

Corporate Environmental Information Disclosure in India: Role of Board Characteristics

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Abstract

This research paper intends to observe the influence of board characteristics, namely, Board Size (BS), Board Independence (BI), Board meetings (BM), CEO duality (CD), firm-size (FS), Tobin Q, and ROA on environmental information disclosure. Environmental information has been measured through their availability in annual reports of particular companies. We have used panel data of 60 environmentally most polluted companies listed on the Bombay Stock Exchange from 2017 to 2021. The data has been analyzed using a regression model and tested through the feasible generalized least square (FGLS) regression technique. Our study indicates that Board Size (BS), CEO duality (CO), Board Meetings (BM), Tobin Q & ROA have a substantial influence on environmental information disclosure, whereas board independence and size of firms do not influence environmental information disclosure. Agency theory discusses that board size (BS) has a negative association with environmental information, but it opposes the empirical work of Ezhilarasi & Kabra (2017) & Pareek et.al. (2019).

Further, Al-Janadi et al. (2012) argue that CEO Duality (CD) and environmental information disclosure have significantly positively linked. The study recommends that environmental information disclosure is obligatory, specifically for environmentally sensitive companies in their periodic reports. In addition, governmental establishments should offer a transparent and standard guideline on disclosing environmental information to ensure responsible business.

Keywords: Board characteristics, Environmental Information disclosure (EID), Feasible General Least Square (FGLS)

Introduction

The country's economic growth depends upon the growth of industries. However, the growth has side effects on the environment, and it increases the environmental pressure in the country; this would require corporates to involve in engaging ethical and responsible business. Environmental disclosure is an important and effective way of protecting shareholders, and it can be done with the help of corporate governance. In addition, concerning the environment and society is essential for companies' sustainability (Htay et al., 2012). Stakeholders such as customers, government, regulatory bodies, non-governmental organizations, investors, agencies and institutions, employees, and society as a whole have paid great attention to the environmental impacts of firms, i.e., emissions of greenhouse gases, carbon footprint, their disposal of toxic wastes (Akbas, 2016). One of the key policy instruments in

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environmental governance is information transparency, and information transparency of environmental disclosure can promote the corporate world. It would support the government in decision-making regarding environmental control (Sun et al., 2019).

Environmental information disclosure (EID) has become a significant zone of concern to the government due to speedy industrial growth. So, It is an essential issue of discussion and concern about it. De Villiers et al. (2011) observed the association between board characteristics and corporate

governance and found that the higher environmental performance in the firm is positively associated with higher board independence, more legal experts on the board, larger board size with large numbers of CEO on the board. De Villiers & Van Staden (2012) conducted a survey-based study in New Zealand regarding shareholder attitude toward environmental disclosure. The study predicted that shareholders were optimistic about disclosing environmental information and demanded the government make EID compulsory and to be published in the annual report. The respondent indicated that companies should be accountable for the environmental impact. The study has significant value for the government, policymakers, companies, board of directors, and management.

The present study has examined the impact of board characteristics on environmental disclosures. The main focus of the study is to analyze the association between environmental information disclosure (EID) and the board characteristics in terms of board size (BS), board Independence (BI), board meetings (BM), CEO duality (CD), firm-size (FS), Tobin Q, and return on assets (ROA). We have chosen sample data from highly environmental cautious industries like pharmaceutical, petroleum & oil, sugar & distillery, fertilizer & pesticides, and cement. These companies belonging to these industries have been shortlisted from India's Bombay Stock Exchange (BSE).

Review of Literature

In Nigeria, Oba and Fodio (2012) examined board characteristics and the quality of environmental reporting of various environmental-sensitive firms. The study used content analysis to recognize firms that disclose qualitative environmental reports. It has been identified that board structure substantially influences environmental reporting. The study also exposed an opposite association

between board size and environmental reporting. Al-Janadi et al. (2012) studied non-mandatory disclosure of information and the external and internal corporate governance mechanism in Saudi Arabia, and their finding reveals that most corporate governance mechanisms, such as non-executive directors, size of the board, chief executive officers (CEO) duality, quality of the audit, and ownership of a firm have a significant impact on the qualitative disclosure of voluntary information.

Che Ahmad and Osazuwa (2015) cast off the ethnic background of the directors to classify the culture of the board. The environmental disclosure was the dependent variable and measured by an index score-based content analysis. The study acknowledged a significant association between environmental disclosure and boards dominated by foreign directors, firm size, and leverage. 'Ezhilarasi & Kabra (2017) claim in their study that corporate governance convey an assurance of fair, consistent, and transparent corporate behaviour to all the stakeholders. These findings indicate that foreign institutional ownership has the most critical corporate governance determinants that encourage companies to disclose environmental information. The study recommends that the Security Exchange Board of India (SEBI) bring policy to disclose environmental information by all Indian firms and focus on strengthening corporate attributes.

Aliyu (2019), in his study, indicated a significant positive relationship between board independence, board meetings, and corporate environmental reporting. Also, Ismail et al. (2019) argue that the current global and innovative economy considers social and environmental issues comprising income distribution and growth. The board plays a crucial role in ensuring that companies engage with environmental and social governance practices that can enhance value addition and financial performance. The result indicated that environmental and social governance practices significantly correlate with board size, board

diversity, and board independence. Rezaee et al. (2020) investigated the relationship between environmental disclosure quality and the risk using corporate governance as a moderating factor for Iran-listed companies. The study did not find any substantial bond between CEO duality and board size and environmental disclosure quality and risk. Wang (2016) examined the association between environmental information and accounting practices. The result indicated an association between total disclosure of environmental information, mandatory and voluntary disclosure of environmental information, and firm value. The result showed that corporate governance is positively associated with total environmental information disclosure and mandatory environmental information. Li et al. (2017) found that environmentally polluted and energy use-based companies are the leading cause of environmental issues at large, which paves the way to strengthen the firm's environmental management and information disclosure policies. The study suggested that environmental information disclosure is necessary for all firms along with a sound environmental policy to achieve better environmental performance. In their study, Melinda & Wardhani (2020) found that firms are more concerned with environmental and social issues. The study's finding indicated that environmental and sustainable growth (ESG-environmental, ESG-social, and ESG-governance) individually affect the firms' value. The study suggests that ESG aspects are essential for the companies to increase company value and show the company is robust and sustainable.

Glass et al. (2016) observed corporate board characteristics in terms of gender, especially the impact of women CEOs, & the proportion of women directors on board. The finding specifies that a company with diversified gender in their leadership teams is more effective than other firms concerning environmentally friendly strategies. The study also states that the gender composition of leaders affects corporate governance practices.

Ofoegbu et al. (2018) examined the impact of corporate board attributes on environmental information disclosure in South Africa and Nigeria. The study indicates that corporate board mechanisms can affect environmental disclosure in these two countries. Besides, the corporate board characteristics are associated with the quantity of environmental information disclosure. .

Elmagrhi et al. (2019) found in their study that corporate governance structures affect environmental performance. They further observed that the age of female directors positively impacts the overall corporate environmental performance. The age of female directors also has a positive effect on the three individual environmental performance components, such as environmental strategy implementation and disclosure. However, the study concluded that the level of education of female directors has no impact on environmental performance. Further, Pareek et.al. (2019) studied the effects of corporate governance such as board size and independent director along with firm-specific characteristics like age of the director, size, and profitability of the firm on the disclosure of environmental performance based on the National Stock Exchange of India (NSE). The finding indicates that the board size and age of the directors of the firm have a positive impact on the firm environmental performance & disclosure of Indian companies.

Motivation of the Study

There are no sufficient empirical studies to explore various aspects of corporate governance concerning the polluting industries in India. This study would fill this hole by providing more empirical evidence in understanding the impact of corporate governance on environmental information disclosure. Besides, this research work is different from the work of other researchers in a different dimension, such as study period, variables, and method of analyzing data.

Hypothesis Development

H0: There is no influence of board characteristics on environmental information disclosure

H1: There is influence of board characteristics on environmental Information disclosure

Research Methodology

Sample and sources of data

The data is collected from 60 listed companies based on the Bombay Stock Exchange (BSE). In this study, five different sectors out of the most polluting industries, have been considered; pharmaceutical; petroleum & oil industries; sugar & distillery industries; fertilizer & pesticides, and cement. The study period is 2017-2021.

Variable Description

Environmental information disclosure (EID)

We have taken environmental disclosure as a dependent variable in this study using dummy values (0, 1). The annual reports of companies are analyzed and based on disclosure or non-disclosure of environmental information, 0 is given to those companies which do not provide any environmental information in their annual reports and 1 is given to those companies which disclose environmental information.

Board size

Board size plays a crucial role in management performance. The total number of directors is called board size or board composition. Empirical studies have been conducted in this regard, and the result is controversial; some of the studies favor small sizes where the management can monitor efficiently and take a unanimous decision.

Contrary, other papers recommend a large board size with the essential understanding and expertise that would lead to higher firm performance. Moreover, some studies relate the large size of the board to environmental disclosure because the large size possesses the necessary experience and expertise to provide environmental advice '(Ezhilarasi & Kabra, 2017).

CEO duality

The term chief executive officer (CEO) duality means that the same person holds the CEO and chairman simultaneously. It is a controversial issue. Some researchers believe that CEO duality can positively influence the performance of firms, while others do not agree with this (Nazar, 2016). Besides, Ezhilarasi & Kabra (2017) argue that CEO duality can reduce the monitoring ability of the board, which is detrimental to the quality of disclosure. CEO duality is measured by dummy variable in this study, a company where the same person holds both the position of CEO and chairman is given one and others 0.

Board independence

Board independence is measured by taking the total number of independent directors out of the total number of directors on the board. In some studies, board independence is considered significant and supposed to impact environmental information disclosure '(Pareek et.al., 2019) positively. Besides, Li et al. (2017) also argue that board independence significantly influences environmental information disclosure.

Board meeting

Board meetings of a firm constitute an essential aspect as it is a value relevant attribute of a firm and is an indicator or a measure of the intensity of board activity. It is observed that the directors of the companies who meet frequently tend to discharge

their duties and responsibilities according to the interests of the shareholders. Akbas (2016) also argued that board meetings significantly influence the disclosure of environmental information.

Return on Assets (ROA)

The firm's profitability can be measured through the most widely used measure of the firm performance called Return on Asset (ROA). This can be calculated by taking the net profit ratio and average total assets of a firm (Pareek et.al., 2019). ROA refers to how a company efficiently utilizes its resources (assets) and generates revenue. The higher the ROA, the higher the firm's income efficiency.

TOBIN'S Q

Market-based measure Tobin's Q has been selected as a variable in this study. It is considered more reliable in India as compliance with accounting standards is weak. Further, market-based measures discounts and factors in all parameters affecting firm performance.

Firm size

The firm size means the company size or scale of its operation. The firm's size can be measured through different proxies such as total turnover, sales, or total assets. In this study, the size of a firm is measured by taking the natural logarithm of the total asset of a company based on its financial statement. The firm's size is essential because it affects the profitability and efficiency of the company.

Research Model

To examine the impact of board characteristics on environmental disclosure, the panel data technique has been applied, data of different companies in the different periods has been analyzed through the

STATA statistical software. The Feasible General Least Square (FGLS) test of the Regression model best fits the study. Environmental information disclosure (EID) is the function of the Board size, Board independence, CEO duality, Board meetings, Firm Size, ROA, and Tobin Q.

$$Y = \beta_0 + \beta_1.X1i + \beta_2.X2i + \beta_3.X3i + \beta_4.X4i + \beta_5.X5i + \beta_6.X6i + \beta_7.X7i + \epsilon_i$$

The research model for the study is

$$EID = \beta_0 + \beta_1.BS + \beta_2.BI + \beta_3.CD + \beta_4.BM + \beta_5.FS + \beta_6.ROA + \beta_7.Q + \epsilon_i$$

Where, β_0 = intercept, β_1 = Slope, EID = Environmental information disclosure, BS = Board size, BI = Board independence, CD = CEO duality, BM = Board meetings, FS = Firm size ROA = Return on assets, TQ = Tobin Q, ϵ_i = Random error

Descriptive Statistics

From the table. 1. below, on average, 60 % (36 out of 60) companies disclosed the environmental information on their annual reports, and these companies are large companies, based on their size of total assets.

The minimum board size consists of 6 members while the maximum number is 21 in some selected firms, and on average, the board size consists of 8 directors. The result shows that on average, 45.1% of the firms do not have a separate post for CEO and Chairman, and the remaining companies (54.9%) have a separate post for the CEO and chairman. Besides, the minimum number of independent directors on the board is 0, the maximum number of independent directors is nine, and the average number of independent directors is 5.

Firm Size which is measured by the proxy of the natural logarithm of total assets of the firm, further

we converted these to binary values of (0,1) and took the median value of its which is 10.872, and any firm values which exceed 10.872 are considered as large firms and rest of them not. The descriptive statistics show that, on average, 60% of the sample firms are large firms and the rest are small based on their total assets.

The ROA of a company shows how the management efficiently utilizes its asset to generate earnings. ROA in this study is measured by the ratio of net profit and total assets of a company. The result indicates that, on average, the rate of ROA is (4.2%); however, the maximum rate of ROA is 32.6%. Tobin Q reveals an overall mean value of 3.4%, varying between 2.3 and 39.1.

Table: 1 Descriptive Statistics

Variable	Mean	Median	Std. Dev.	Minimum	Maximum	Skewness	Kurtosis	Obs.
BS	8.123	9.000	2.976	3	21	-0.54	3.82	300
CD	0.451	0.000	0.567	0	1	-0.51	1.21	300
BI	4.678	4.000	1.450	3	9	-0.50	1.20	300
BM	9.13	9.120	3.650	4	19	-1.03	6.62	300
FS	0.602	1.000	0.501	0	1	4.62	5.67	300
ROA	0.042	0.038	0.092	-0.316	0.326	0.81	3.01	300
Tobin Q	0.034	0.023	0.391	0.090	0.357	1.02	4.22	300
EID	0.604	1	0.495	0	1	0.96	3.63	300

Source: Calculation by the author. The variables are Environmental information disclosure (EID) Board Size (BS), Board Independence (BI), Board meetings (BM), CEO duality (CD), firm-size (FS), Tobin Q, and ROA

Correlation Analysis

Table 2 represents the correlation matrix between dependent and independent variables. The correlation matrix shows that board size (0.23),

board independence (0.13), board meeting (0.14), CEO duality (0.13), Firm Size, ROA, and Tobin q are positively associated with EID, but firm size (-0.10) is negatively associated with EID.

Table.2. Inter Correlation Matrix

Variables	EID	BS	BI	BM	CD	FS	ROA	Tobin Q
EID	1							
BS	0.23	1						
BI	0.13	0.68	1					
BM	0.14	0.68	-0.01	1				
CD	0.13	-0.04	-0.01	0.13	1			
FS	-0.10	-0.05	-0.05	0.14	0.05	1		
ROA	0.10	-0.04	-0.07	0.34	-0.02	0.05	1	
Tobin Q	0.12	-0.23	-0.13	-0.12	-0.01	0.04	0.19	1

Source: Calculation by the author. The variables are Environmental information disclosure (EID) Board Size (BS), Board Independence (BI), Board meetings (BM), CEO duality (CD), firm-size (FS), Tobin Q, and ROA

To identify whether there is any multicollinearity problem, a VIF test has been conducted. A good regression model is free of multi-collinearity when the variance inflation factors (VIF) <10 and

Tolerance value >0.10 (Hair et al., 1995). The result shows that all values of VIF are lower than 10, and the tolerance values are >0.10. The FGLS output shows that data is homoscedastic, and there is no

Table.3. Multicollinearity Test

Variable	Tolerance	VIF
BS	0.53	1.889
BI	0.98	1.005
BM	0.52	1.894
CD	0.53	1.894
FS	0.99	1.008
ROA	0.98	1.009
Tobin Q	0.97	1.007

Source: Compiled by author. The independent variables are Board Size (BS), Board Independence (BI), Board meetings (BM), CEO duality (CD), firm-size (FS), Tobin Q, and ROA

autocorrelation in this study.

Cross-Sectional Time-Series (FGLS-Regression)

For this study, the Feasible Generalized Least square (FGLS) regression output shows five

variables, namely Board Size (BS), Board Meeting (BM) CEO duality (CD), Tobin Q, and ROA are significant at a 5% level of significance. FGLS is used in the case of the unknown Covariance matrix and the presence of autocorrelation. The estimators are asymptotically efficient, consistent, and unbiased.

Table.4. FGLS Regression Result

Variable	Coefficient	Standard Error	z-stat	Prob.
BS	0.0458669	0.0131287	3.43	0.001*
BI	-0.0128518	0.0273035	-0.57	-0.066
BM	0.5176166	0.0157687	2.62	0.012*
CD	0.1499503	0.0584878	2.42	0.010*
FS	-0.0178195	0.0095106	-1.16	0.061
ROA	0.6774533	0.3127126	2.64	0.032*
Tobin Q	0.5245321	0.2912766	3.01	0.032*
Constant	0.3376556	0.1591224	1.98	0.034*
Wald Chi2(5)=36.25	Log likelihood = -157.546			
Pro>chi2=0.000				

Source: computed by author. The independent variables are Board Size (BS), Board Independence (BI), Board meetings (BM), CEO duality (CD), firm size (FS), Tobin Q, and ROA * Variables are significant at 5%

Based on the above table the board size is significant and positively impacts environmental information disclosure. As per the study done by Pareek et.al. (2019), the firm's board-size and age positively impact the firm's environmental performance. Besides, in the study of De Villiers et al. (2011), it is also argued that higher environmental performance in the firm is associated with larger board size. Thus, based on

our regression analysis, our model indeed estimates the desired output, and also based on the descriptive statistics, we can say that those companies where the median value of their board size is nine or >9 are more interested in disclosing environmental information in their annual reports. This study rejects the null hypothesis and accepts the alternative hypothesis because the $P < 0.05$. Thus the board size has a significant impact on disclosing

environmental information.

Board independence in this study is insignificant based on the probability and Z statistics in which the $P > 0.05$, and thus we reject the alternative hypothesis (H1) and accept the null hypothesis (that board independence has no significant impact on environmental information disclosure. Board meetings in the study are significant at 5% as those companies conducting board meetings frequently impact disclosing environmental information.

CEO duality in the study is also significant at 5% as those companies where CEO and Chairman hold the same position can affect the environmental information disclosure. Al-Janadi et al. (2012) argued that corporate governance mechanisms, such as non-executive directors, the size of the board, CEO duality, audit quality, and government ownership, have a significant impact on the disclosure of voluntary information. This study assumed that (H1: CEO duality significantly impacts environmental information disclosure). Therefore, since the $P < 0.05$ so, we reject the null hypothesis and confirm the alternative hypothesis.

The size of the firm or company is another control variable that is measured through the natural logarithm of the total asset of a company. The result shows that it is insignificant since the $P > 0.05$. Thus, we accept the null hypothesis that there is no relationship between firm size and environmental information disclosure of a company. Hence the study rejects the alternative hypothesis.

ROA is related to the profitability measure of the company, and profitability is the ability of a company to earn profit. ROA is also a control variable of the study, which is significant at 5% based on the test result as the P-value of $0.032 < 0.05$. It has a positive association with environmental information disclosure; the higher the ROA of the company, most likely the company would disclose environmental information. Thus, we confirm the alternative hypothesis (H1). Besides, based on the finding of Iatridis (2013) that company attributes like board size, capital requirement, the profitability of the firm, and

capital spending are positively linked with disclosure of environmental information & its quality. Tobin Q is the profitability measure of the firm. Tobin Q is a control variable of the study, which is significant at 5% based on the test result as the P-value of $0.034 > 0.05$. It has a positive association with environmental information disclosure.

Conclusion

In this empirical study, we examined the impact of corporate governance on environmental information disclosure for 60 BSE-listed companies in India. The industries selected for the study are environmentally polluted companies that the Ministry of Environment and Forest recognizes, Govt. of India. There are various polluting industries classified as Red, Orange, Green, and White, based on their emission of significant pollution or hazardous wastes. Since disclosing environmental information is a win-win situation, any company that discloses environmental information can attract stakeholders, which can help companies in their present and future. Thus, a company that discloses environmental information and is concerned about protecting the environment is doing their business more responsibly than those who do not provide environmental information in their periodic reports. The present study finding indicates that firms with large board sizes (BS) are more likely to provide environmental information in their annual reports. Secondly, CEO duality (CD) has an essential role in disclosing environmental information and has a significant positive relationship with environmental information disclosure. The companies which are large (based on the total asset), are always interested in disclosing environmental information. Finally, the ROA and Tobin Q of the firm are also significant, which means if the company generates higher profit, it would be highly interested in showing information regarding the environment in their periodic reports. The empirical finding of the current study suggests that the SEBI should

consider mandatory disclosure of environmental information so that every company performs ethical and responsible business operations. This would add to the credibility of the companies which by having environmental information disclosure serve the purpose to the society. For future research, we can consider comparing other countries with the Indian context.

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