508	5317	12510.72	6994.823
Current Liabilities	7,906.589	1209.705	28774	14192	8913	42123	26786.8	1411.6	2251.97	816	8107.577	5145.84
Depriciation	513.256	124.175	2766	2796	1851	4815	371.8	176.8	18.44226	189	936.7836	243.2532

Source: Collected and compiled from companies Annual Reports by authors

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TABLE 5

MODEL SUMMARY TABLE

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.994[a]	.989	.979	11595.49877

TABLE 1

ANOVA TABLE

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.082E10	5	1.416E10	105.346	.000[a]
	Residual	8.067E8	6	1.345E8		
	Total	7.163E10	11			

F-test establishes significance of the regression model. The F statistic of **105.346** for **(5, 11)** is significant at 95 % confidence level as shown in Table 14. Thereby, meaning that variation in firm value is strongly dependent on the independent variables.

TABLE 7

COEFFICIENTS TABLE

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
		B	Std. Error	Beta			VIF
1	(Constant)	-209216.718	45213.984		-4.627	.004	
	Liabilities	1.844	.286	.640	6.455	**.001**	5.234
	Green	3115.207	633.477	.290	4.918	**.003**	1.847
	Emissions	-.057	.018	-.537	-3.148	**.020**	5.475
	Retained Earnings	.992	.298	.367	3.328	**.016**	6.460

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	Working Cap	4.296	.362	.879	11.862	**.000**	2.925

In this Table, it can be seen that all the independent variables (marked in red) are significant at a 95 % confidence interval and free of multi-co linearity. Thereby, the regression equation can be written as:
Market Cap = x + 0.640 * Liabilities + 0.290 * Green Score – 0.537 * Carbon Emissions + 0.367 * Retained Earnings + 0.879 * Working Capital

From the above equation, it can be said that Market capitalization is directly proportional to Green Score and inversely proportional to Carbon Emissions. This means that as the Green score increases and carbon emissions decreases, market capitalization also increases. However, this analysis is limited to the Global IT industry; the trend may vary with respect to other industries.

FINDINGS OF THE RESEARCH

The findings of the research have been summarised below as follows:

- Carbon Impact Analysis proved that the market capitalisation of IT firms has an inverse relationship with carbon emissions and direct relationship with Green Score.
- From the Holding Period return analysis of green Indian firms, it has been found that investors in India cannot differentiate between the environmentally responsible companies and traditional companies due to low awareness. Investors don't consider the environment aspect while investing in any firm as they are not able to realise that a green company can reap them long term and sustainable benefits as compared to the non-green firm.
- Altman Model Analysis of the Top 12 Global green IT firms showed that green companies have lesser or no probability of going bankrupt. It can be considered a measure of sustainability.
- Parameter Analysis of the (News_Week_Green_Rankings, 2011) revealed that Cognizant Technologies has the best practices in terms of environmental impact; IBM employs the best strategies for environmental management while TCS uses the best method in terms of carbon disclosure practices.
- Greenest Industry Analysis revealed that IT industry is the greenest across the world, while the food, beverage and tobacco industry is the least green.
- USA has the maximum number of firms employing green strategies in their work operations while Russia has the least number of green firms.

CONCLUSION

From the data analysis, it can be concluded that greener Companies have 86.3 % higher market cap in comparison to companies with low green score or the non-green companies. It implies that the financial performance of green companies is much better than non-green companies. IT Industry happens to be the greenest industry of the world. IT industry players must suggest green technology adoption activities to their counterparts across different industries. In India, awareness regarding sustainable development is comparatively less and therefore only three companies are appearing in Newsweek Green Rankings and therefore it is recommended for the Indian Companies to take their efforts to a global level.

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