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SUSTAINABILITY REPORTING QUALITY OF INDIAN AND AMERICAN MANUFACTURING FIRMS: A COMPARATIVE ANALYSIS

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Abstract

The content analysis method has been adopted to study the pattern of reporting on sustainability indicators by 10 American and 10 Indian manufacturing firms in their sustainability reports prepared as per the GRI framework and published during 2011-2013. Scores of 2, 1 and 0 have been respectively assigned for full, partial and non disclosure of sub clauses of economic, environment and social indicators to compute a SDI (sustainability disclosure index). Independent t test found a significant difference in the quality of sustainability disclosure of the sampled American and Indian manufacturing firms during 2011-13. The improvement/ deterioration in the quality of disclosure over the period were correlated with changes in performance parameters like EPS and ROA to examine if betterment in quality of sustainability reporting translates into financial performance of the firms. Multiple regression analysis was performed to determine the variables which explain the variation in the sustainability reporting quality of firms.

Keywords: Sustainability reporting quality, content analysis, disclosure index, financial performance, manufacturing firms

1. INTRODUCTION

Sustainability reporting is a practice adopted by firms for being accountable to its internal and external stakeholders. The reporting process entails measurement and

thereafter a structured disclosure of firms' performance in the arena of sustainability, as per some guidelines followed globally. The sustainability reports provide information on the firms' efforts in the environmental, economic and social fields and has evolved

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as a valuable tool of influencing stakeholders' perceptions about the firm's operations. Without a structured framework for sustainability reporting, there exists a risk of bias in the firms' reporting exercise and more importantly makes it difficult to compare their sustainability activities. Worldwide, the Global Reporting Initiative (GRI) Guidelines have emerged as the most widely acceptable sustainability reporting framework, followed by firms. It enables firms to report on numerous dimensions namely, economic, environment, society, human rights, labor practice, decent work and product responsibility Isa (2014).

Research shows that the technique of content analysis has been successfully applied to analyze firms' annual financial reports, corporate social responsibility reports, reports on corporate governance and other business documents and gather information about the firms (Bice, 2014). Content analysis is a systematic and scientific study of content communication which involves examining the content contained in reports / messages with reference to countable elements such as themes, paragraphs, words, concepts and characters (Prasad, 2008). In this paper, the content analysis approach has been adopted to gain insight about the pattern of disclosure made by American and Indian manufacturing firms in their sustainability reports, using the GRI Guidelines.

The research work have focused on manufacturing firms since sustainable business practices assume more significance for them compared to their counterparts in the service sector. The manufacturing firms engage in greater competition for usage of scarce natural resources, thereby leading to their depletion. Moreover, they being more polluting in nature than service oriented

businesses, display significantly more concern towards environmental aspects such as reducing global warming and carbon footprint. This may be also due to stronger environmental regulations and requirements. Moreover, unwanted by-products or disposal of defective products by manufacturing firms, create an adverse effect on the society and consumer. A paradigm shift towards corporate sustainability, is forcing manufacturing firms across the globe to adopt alternative materials and lean manufacturing techniques to produce green products (Marwah et al., 2014).

For a considerable period of time, manufacturing firms in developed countries like USA, Europe, Japan, Australia and Germany have been supporting the context of sustainability due to their consciousness towards the environment and society (Daizy & Das 2014). They have systematically adopted established frameworks for reporting their efforts towards upholding sustainability since the '90s. With the forces of globalization gaining in prominence, it has become imperative for Indian manufacturing firms to also concentrate on this issue of sustainability, which translates into a better image for them in the global scenario and ensures them long term success. The Indian firms need to adopt reporting guidelines like that of GRI, which are acceptable globally. Though Indian manufacturing firms have started sustainability reporting as per the GRI guidelines over the recent past, it needs to be examined if these firms from a developing country like India are at par with the firms from a developed nation like USA as far as their reporting quality is concerned.

2. LITERATURE REVIEW

A firm's long term success, viability and growth will depend on the functioning of its communication system. Internal and external stakeholders are all vital viewers of the firm's sustainability report. Such a report can provide important information which becomes instrumental in elevating consciousness about improving the quality of life for all concerned stakeholders.

Dincer (2011) conducted a study on 92 firms listed on Istanbul Stock Exchange, based on the framework proposed by Ullman (1985) and it was observed that publishing of CSR report is due to the considerable influence exerted by the government and creditors. It was also noted that financial institutions and shareholders are concerned with the financial performance of the firm, and not so much in its sustainable strategies or activities.

Content analysis method was adopted by Bayound et al. (2012) to examine the annual reports of 40 Libyan firms during 2007 – 2009. They assessed the relationship between firm reputation and level of the corporate social responsibility disclosure (CSR), through a scoring index, where 1 or 0 score was allotted against disclosed or non-disclosed categories respectively. It was found that at 1% level of significance, a positive relationship exists between level of CSR and firm reputation. Ching et al. (2013) studied 60 listed firms in Brazil comprising of top 36 sustainable firms and 24 conforming to corporate governance practice, in the year 2011. The aim of the study was to assess the quality of information disclosed by firms on sustainability dimensions. Content analysis was adopted for qualitative assessment and statistical analysis was employed for

quantitative evaluation. After evaluating sustainability dimensions reported in sustainability reports, the firms were awarded a score ranging between 0 and 1, with 0 denoting the worst and 1 denoting the best score. Statistical analysis confirmed that the sustainable firms were disclosing more information and in a more satisfactory manner as compared to the firms adhering to corporate governance. Focusing on Indian firms, Mitra (2012) found that the absence of legal binding and lack of awareness amongst stakeholders have till now lead to lesser number of Indian enterprises publishing structured sustainability reports. However, he also highlighted that the sustainability reporting practices in India are gaining in focus and suggested that Indian firms will have to address a wide range of sustainability issues in their reports, given the growing concern for environment and community worldwide.

Academic attention has also been given towards finding a relationship between sustainability disclosures and economic performance parameters in firms. Study of 58 publicly listed Indonesian firms during 2010-12 by Kusuma and Koesrindartoto (2014), revealed that a positive relationship exists between sustainability disclosure and various financial performance parameters like return on asset, return on equity, return on invested capital, EBITDA margin, depreciation, amortization margin and net operating profit less adjusted taxes margin. A scoring methodology was adopted to formulate sustainability disclosure score, where 0 (zero) was awarded against the non-disclosure of a particular indicator and 1 (one) was awarded against the disclosure of a particular indicator. They concluded that a slightly positive but not very significant relationship exists between the sustainability

disclosure score and financial performance. Burhan and Rahmanti (2012) studied 32 Indonesian firms during 2006-2009 to scrutinize the relationship between their performance and the nature of sustainability reporting in totality, as well as each of the components of sustainability reporting i.e. economic, environmental and social. They found that firm's ROA, a proxy measure of financial performance, is positively affected by sustainability reporting as a whole as well as by the disclosure of economic and environment performance parameters. However, social performance disclosure does not have any noteworthy influence on firm's ROA. Makori (2013) examined whether any relationship exists between profitability of the firm and environmental accounting of 14 firms, listed on the Bombay Stock Exchange. The study revealed that a negative relationship exists between environmental accounting and financial parameters like return on capital employed (ROCE) and earnings per share (EPS). However, the relationship is positive when environmental accounting is compared with net profit margin and dividend per share. It was further suggested by the author that government rules and regulations should be stringent for firms to comply with environmental laws and hence reporting environmental indicators should be made compulsory to enhance performance of the firms.

Prior research on sustainability reporting also focuses on firm specific variables which might impact the quality of disclosure. It has been established by Isa (2014), Aljifri et al. (2014), Yao et al. (2011) and Ali and Atan (2013) that size of the firm as proxied by measures such as total assets, market capitalization, net sales or number of employees is an influential variable in

determining the sustainability disclosure practices amongst firms. This implies that a positive association exists between firm size and the extent of disclosure whereby larger firms tend to pay more attention towards quality of disclosures as compared to their smaller counterparts. Focusing on the firm's liquidity, Wallace et al. (1994), Aljifri et al. (2014) highlighted that firms with high liquidity ratio are more keen towards financial disclosure. Profitability of the firm as measured by indicators such as net income, profit margin, return on assets, and return on equity are associated with disclosure of sustainability parameters as evident in a study by Artiach et al. (2010). The age of the firm has some relationship with disclosure on sustainability parameters. It has been reported by Parsa and Kouhy (2008) that younger firms in comparison with older firms are not very enthusiastic in terms of disclosure on social parameters, due to lack of issues addressed. However, Yao et al. (2011) identified that in order to attract investors, newer firms are eager to disclose more information on social issues. Studies by Ali and Atan (2013), Michelon and Parbonetti (2012), Haniffa and Cooke (2005) have highlighted how some corporate governance variables such as size of the board of directors, board independence and CEO duality have an effect on the quality of disclosure. Review of available literature shows that location of a firm may be a determinant of sustainability disclosure. As posited by Van der Laan Smith et al. (2005), firms in countries with greater importance on social issues and additional focus on multi stakeholders, will display stronger and improved quality of social disclosure, as compared with firms originating in countries with lesser focus on social issues and more influence exerted by shareholders. Millar et

al. (2005) stated that the high degree of disclosure is associated with Anglo-Saxon business systems in countries such as USA, UK, Canada vis-a vis the Communitarian system as in Germany France and Switzerland, where there is a tendency to disclose limited information due to prevalent lack of transparency. Taking the case of Czech Republic and Romania in the domain of environmental reporting, Jindrichovska and Purcărea (2011), suggested, that non-prescriptive approach which is prevalent in other developed countries, should be adopted in Czech Republic whereas for Romania a systematic and regulatory procedure should be followed. This review prompted us to design a model whereby the above mentioned firm specific variables have been included as independent variables to examine their effect on quality of sustainability reporting.

3. OBJECTIVE

The objective of this study is to determine:

- a) The ranks of the Indian and American firms as per their sustainability disclosure index and make comparisons thereof.
- b) The improvement / deterioration in the quality of sustainability reporting, between 2011-12 and 2012-13 by noting the changes in the year-wise ranks assigned.
- c) If the reporting quality in the sustainability reports of American and Indian manufacturing firms differed significantly over the said period, using the independent t test.
- d) Whether the change in the sustainability reporting quality (as proxied by sustainability disclosure index) has any correlation with change in the financial

parameters of the firms (as proxied by EPS and ROA) over the said period.

- e) The extent to which independent variables such as total assets, firm age, liquidity, profitability, board composition, board independence, CEO duality and lastly location of the firm contribute significantly towards explaining the variation in the dependent variable i.e. quality of sustainability reporting (as proxied by sustainability disclosure index).

4. METHODOLOGY

4.1. Database

Data and facts have been collected from the Annual Reports and Sustainability Reports published by Indian and American manufacturing companies. The profile of the firms is in Table 1. Out of 40 manufacturing companies listed in the Nifty, of the National Stock Exchange in India only 10 firms have published sustainability reports for the financial years 2011 - 2012 and 2012 - 2013, as per the Global Reporting Initiative framework. Hence all these 10 firms have been included in the study. The sample consists of 3 public sector units (PSUs') namely Gail (India) Limited, Oil and Natural Gas Corporation Limited, Bharat Petroleum Corporation Limited and 7 private sector firms like Tata Steel Limited, Tata Motors Limited, ITC Limited, Hindalco Industries Limited, Reliance Industries Limited, Mahindra & Mahindra Limited, Larsen & Toubro Limited.

In order to maintain parity and undertake meaningful comparison with these Indian manufacturing firms, we decided to consider 10 American manufacturing firms listed on the NASDAQ. Out of 5519 American firms

Table 1. Profile of Firms

INDIAN FIRMS	AGE	NET INCOME OF YR 12-13 IN US \$ MILLION	SALES OF YR12-13 IN US \$ MILLION	INDUSTRY
ITC Limited	41	7418.39	30839.97	Tobacco
Larsen & Toubro Limited	65	4910.65	62724.16	Engineering
Reliance Industries Limited	30	21003	368295	Oil and Gas
Tata Steel Limited	108	5062.97	39101.47	Metals and Mining
Tata Motors Limited	70	301.81	46853.92	Automotives
Oil and Natural Gas Corporation Limited	59	88442.07	20925.69	Oil and Gas
Gail (India) Limited	31	4022.20	48287.2	Oil and Gas
Hindalco Industries Limited	57	1669.20	27040.02	Metals and Mining
Bharat Petroleum Corporation Limited	38	2642.90	241795.98	Oil and Gas
Mahindra & Mahindra Limited	67	4099.20	69142.60	Automotives
AMERICAN FIRMS	AGE	SALES OF YR12-13 IN US \$ MILLION	NET INCOME OF YR 12-13 IN US \$ MILLION	INDUSTRY
3M Company	86	30900	4721	Health care
The Coca Cola Company	86	46854	8626	Consumer non durables
Colgate	92	17420	2410	Consumer non durables
The Dow Chemical Company	68	57080	4816	Basic industry
DuPont	213	35700	4862	Basic industry
General Motors Company	107	155427	5331	Capital goods
Intel Corporation	47	52700	9620	Technology
Johnson & Johnson	128	13831	13831	Health care
Norfolk Southern Corporation	35	11245	1910	Transportation
The Procter & Gamble Company	110	53900	11402	Basic industry

listed on NASDAQ, the random sampling technique was used to select 10 manufacturing firms namely, 3M Company, The Coca Cola Company, Colgate, The Dow Chemical Company, DuPont, General Motors Company, Intel Corporation, Johnson & Johnson, Norkfolk Southern Corporation, and The Procter & Gamble Company.

4.2. Computation of Sustainability Disclosure Index

According to GRI (Global Reporting Initiative) framework, there are 3 sustainability indicators namely i) economic ii) environment and iii) social, comprising of 9, 30 and 45 sub clauses respectively, on which reporting is required. The content

analysis approach was used to examine the nature of reporting by the sampled Indian and American firms on each of the sub clauses of all 3 sustainability indicators, as the unit of our count. The content on the disclosure made, was studied and a scoring system was devised to reflect the quality of the disclosures.

Firms which have fully reported against a particular sub-clause of economic, environment or social indicator of the GRI framework, have been awarded 2 points. Likewise for partial reporting and for non reporting against a particular sub-clause, 1 and 0 points have been awarded respectively. This procedure has been followed for each of the 2 financial years (2011-12 & 2012-13).

For each financial year, the scores assigned to the component sub clauses of an indicator (economic / environment / social) were summated to find the total disclosure score, (TD_i) and then divided by the maximum score possible (M_i), to compute the disclosure index of that indicator (DI_i) as given below.

The total disclosure score (TD_i) for a sustainability indicator i was calculated as follows:

$$TD_i = \sum_{s=1}^n d_s \tag{1}$$

- Where d_s
- =2 for full reporting against a sub clause s
- =1 for partial reporting against a sub clause s
- =0 for non reporting against a sub clause s
- and
- n=9 for i= economic indicator
- n=30 for i= environment indicator
- n=45 for i= social indicator

Maximum possible score is "M_i=2n_i"

considering that full reporting has been done on all clauses of the said indicator i.

$$\text{Disclosure Index: } DI_i = TD_i / M$$

The sustainability disclosure index (SDI) for each firm was therefore calculated by summing the total disclosure score (TD_i) of all 3 indicators, and then dividing the score with the maximum score possible i.e. 168 considering that full reporting has been done on all clauses of all the 3 indicators.

$$SDI = \sum TD_i / 168$$

For instance, in the year 2011-12, for The Dow Chemical Company, total disclosure score in economic indicator (TD_{eco}) was 17 for the 9 sub clauses in the said indicator. (M_{eco}) being 18, the (DI_{eco}) was computed as 0.94. Similarly (TD_{env}) and (TD_{soc}) scores were 54 and 80 respectively. Thus (SDI) for The Dow Chemical Company in the year 2011-12 was calculated as (17+54+80)/168 = 0.90 This exercise was repeated for the next year, and thereafter the average disclosure index for 2011-13 corresponding to each indicator was computed. To capture the sustainability disclosure quality in totality for the 2 year period, the average sustainability disclosure index (SDI) was calculated.

5. DATA ANALYSIS AND DISCUSSION

5.1. Ranks based on Sustainability Disclosure Indices during 2011-13

Table 2 shows the ranks assigned to the American and Indian firms as per their average sustainability disclosure index generated for the period 2011-13. Dow Chemical Company has been ranked 1st amongst the 10 firms, and it may be noted that it secures the 1st position in the

economic, environmental and social fields as well. Intel Corporation and Johnson & Johnson have attained 2nd and 3rd position respectively. It may be interesting to note that although Johnson and Johnson have reported well on the social and economic indicators, it has considerably lagged behind when reporting on environmental aspects. This indicates that the firm has not given equal importance towards reporting on all the three aspects of sustainability. The Coca Cola Company has been ranked last amongst the 10 firms. Amongst the Indian

manufacturing companies, Tata Steel Limited has been ranked 1st, on the basis of its average sustainability disclosure index. It is followed closely by Reliance Industries Limited and Oil and Natural Gas Corporation Limited. Larsen and Toubro did not assign equal importance towards all three different parameters of sustainability reporting. The quality of reporting on environmental parameters was poor, in comparison to economic and social reporting. ITC limited has been ranked last amongst the 10 Indian firms.

Table 2. Ranks based on Sustainability Disclosure Indices for 2011-13

	FIRM NAME	D I_{eco}	D I_{env}	D I_{soc}	SDI	RANK BASED ON SUSTAINABILITY INDEX
----- AMERICAN FIRMS -----	The Coca Cola Company	0.44	0.36	0.27	0.32	10
	Norfolk Southern Corporation	0.42	0.58	0.26	0.39	9
	General Motors Company	0.44	0.63	0.28	0.43	8
	3M Company	0.61	0.47	0.44	0.47	7
	DuPont	0.47	0.55	0.49	0.51	6
	Colgate	0.44	0.65	0.54	0.57	5
	The Procter & Gamble Company	0.89	0.80	0.60	0.7	4
	Johnson & Johnson	0.72	0.59	0.79	0.71	3
	Intel Corporation	0.78	0.77	0.69	0.73	2
	The Dow Chemical Company	0.97	0.93	0.93	0.93	1
----- INDIAN FIRMS -----	ITC Limited	0.78	0.67	0.52	0.6	9
	Bharat Petroleum Corporation Limited	0.81	0.68	0.64	0.67	8
	Hindalco Industries Limited	0.83	0.65	0.71	0.7	7
	Mahindra & Mahindra Limited	0.78	0.75	0.73	0.74	6
	Gail (India) Limited	0.61	0.66	0.87	0.76	5
	Larsen & Toubro Limited	1.00	0.62	0.82	0.77	4
	Tata Motors Limited	0.50	0.88	0.91	0.85	3
	Oil and Natural Gas Corporation Limited	1.00	0.85	0.89	0.89	2
	Reliance Industries Limited	0.94	0.92	0.97	0.95	1
	Tata Steel Limited	0.94	0.97	0.94	0.95	1

5.2. Improvement / deterioration in the quality of disclosure on sustainability indicators

In Table 3 we compare the ranks attained by the sampled firms in 2012-13 with that of 2011-12 to highlight any improvement /deterioration in the quality of disclosures on sustainability indicators. 6 firms namely 3M Company, The Coca Cola Company, DuPont, General Motors Company, Intel

Corporation and Norfolk Southern Corporation have been able to improve their pattern of disclosure in 2012-13 as compared to 2011-12. Comparatively the change has been more phenomenal in case of DuPont, General Motors Company and Intel Corporation. Colgate, Dow Chemical Company and The Procter and Gamble Company have been able to maintain the same rank over the period. For Johnson and Johnson phenomenal deterioration has taken

Table 3. Deterioration / Improvement in quality of sustainability disclosure in 2012-13 vs 2011-12

FIRM NAME	ECONOMIC		ENVIRONMENT		SOCIAL		SUSTAINABILITY		
FIRMS	RANK		RANK		RANK		RANK		
	YR 11-12	YR 12-13	YR 11-12	YR 12-13	YR 11-12	YR 12-13	YR 11-12	YR 12-13	
AMERICAN FIRMS	3M Company	5	4	8	6	6	6	9	5
	The Coca Cola Company	7	6	9	7	9	8	10	7
	Colgate	7	6	5	4	4	6	5	5
	The Dow Chemical Company	1	1	1	1	1	1	1	1
	DuPont	6	5	8	4	8	4	8	4
	General Motors Company	4	7	7	3	7	9	6	3
	Intel Corporation	3	3	4	2	3	3	4	2
	Johnson & Johnson	6	2	2	8	2	2	3	6
	Norfolk Southern Corporation	8	6	6	5	10	7	7	5
	The Procter & Gamble Company	2	2	3	2	5	5	2	2
	ITC Limited	3	4	6	5	9	10	8	6
INDIAN FIRMS	Larsen & Toubro Limited	1	1	7	7	5	5	7	7
	Reliance Industries Limited	2	2	2	2	1	2	2	2
	Tata Steel Limited	2	2	2	1	2	1	2	1
	Tata Motors Limited	4	5	4	2	4	3	4	4
	Oil and Natural Gas Corporation Limited	1	1	3	3	3	4	3	3
	Gail (India) Limited	1	6	1	9	1	7	1	9
	Hindalco Industries Limited	4	2	6	6	6	8	9	5
	Bharat Petroleum Corporation Limited	4	3	5	8	8	9	6	8
	Mahindra & Mahindra Limited	3	4	5	4	7	6	5	5

place from 3rd position to 6th position due to lesser disclosure on the environmental clause. It has been observed that 3 Indian manufacturing firms namely ITC Limited, Tata Steel Limited and Hindalco Industries Limited have bettered their sustainability reporting quality in 2012-13 as compared to 2011-12. Larsen & Toubro Limited, Reliance Industries Limited, Tata Motors Limited, Oil and Natural Gas Corporation Limited and Mahindra & Mahindra Limited have been able to maintain the same the same rank during the period 2012-13 when compared with 2011-12. There has been significant deterioration in the sustainability reporting quality of Gail (India) Limited which secured the 1st rank in 2011-12, but scored 9th in 2012-13. The firm did not report on numerous clauses of the 3 sustainability indicators in 2012-13.

5.3. t-Test for comparing American and Indian firms' reporting quality

The independent t test was performed by using IBM SPSS version 20.0, to examine if the sustainability disclosure index of the sampled American and Indian manufacturing firms for the period 2011-13, differed significantly. In addition, t tests were also conducted for judging the difference in the extent of disclosures on economic, environment and social indicators individually. Prior to conducting the t tests the Shapiro-Wilk Test was undertaken to test the data for normality. Corresponding to all the 4 variables of interest i.e. disclosure index on economic, environment, social and sustainability indicators for both American and Indian companies respectively, the significance value of the Shapiro-Wilk Test was greater than 0.05, suggesting that the data is normal.

The results of the independent t-tests for the overall sustainability disclosure index, indicated that there is a significant difference in the quality of disclosures made by the sampled American and Indian firms in their sustainability reports. It is evident that the Indian firms (mean= 0.7880) have scored better than their American counterparts (mean= 0.5760) ($t = -3.01$) (Sig = 0.008). It implies that the Indian firms are more diligent than the American firms with respect to providing full disclosure on various clauses of sustainability indicators. Similar results are observed when the disclosure indices for economic, environment and social indicators of the 2 groups of firms are compared. While the results are significant at $p < 0.05$ for the economic and social indicators, for the environment indicator the results are significant at $p < 0.1$ as shown in Table 4.

It needs to reiterate that this study merely highlights the difference in the pattern of sustainability reporting of the sampled American and Indian firms. It in no way posits that American firms take less effort at upholding sustainability initiatives when compared to its Indian counterparts since that is beyond the purview of this study.

5.4. Correlation between financial performance parameters and sustainability disclosure index

Literature review establishes evidence of relationship between sustainability initiatives and financial performance. In this study, proportionate change in financial parameters like EPS and ROA between 2011-12 and 2012-13 has been computed and thereafter correlated with the proportionate change in sustainability disclosure index over the 2 year period. In case of American

Table 4. *t* test for difference in sustainability disclosure quality of American and Indian firms

Indicator	Nation	Mean	t Value	Significance
ECONOMIC	AMERICAN FIRM	.6180	-2.394	.028 **
	INDIAN FIRM	.8190		
ENVIRONMENT	AMERICAN FIRM	.6330	-1.990	.062 *
	INDIAN FIRM	.7650		
SOCIAL	AMERICAN FIRM	.5290	-3.160	.005 **
	INDIAN FIRM	.8000		
SUSTAINABILITY	AMERICAN FIRM	.5760	-3.010	.008 ***
	INDIAN FIRM	.7880		

Note: *p<0.1, **p<0.05, ***p<0.01 (2-tailed)

firms, the Pearson's correlation coefficient between change in sustainability disclosure index and change in EPS is 0.135, while it is 0.315 in case of change in ROA. The results indicate that there is a weak and positive correlation between the change in the quality of sustainability reporting and the change in the financial performance parameters during the period. The results were similar for Indian firms, and the Pearson's correlation coefficient between change in sustainability disclosure index and change in EPS and ROA was 0.377 and 0.142 respectively, as shown in Table 5. The results however were not significant. This research fails to establish that betterment in the pattern of sustainability disclosure translates into better financial performance for the firms. This implies that engaging in better reporting is a voluntary action on the part of the corporate and not so much motivated by the prospects of bettering their bottom line.

5.5. Multiple Regression Analysis: Determinants of Sustainability Disclosure Index

Multiple regression analysis was conducted to identify variables which explain the variation in the sustainability reporting quality of firms. The sustainability disclosure index (SDI) was regressed against the 8 specified independent variables by applying the OLS regression procedures.

The regression model is expressed as follows:

$$SDI = \alpha + \beta_1 \text{ Firm Size} + \beta_2 \text{ Firm Age} + \beta_3 \text{ Liquidity} + \beta_4 \text{ ROE} + \beta_5 \text{ Board Composition} + \beta_6 \text{ Board Independence} + \beta_7 \text{ CEO Duality} + \beta_8 \text{ Location of the firms} + \varepsilon \quad (2)$$

Where the variables are as follows:

Table 5. Correlation between proportionate change in sustainability disclosure index and proportionate change in EPS / ROA in 2012-13 vs 2011-12

		Change in EPS	Change in ROA
American firms	Pearson Correlation	.135	.315
	Sig. (2 tailed)	.710	.375
Indian firms	Pearson Correlation	.377	.142
	Sig. (2 tailed)	.283	.695

Variables	Measurement
Dependent:	
Sustainability Disclosure Index (SDI)	Unweighted Sustainability Disclosure Index
Independent:	
Firm size	Natural logarithm of the average of total assets for 2011-13.
Firm age	Age of firms since date of incorporation.
Liquidity	Current ratio for 2011-13.
ROE	Ratio of Net income to Shareholders Equity for 2011-13.
Board composition	Average number of board members during 2011-13.
Directors independence	Average number of independent directors for 2011-13.
CEO duality	1= Yes and 0= No.
Location of firm	1= American firms, 0 = Indian firms.

From the model summary of the results given in Table 6a, it is seen that the value of R is 0.877. This denotes the high correlation between the observed sustainability disclosure index and the values predicted by the model. The coefficient of determination R^2 equals to 0.77 Thus one may suggest that the 8 predictor variables of this model explain 77% of the variation in the sustainability disclosure index (SDI) (the dependent variable). The Adjusted R^2 is 0.603 which reflects that the model fits the population well.

The significance of the overall regression, conducted by using an F statistic is determined by the F value of 4.60 which is significant at 1% level of significance. The significance of each of the predictor variables is displayed in Table 6b. The total assets of the firm and location of the firm are the only two predictor variables which are significant at 10% level of significance. The total assets are positively and significantly

associated with the extent of disclosure of the sample companies. With respect to location of the firm, which is a dummy variable, the value of the partial regression coefficient, b, shows that American firms are less conscious about their quality of sustainability reporting as compared to their Indian counterparts (the referral category).

The model indicated that the other variables did not significantly affect the variations in the sustainability disclosure index (SDI) of the sample firms.

6. CONCLUSION

The Legitimacy Theory framework highlights the need for firms to conduct their activities in a manner which conforms to society's expectations (O'Donovan, 2002). The importance of sustainability reporting arises from this need to legitimize its actions since the information disclosed in the reports

Table 6a. Model Summary on the robustness of Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.877	.770	.603	.11906

Table 6b. Significance of the Partial Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	.575	.464		1.239	.241
Total Assets	.079	.043	.317	1.841	.093
Age of the firm	.000	.001	-.052	-.302	.768
Liquidity	-.007	.065	-.019	-.110	.914
ROE	-.010	.011	-.167	-.944	.365
Board composition	-.030	.027	-.335	-1.087	.300
Directors independence	-.024	.024	-.318	-1.013	.333
CEO duality	.006	.073	.014	.082	.936
Location of the firms	-.190	.103	-.515	-1.840	.093

is instrumental in shaping society's perception towards the firm (Cho & Patten, 2007). This study is a step towards evaluating the quality of the disclosure made by a sample of American and Indian manufacturing firms, via a proxy measure termed sustainability disclosure index (SDI).

On a scale of 0 to 1, the mean SDI for American firms has been computed as 0.57. In the sample of American firms it is found that 40% of the firms have SDI exceeding the mean. The ranking of firms on the basis of the SDI has enabled us to identify firms which are exemplary and can establish a benchmark for sustainability disclosure quality. One such firm is The Dow Chemical Company has been ranked 1st with a SDI of 0.93. Although the mean SDI of Indian firms being 0.788, exceeds that of the American firms, it is interesting to note that in this case to 40% of the firms have SDI exceeding the mean. 2 firms namely Reliance Industries Limited and Tata Steel Limited have tied for the 1st rank with a SDI value of 0. This study is novel in highlighting that in this particular

sample of 20 firms, the Indian manufacturing firm have emerged as being more conscious towards reporting sustainability indicators, in comparison to American manufacturing firms. These Indian firms are providing full disclosure on many clauses of the 3 indicators, namely economic, environment and social. The results of the Independent t test also echoes that a significant difference exists in the quality of reporting of Indian firms in comparison to their American counterparts. However, this study in no way claims that the American firms take less effort at upholding sustainability initiatives when compared to its Indian counterparts. Examining the change in the SDI over the 2 year period, we observed that 6 American firms have successfully improved their quality of disclosure by providing complete information on more number of clauses of the sustainability indicators in 2012-13 vis-à-vis 2011-12. However in the Indian sample only 3 firms have demonstrated improvement in SDI. Scrutiny of the change in the quality of sustainability reporting,

between the 2 years enabled us to identify the firms whose reporting quality was showing a regressive trend, which calls for attention and action. It may be noted that for both group of firms, although a weak positive correlation exists between change in sustainability reporting quality and change in financial parameters like EPS and ROA over the 2 year span, the results are not significant. The multiple regression exercise established that contrary to prior research, in this study, the corporate governance variables like CEO duality, board composition and board independence failed to significantly explain the variation in the quality of sustainability disclosure. However, total assets and location of firms have emerged as significant determinants of the quality of sustainability disclosure in this study.

As with any research, this study has its limitations. One inadequacy of the study is that the sample size is small, spanning only 20 companies, 10 from each country. We have been unable to study more than 10 Indian manufacturing firms because these were the only listed firms which have been publishing sustainability reports as per GRI frame work during the 2 year period of our study i.e. 2011-13. Thereafter to maintain parity, the same number of American firms has been examined. The study only pertains to manufacturing firms and the service sector has not been examined although corporate sustainability is an issue of concern for all industries, irrespective of sector. The sample size as well as the time frame of study may be increased to improve the reliability of the results. Since this is a preliminary inquiry over a group of firms, this study provides us an indication of what may be expected from a larger sample.

As a way forward, this study can be

extended to include firms in other countries such that a more robust cross-country comparison can be undertaken. This will highlight the extent of which location of a firm influences its quality of sustainability disclosure. Further, service sector industries may be brought under the purview of examination and a comparison between the manufacturing and service oriented firms may be undertaken to investigate if the industry sector is an important determinant of sustainability disclosure.

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КВАЛИТЕТ ИЗВЕШТАЈА ОДРЖИВОСТИ ПОСЛОВАЊА ИНДИЈСКИХ И АМЕРИЧКИХ КОМПАНИЈА: УПОРЕДНА АНАЛИЗА

Diganta Munshi, Sraboni Dutta

Извод

Да би се проучио начин извештавања индикатора одрживости пословања 10 америчких и 10 индијских производних компанија, коришћен је метод алаизе садржаја. Сами извештаји су припремљени у оквиру ГРИ оквира и званично публиковани у периоду 2011-2013

Како би се прорачунао СДИ (индекс показатеља одрживости), под-класе економских, еколошких и друштвених индикатора су оцењиване са 2 (потпуно), 1 (делимично) и 0 (непотпуно). Значајна разлика у квалитету приказа одрживости анализираних америчких и индијских производних компанија је установљена применом независног т - теста, за период 2011-13. Како би се установило да ли ће бољи квалитет извештавања одрживости резултовати бољим финансијским перформансама компанија, урађена је корелација фактора показатеља квалитета извештавања и показатеља перформанси пословања, као што су ЕПС и РОИ. Вишеструка регресиона анализа је коришћена да би се одредиле промењиве које објашњавају варијацију у квалитету извештавања одрживости компанија.

Кључне речи: Квалитет извештавања одрживости, анализа садржаја, индекс приказа, финансијске перформансе, производне компаније

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