

**Important of Corporate Governance for Environmental Disclosure: Evidence from Pakistan
Stock Exchange**

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Abstract

In modern times, it is crucial for industries that do not care about their environmental disclosure, and they can face problems in the success of the business because financial success is not a single determinant of business success; in the modern era, governance demands society safety too. Therefore, this study investigates the impact of corporate governance variables related to board of directors and ownership structure on environmental disclosure. This study used the data of the top 30 indexing firms of the Pakistan stock exchange and the information gathered through content analysis from annual reports from 2016 to 2020. Moreover, panel data analysis was done through the statistical technique "Ordinary Least Square" (fixed and random model) to answer the study hypotheses by using Eviews v10. It was found that board structure has a positive and significant relation with environmental disclosure. In contrast, board independency relationship with the environment is negative and significant, whereas CEO duality, managerial and institutional ownership had an insignificant relationship, whereas foreign ownership relates to environmental disclosure positively and significantly. Theoretically, we used different theories, i.e., agency, legitimacy, and stakeholder

theories, to link corporate governance to environmental disclosure decisions. Therefore, policymakers should consider ways to enhance board structure sketchily to provide more environmental disclosure activities. Implications for management include adopting a common environmental strategy. Additionally, this research inspires diverse stakeholders and activist groups to demand environmental disclosure aggressively.

Keywords: Corporate governance, Environmental disclosure, Penal data analysis, Pakistan stock exchange.

Introduction

Environmental disclosure (ED) is a system of company obligation towards civilization, which through its activities has an undesirable impression on the atmosphere. The ED, on the other hand, is responsible for meeting the company's information requirements for stakeholders, investors, clients, and further interested parties. Environmental issues have attracted considerable interest in the scientific community. The rules and regulations of a company disclose its environmental activities through the performance and efficiency of its management. ED of an organization attracts investors because it helps investors to measure the level of efficiency of a company's management. ED has a significant impact to achieve its selected goals and become successful in the world because a positive environment motivates the management to focus on unlimited achievements. The effect of intended environmental discoveries on the company's valuation may be related to the simplification of upcoming economic projections ("numerator" effect) and the cost of capital reduction ("denominator" effect).

The environmental disclosure is depending upon CG because CG is the procedure that is used to control and manage matters to secure the individual and collective comforts of all participants. Numerous research has looked into the impact of company authority on recyclable exposure at the corporate level (Ienciu et al., 2012; Ofoegbu et al., 2018). Moreover, not only does corporate governance effects environmental disclosure infect many other variables such as board size (BS), CEO duality, board independence

(BI), institutional ownership (IO), management ownership (MO), and foreign ownership (FO) are also affecting the environmental disclosure.

The panel frequently contains inside and outside associates. Internal members are selected from the administrative officers of an organization while external members-only connected with an organization is their directorship. A large number of independent directors will be able to achieve a tending role to reduce the aggressive role of managers that make settlements to ensure the interest of stakeholders which is very helpful for a firm. A large number of committees' independent members can play a better role in monitoring the mitigation of opportunistic managerial behavior that is detrimental to the interests of stakeholders (Chaudhry et al., 2021; Raimo et al., 2021). CEO duality is also an important instrument that affects environmental disclosure because the role of duality arises when the same person acts as CEO and chairperson at the same time. Prior revisions have described that firms with the same person both managers and presidents, work better and have a good relationship with the company (Chaudhry & Amir, 2020; Chouaibi et al., 2021).

This study determines to conduct the results of the last five years from 2016 to 2020 because in previous studies there are considered only one or two years. The study will provide the data of the large companies on the other hand, in the hypothetical pitch, the volume of conservational evidence controlled in the combined reports has never remained analyzed for more than a year in Pakistan. This research proposes to fill this imperative gap by analyzing previous five years' yearly reports of the large companies working in Pakistan. This analysis is extremely important for the functions of these organizations. The company's role has changed in recent years. Governance mechanisms have shifted from traditional guarantees designed to protect shareholder value to consolidation affairs with trade investors (Garcia-Torea et al., 2017; Giannarakis et al., 2020). Further, variables of corporate governance, environmental disclosure, board size, board independence, CEO duality, managerial ownership, foreign ownership, and

institutional ownership are also introduced in this study. Therefore, this study tries to ascertain impact of corporate governance variables on environmental disclosure in Pakistan.

This study will become beneficent for many organizations in Pakistan because it will help to maintain the environment of the management and motivate foreign investors to invest in that organizations whose applies all the rules and regulations of corporate governance and environmental disclosure to develop their performance, efficiency, and effectiveness to achieve the selected goals of the firm and built a strong reputation in markets. Meanwhile, this research can help them better to manage corporate governance rules, regulations, and procedures by developing the Corporate Governance Law of Pakistan in 2016-2020. Therefore, this will improve the investment environment in Pakistan. This research is also important to maintain and stimulate the efficiency and management of the company.

Literature Review

Several theories are used in the academic literature to explain business decisions. Dissemination of environmental data such as agency theory, stakeholder theory, and legitimacy theory (Liao, 2015). Many different theories are also used in diverse situations (Baalouch et al., 2019). Considering agency theory, corporate disclosure is used to reconcile the benefits of supervisors and stockholders. Briefly, agency theory suggested that CG best observes companies as more responsible to shareholders and other sponsors and helps reduce management opportunity, thereby reducing agency charges.

According to stakeholder theory, companies must reply to composite policies and develop confident, attractive, and productive discussions with stakeholders to create competitive benefits (Baalouch, 2019). Thus, the survival of a company depends primarily on the support it receives from its stakeholders (De Gooyert et al., 2017; Chaudhry et al., 2021). Theory of legitimacy is seen as an imaginable motive for the current quick growth in environmental disclosure as companies attempt to be environmentally friendly in their

actions (Prasad, 2016). This training was argued, with companies disclosing environmental information to protect their public contracts, work to correct environmental problems, and avoid legislation (Ofoegbu, 2018).

Managerial Ownership (MO) and Environmental Disclosure

Research on managerial ownership on environmental disclosure conducted by Oktavianti et al. (2020) shows that managerial ownership and environmental disclosure are positively related. It is imposing leadership in strategic planning and implementation of decision-making activities the manager does it is an action aimed at increasing the value that exists in the organization. It has been argued that ownership controls can influence convergence ratios between management and other stakeholders that influence firm performance (Huy et al., 2021). The business manager can search for Disclosure of environmental facts to increase the reputation of the business, but the organization must refuse some budgets of environmental information goings-on. The previous study has documented the link between management ownership and voluntary exposure levels. Ullah et al. (2019), proved that MO and ED have a significant negative effect. Meanwhile, (Chang et al., 2018) & (Ningsih & Soekotjo, 2018) stated that there is no sign of a relationship between MO and ED. Therefore, the proposed hypothesis is stated in the following:

H1: Management ownership (MO) has a significant relationship with environmental disclosure.

Board Independence (BI) and Environmental Disclosure

Independence directors have an incentive to influence disclosure practices. Because of their anxiety about continuing their reputation, then they are regarded as exclusive assets that connect companies to their stakeholders. According to stakeholder theory, a large number of board independent members can act as a watchdog for the mitigation of opportunistic managerial behavior to protect stakeholder interest (Tauringana & Chithambo, 2015). Such oversight covers an extensive variety of sectors, including both

CSR and environmental enterprises (Tauringana & Chithambo, 2015; Amir et al., 2022; Chaudhry & Chaudhry, 2022). Best tracking function, caring for the environment and more stakeholder orientation individual independent members can support the broader expansion of the environment Information in an integrated report. Previous studies have shown mixed results on the relationship between board structure and environmental disclosure (Liao, 2015; Giannarakis, 2019; Gerged, 2021). Proposed hypothesis is in the following:

H2: There is a significant relationship between board independence (BI) and environmental disclosure.

Board Size (BS) and Environmental Disclosure

There are different opinions in fiction on the impact of insert size in CED. According to Gerged (2021), minor boards are additional operative in reducing agency struggle. The other one happens; I think oversized boards can lead to more business participation in the exercise of CED (Trireksani & Djajadikerta, 2016; Howard et al., 2017). Which will probably contain more self-determining and experienced managers who can control management activities and diminish irregular information gaps such as those linked to corporate environmental responsibility (Giannarakis et al., 2020; Amir et al., 2022; Chaudhry & Chaudhry, 2022; Ali et al., 2023). These situations greater the propagation of environmental information in combined reports. Past research incompatible consequences were obtained about environmental impact due to the size of the council disclosure level (Tauringana & Chithambo, 2015; Gerged, 2021).

H3: There is a significant relationship between board size (BS) and environmental disclosure.

Institutional Ownership (IO) and Environmental Disclosure

Institutional ownership represents a condition where the major shareholder is an institutional investor or not. Generally, large institutional investors do not have the benefit of having access to inner causes of information (El-Diftar et al., 2017). Therefore,

such a pleasure makes them side-step excessive unpaid disclosure of information on societal and environmental subjects. Experimental indication specifies an undesirable relationship between IO and voluntary disclosure (Tsamenyi et al., 2007; Juhmani, 2013; Acar et al., 2021). Despite their consequences, environment, society, administrative disclosure and IO information reduce asymmetries of information. High levels of IO is found to reduce such losses contact (Siew, 2016; Amir et al., 2023). The reason for the adverse impression that officeholders have on environmental disclosure can be clarified their focus shifted to short-term as well as long-term business interests' continuous growth. As institutional owners concentrate on instant financial achievement, they are vulnerable to the requirements of the community and other sponsors and are more expected to do so legitimize your arrangements with voluntary messages to send an optimistic gesture to the market. Hence, we suggest the following hypothesis:

H4: Institutional ownership (IO) is negatively and significantly affected by environmental disclosure.

CEO Duality and Environmental Disclosure

Dual leadership can be an improved opportunity to develop the company's competitive advantage through business improvement networking thanks to the CEO's information, aptitude, and skill (Samaha et al., 2015). However, there are instances where the CEO's decision may not significantly relate to risk-taking (Martino et al., 2020). Nevertheless, when the CEO holds both the roles of CEO and Chairperson, it can lead to substantial responsibilities that could potentially impact decision-making, such as the choice to increase environmental disclosure (Amir et al., 2023). This dual role may have both negative and positive effects on the environmental statement. It is worth noting that CEO duality and eco-friendly management are not much explored in previous literature, where most previous studies consider it in developed and emerging countries only.

Regarding operational efficiency, having a President and CEO can enhance communication and decision-making among board members (Prado-Lorenzo & Garcia-

Sanchez, 2010). Apart from that, they also found a positive correlation between CEO duality and the implementation of environmental information measures within a company.

H5: CEO duality has a significant impact on environmental disclosure.

Foreign Ownership (FO) and Environmental Disclosure

Foreign investment supports the private sector and helps it gain more economies. Social problems such as unemployment (Al Amosh, 2020; Dahawy, 2009). Secondly, foreign shares play an instrumental as a tool to push companies toward more success and development (Tsang, 2014; Al Amosh & Mansor, 2020). In fact, the legitimacy theory is also supporting this system, it believes that foreign ownership helps to legitimize a company's presence. Based on prior research, foreign ownership has been consistently identified as a significant predictor of reporting (Al Amosh & Khatib, 2021; Alhazaimah et al., 2014). These studies provided evidence that FO exerts a positive influence on a company's information disclosure practices. However, in a different context, Qa'dan and Suwaidan (2018) noted an indirect relation for FO and corporate social responsibility (CSR) disclosure. Furthermore, Guo and Zheng (2021) investigated various factors determining the corporate social structure of board ownership and responsibility to note that FO has a positive impact on disclosure rates, which aligns with the findings confirmed by Grassa et al. (2020).

H6: Foreign ownership (FO) has a significant influence on environmental disclosure.

Methodology

Saliya (2017) highlighted many common philosophies used to research different theories like post-modernism, realism, pragmatism, interpretivism, and positivism. Positivism is employed in this study as this study seeks to explain the relationship between corporate governance and environmental disclosure on objective-empirical grounds. All the data is collected through annual reports as well as the findings of this study are properly observable and measurable. There is no human interference in the form of interviews,

and no collected data through questionnaires. The data is purely objective. This study determines to measure the significance of different variables of corporate governance on the environmental disclosure of the firms. Positivism philosophy can provide a basic foundation that helps researchers to determine the outputs of their study.

The data collection method is a procedure of collecting data or information according to a particular research topic. The method of data collection takes responsibility for the credibility and authenticity of that particular research. Two basic methods are normally used to collect data one is the numerical data gathering technique and the other is the secondary data collection method (Johnston, 2017). As a result, qualitative research methodologies allow for detailed and developed searching and questioning of the accused based on their responses, as well as the investigator seeking to appreciate the respondents' motives and moods. Knowing how your mark spectators make conclusions capacity helps you to improve the quality of your market research. According to the study's requirements, secondary data was acquired from annual reports of various industry businesses throughout the previous five years, from 2016 to 2020.

The main study focuses on people's opinions and responses to anything, and the researcher selects a big number of people to participate. On the other hand, secondary research gathers information from a range of sources such as research journals, newspapers, magazines, publications, and annual reports from numerous companies (Taherdoost, 2017). Therefore, for this research top, 30 companies are selected to collect data from different sectors, and this data is collected from the last five years 2016-2020 registered in Karachi Stock Exchange.

Sampling is amazingly valuable in research. It's one of the most imperative aspects to deliberate when assessing the correctness of your study/review results. If your sample has an issue, it will be highlighted in the final result. Therefore, the researcher can pick the segment of the population that aids in making a choice or drawing a conclusion about the entire population (Sharma et al., 2017). The data for all of the variables are applied

through Microsoft Excel. The empirical testing for this study was carried out using software named EVIEWS.

Econometric Model

According to the researcher, the application of this technology revolves around the acquisition of data and the subsequent processing of that data to provide results. To validate the formulated hypothesis, various statistical tests are employed, including descriptive analysis, correlation analysis, regression analysis, as well as random effect model and fixed-effect model tests. These tests are utilized to provide evidence and support for the hypothesis under consideration.

Equation

$$EDI = \beta_0 BS + \beta_1 BI + \beta_2 CEOD + \beta_3 MO + \beta_4 IO + \beta_5 FO + \beta_6 FS + \beta_7 LEV + \beta_8 ROA + \beta_{19} ROE + e$$

EDI= Environmental Disclosure Index

BI= Board Size

CEOD= CEO Duality

MO= Managerial Ownership

IO= Institutional Ownership

FO= Foreign Ownership

FS=Firm Size

LEV= Leverage

ROA =Return on Assets

ROE =Return on Equity

e = Error Term

Results and Interpretation

The process of transforming raw data into a readily intelligible and interpretable format includes rearranging, sorting, and changing data to provide relevant statistics about the provided data. It is one of the most significant phases in arithmetical data analysis. It

provides us with a determination about the circulation of our data, and contributions in detecting errors and misfits, plus allows us to spot commonalities between parameters, formulating us for supplementary statistical analysis.

The table presented below provides a descriptive analysis of the top 30 active corporations registered on the Karachi Stock Exchange. The data is based on information collected from these companies' annual reports spanning the years 2016 to 2020. The study utilizes various independent variables, including Board Size, Board Independence, CEO Duality, Managerial Ownership, Institutional Ownership, and Foreign Ownership, to assess the performance of these active firms. For this project, descriptive statistics are computed for the variables, focusing on the minimum, maximum, mean, and standard deviation. The standard deviation is employed to gauge the extent of variation in the data from its mean value.

Table 1 Descriptive Analysis

	ED	BS	BI	CEO D	MO	IO	FO	FS	LEV	ROA	ROE
Mean	0.98	9.47	2.91	0.94	9.99	6.24	10.85	8.38	0.7	0.07	0.23
Max	1.00	24.0	9.00	1.00	57.27	75.2	78.05	10.27	15.65	1.44	2.90
Min	0.00	5.00	1.00	0.00	0.00	0.00	0.00	6.47	-3.46	-0.35	-0.25
S. D.	0.14	2.81	1.69	0.22	15.54	6.90	15.38	0.76	1.73	0.15	0.31
obs.	150	150	150	150	150	150	150	150	150	150	150

In the table above, the dependent variable "ED" (Environmental Disclosure) has a mean value of 0.98, with a maximum of 1.00, a minimum of 0.00, and a standard deviation of 0.14, based on 150 observations. Moving on to the first independent variable, BS, the mean value is 9.47, with a maximum of 24.0, a minimum of 5.00, and a standard deviation of 2.81. The second independent variable, BI, has a mean of 2.91, with a max of 9.00, a min of 1.00, and a standard deviation of 1.69. The third independent variable, CEO Duality, has a mean of 0.94, with a max of 1.00, a min of 0.00, and a standard deviation of 0.22. The

fourth independent variable, MO, has a mean of 9.99, with a max of 57.27 and a min of 0.00. The standard deviation for this variable is 15.54. Lastly, the fifth independent variable, IO has a mean of 6.24, with a max of 75.2 and a min of 0.00. The standard deviation for IO is 6.90, based on the descriptive analysis results.

According to the data, the independent variable FO has a mean value of 10.85, the max value of foreign ownership is 78.05, and the minimum value of the same variable is 0.00, with a standard deviation of 15.38 with total observations of 150. Now the further discussion is about the statistics of control variables used in this study the first control variable is FS and the mean of the variable is 8.38, the max value that is analyzed by descriptive statistics is 10.27, the min value is 6.47 and the value of standard deviation is 0.76. According to the above analysis, the mean value of LEV is 0.7, the maximum value for the same variable is 15.65, the minimum value is -3.46 and the standard deviation is 1.73. The mean value of ROA is 0.07, the maximum value is 1.44, the minimum value is -0.35 and the value of standard deviation is 0.15. ROA is also a control variable in this study. The last control variable is ROE, and its mean value is 0.23, the maximum value is 2.90, the minimum value is -0.25 and the standard deviation is 0.31.

The correlation test is used to evaluate the strongness and direction of the investigated variables' connection. The correlation matrix also revealed the individual link between the research variables because a high because a strong connection suggests that at least two elements have a stable interaction with each other, whereas it reveals feedable connectivity among unrelated factors. The following table presents the significance and relation of ED and explains how various factors are correlated with each other.

Table 2 Correlation Analysis

	ED	BS	BI	CEOD	MO	IO	FO	FS	LEV	ROA	ROE
ED	1										

BS	0.091	1							
	1.122	-----							
BI	0.077		1						
	0.942	0.466	-----						
		6.426							
CEOD	-0.033			1					
	-0.412	0.187	0.216	-----					
		2.327	2.693						
MO	-0.127	-	-	0.144	1				
	-1.559	0.117	0.144	1.773	-----				
		-	-						
		1.438	1.781						
IO	0.073			0.028	0.063	1			
	0.900	0.148	0.131	0.342	0.772	-----			
		1.821	1.616						
FO	0.076	-	-	0.092	-	-0.127	1		
	0.938	0.173	0.066	1.132	0.005	-1.564	-----		
		-	-		-				
		2.137	0.815		0.065				
FS	0.293			0.279	0.145	0.065		1	
	3.736	0.092	0.410	3.546	1.794	0.798	0.116	-----	
		1.135	5.476					1.425	
LEV	0.041			0.049	-	0.113	-		1
	0.504	0.577	0.314	0.607	0.067	1.389	0.074	0.016	-----

				-		-				
	8.610	4.032		0.828		0.909	0.202			
ROA	-0.512	-	-	-0.134	0.105	-0.034	-	-	-	1
	-7.263	0.151	0.113	-1.647	1.295	-0.420	0.109	0.332	0.052	-----
	-	-					-	-	-	
	1.859	1.395					1.344	4.287	0.643	
ROE	-0.241	-	-	-0.041	0.064	-0.139	-	-	0.238	1
	-3.025	0.005	0.036	-0.508		-1.708	0.056	0.116	0.106	2.982
		-		0.781			-	-		
	0.067	0.446					0.684	1.424	1.301	

According to the above table, it can be seen that the relationship between BS and ED is insignificant and weak as well because the t value of BS is 1.12 which shows a positive but weak relationship of both variables. Whereas the correlation between BI and ED is also positive as well as weak because the t value of BI is 0.94 which is less than its significant measurements. Furthermore, the t value of CEOD is -0.41 and it can be seen that it's a negative and insignificant relationship between CEOD and ED. MO is also shown a negative and insignificant correlation between MO and ED according to the analysis t value of MO is -1.55. whereas, the t value of IO is 0.90 which means it is also an insignificant but positive correlation between IO and ED. Furthermore, the correlation between FO and ED is analyzed as insignificant but positive with the t value of FO being 0.93. The further results are about control variables where FS shows the positive and significant correlation between FS and ED with the t value of 3.73. Next, the correlation analyzed between LEV and ED showed the results with a positive insignificant relationship among both variables with a t value of 0.50, while the relationship between ROA and ED is negative but significant with a t value of ROA -7.26. lastly, the correlation between ROE and ED is negatively significant with the t value of -3.02.

Hausman test

The distribution of the samples in the Hausman formula determines the difference in the forward statement based on the null hypothesis. Hausman's statistics are comparable to the statistical significance calculated from his experimental group and Hausman's calculations are greater than the statistical significance, so the data are not included. Hausman's calculations can be easily calculated for large samples.

Table 3 Hausman Test

Correlated Fixed Effects - Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	50.960346	10	0.0000

The researcher obtained the above output after running the Hausman Test Case 1 Hausman Test chi-square test value is 50.960346 and p-value of 0.0000. So, according to the given value, the researcher should go with F Effect in the above-selected model. So, here is the interpretation of Fixed Effect having ED independent variable.

Regression Analysis

Deterioration is a statistical approach used in business, investment, and other fields to recognize the strength and category of a connection between one dependent variable and the classification of other variables (known as independent variables). Therefore, the investigator used a panel regression analysis to determine the relationships between some CG variables such as BS, BI, CEO Duality, MO, IO, and FO on the dependent variable ED of various sectors in Pakistan, as well as the relationships between some control variables such as FS, Lev, ROA, and ROE.

Table 4 Fixed Effects Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BS	0.113	0.238	2.483	0.004
BI	0.108	0.229	-1.990	0.041

CEOD	0.147	0.090	1.628	0.106
MO	0.002	0.001	1.489	0.139
IO	-0.000	0.001	-0.240	0.003
FO	0.000	0.001	0.694	0.488
FS	0.224	0.034	6.459	0.000
LEV	0.005	0.009	0.626	0.532
ROA	-0.094	0.097	-0.971	0.333
ROE	0.010	0.037	0.291	0.771
C	-1.053	0.316	-3.331	0.001

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.675	Mean dependent var	0.980
Adjusted R-squared	0.559	S.D. dependent var	0.140
S.E. of regression	0.093	Akaike info criterion	-1.685
Sum squared resid	0.955	Schwarz criterion	-0.882
Log-likelihood	166.394	Hannan-Quinn criteria.	-1.359
F-statistic	5.860	Durbin-Watson stat	1.684
Prob(F-statistic)	0.000		

According to the above regression results, board size is found to be significant with a p-value of 0.004 and there is a positive association between BS and ED with a coefficient value of 0.003 therefore, the hypothesis is accepted because the results are following the hypothesis generated that there is a positive and significant relationship between board size and environmental disclosure.

Moreover, it can also be seen that an association between board independence and environmental disclosure with a magnitude of 0.108 and its connectivity is considerable

with a significant level of 0.041 and this result suggested that one unit increase in board independence will make a change of 0.041 that is a favorable direction. Thus, the assumption that there is a positive and significant relationship between the independence of the Commission and environmental impacts is accepted as the results show a significant but negative relationship between the two variables. Furthermore, according to the above table, the regression results show the connection between CEO and ED with a coefficient level of 0.147 and this connectivity is highly considerable with a significance level of 0.106. So, the third proposed hypothesis stands accurate that CEO and ED are associated with a positive and significant relationship.

The above table Disclose the results of the regression analysis of MO which is insignificant with a p-value of 0.139 and the relationship between MO and ED is positive with a coefficient value of 0.002. So, the above results rejected the hypothesis of this research that the connotation among MO and ED is positive and significant while the results showed the relationship of both variables is positive but insignificant. Next, the results are about the statistical position of IO and ED which indicates the significant position of IO and ED with a p-value of 0.003 and negative with a coefficient value of -0.000 and this output accepted the hypothesis that the relationship is negative and significant. FO is the final rationale assuming that foreign ownership has a significant impact on the level of environmental exposure. In the annual report, however, the results show that the ratio between FO and ED is positive and insignificant with a coefficient value of 0.488 and p value of 0.000.

Heteroskedasticity happens in statistics when the standard deviations of a regression model are non-constant when detected through fluctuating standards of an independent variable or as allied to past periods. When it comes to heteroskedasticity, the betraying indicator is that the remaining faults tend to broaden out with time, as seen in the table below.

Table 5 Heteroskedasticity Test**Specification:** ED BS BI CEOD MO IO FO FS LEV ROA ROE C

	Value	D.f.	Probability
Likelihood ratio	7932.485	30	0.6755
LR test summary:			
	Value	D.f.	
Restricted LogL	111.7700	139	
Unrestricted LogL	4078.012	139	

Discussion and conclusion

As a government agency, there is an action plan in place to reform various corporate governance structures and address business failures. These measures have been implemented not only in industrialized nations but also in emerging economies. Consequently, corporate governance holds significant importance for organizations both in Pakistan and overseas, as it ensures the right level of governance and environmental practices to achieve their objectives and plans. Combined findings from various studies indicate that corporate governance procedures play a crucial role in corporate environmental reporting. However, evaluations from a cross-country perspective have mainly focused on a legal framework-based context (Khlif et al., 2015). Good company governance includes elements like transparency, responsibility, accountability, and impartiality (Mahrani & Soewarno, 2018). The first hypothesis suggests a positive and significant relationship between BS and ED, which the results support by revealing a positive and significant correlation between these variables.

These findings align with similar studies (Htay & M., 2016; Mahmood et al., 2018; Trieksani & Djajadikerta, 2016). The second hypothesis proposes a positive and significant relationship between BI and ED. The study supports this hypothesis, emphasizing the importance of controlling board independence in any organization. The results are consistent with previous studies (Mahmood et al., 2018; Trieksani &

Djajadikerta, 2016). Regarding the third hypothesis, which suggests a positive and significant relationship between CEOD and ED the results reject this hypothesis. While a positive correlation between these variables was found, it was not statistically significant. This could be attributed to the potential inefficiency resulting from an individual holding dual responsibilities within the organization. These results align with the findings of Htay and M. (2016), indicating an insignificant association of the interactive variable. However, it is worth noting that the insignificant association is inconsistent with individual studies on CEO duality and corporate environmental disclosure, where a positive association between corporate governance and environmental disclosure has been observed (Hassan & Guo, 2017).

Managerial Ownership is the fourth independent variable for which the hypothesis was created that there is a significant and positive relationship between MO and ED while the actual result of this study is not in line with agency theory that MO can be used to reduce agent and principal interests. However, on the other hand, in line with the findings of Chang et al. (2018) & Ningsih and Soekotjo (2018) Managerial Ownership is insignificant to environmental disclosure. Probably, management assets will not have an impact on environmental disclosure. The researcher's fifth hypothesis is that the relationship between institutional ownership and environmental disclosure is negative and significant, and results also show that the relationship between IO and ED is negative and significant. The result is in line with Vázquez-Rey Farto and Arcay Barral (2018) which states that institutional ownership has a significant negative effect on environmental disclosure. It can occur because the ownership of participating institutions has not considered social responsibility as one of the criteria for making investments, including environmental responsibility.

Here the discussion is about the last independent variable of this study which is foreign ownership. The results of this variable tell how FO creates its impact on environmental disclosure and according to the test, the foreign ownership positively and

insignificantly creates an impact on ED which rejected the hypothesis that was proposed in the literature review of this study. Foreign shareholders are a key pillar (Al Amosh & Mansor, 2021).

Implication of the study

This study included data from the latest 5 years from 2016 to 2020 where the top 30 companies of various sectors registered in the Karachi Stock Exchange of Pakistan, included named as MCB, HBL, OGDC, PPL, POL, etc. it provides help for those who want to see the performance of companies in only one study. The study describes board structure (BS, BI, and CEO duality) and ownership structure (MO, IO, and FO) consecutively in this research that will help businesses how to manage their board structure and structure of ownership. In this way, it is beneficial for both services and manufacturing sectors for an effective decision-making process. It also contributed three theories in the literature of this research that are agency theory, legitimacy theory, and stakeholder theory, agency theory considered corporate governance while legitimacy and stakeholder theories are about environmental disclosures of companies.

Conclusion

The purpose to conduct this current study is to provide knowledge about environmental disclosure, Board Size, Board Independence, CEO duality, Managerial Ownership, Institutional Ownership, and Foreign Ownership, the second purpose of the study is to improve the manufacturing and services sector by giving a clarification that which indicator influences environmental disclosure. This study is conducted in Pakistan, and this is secondary research, where the researcher used an inductive approach. By taking using a sample of 30 top listed companies, data was collected by annual reports of the last 5 years. This study consists of 10 variables including the control variable. The dependent variable is environmental disclosure and independent variable is board structure and ownership structure and the control variable is firm size, leverage, return on assets and return on investment. The relationship between this variable is run with

the software EViews. This study describes the advantages and disadvantages of corporate governance and environmental disclosure. And the relationship between the independence of the board and the acceptance of the environment is positive and important, and the second chief executive has a positive but insignificant position. Administrative tools are related but not essential, but organizational tools are not relative and simple. Foreign ownership influences positively but insignificantly. As you can see there are so many relations that are not according to the hypothesis and are rejected, the researcher describes in a discussion the reasons behind the rejection.

Limitations and further directions

There are some boundaries in this study firstly, data is obtained from accessible databases like annual reports of companies from their websites. If there are any difficulties with data disclosures or international accounting methods, the reliability of the results will be questioned. Secondly, if there are any difficulties with data disclosures or international accounting methods, the reliability of the results will be called into doubt. The outcomes were achieved in Pakistan's numerous areas such as banking, oil and gas, manufacturing, and so on. There is a need to research various sectors such as the economy, including the medical sector, transportation, and electronics, on a national and worldwide scale that could be studied how corporate governance determinants affect environmental disclosure in companies. Further time limit could be increased in future. This study could be examined in other countries. Furthermore, in future research more variables like earning management for more results.

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