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Original Article

Board of Director and Environmental Disclosure: Study of Energy Companies

[1]Irman Firmansyah
[1]Accounting Department, Faculty of Economics, Siliwangi University.

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Abstract*: This study aims to examine the effect of the characteristics of the board of directors, which consist of meeting attendance rates, the composition of the female board of directors, the education level of directors, and directors who have family relations on environmental disclosure. In addition, this research also involves other control variables, namely leverage, liquidity, profitability, and company size. The data used is secondary data taken from the energy company's annual report spanning the period 2018 to 2021. The analysis used is multiple regression analysis with the tools used, namely SPSS software. The results found that all the proposed independent variables did not significantly affect environmental disclosure; only company size was used as a control that could have a positive and significant effect. This finding explains that large companies have a big responsibility for environmental impacts, so their disclosures are wider than small companies.*

Keywords: *Environmental Disclosure, Energy Companies, Characteristics of the Board Of Directors.*

I. INTRODUCTION

Environmental disclosure relates to demands from various parties for companies to be responsible for the environmental impacts caused by their business activities. Environmental disclosure can be interpreted as information companies provide to the public about the environmental impacts generated by their business activities. According to the Global Reporting Initiative (GRI), environmental disclosure is part of a sustainability report which includes information on environmental impacts, management of natural resources, and efforts to reduce negative environmental impacts.

In general, the development of research on environmental disclosure continues to increase along with the increasing awareness of the importance of protecting the environment and the need for transparency and accountability in business activities. According to Nurhidayah and Kusuma (2019), since it was first introduced in the late 1980s, environmental disclosure has become an increasingly popular research topic among academics and practitioners. In addition, research by Bouaziz et al. (2020) shows that research on environmental disclosure is growing along with the increasing demand from various parties for transparency and accountability in business activities.

The development of this research is very important because it can help companies to understand the importance of environmental disclosure and how this can affect the company's image and performance, especially in energy companies that have a close relationship with environmental damage. Such as the existence of natural exploitation due to the excavation of mining goods causes damage to nature as well pollution causes environmental pollution. Therefore, it is important to know the factors that motivate environmental disclosures, such as the board of directors' characteristics. It can also assist governments and regulators in designing appropriate policies and standards to govern environmental disclosure.

Therefore, environmental disclosure is important for companies facing demands from various parties to be responsible for the environmental impacts caused by their business activities (Handoko and Yuniawan, 2017). In addition, in their research, Ayuso and Argilés-Bosch (2017) found that companies that make environmental disclosures are more likely to adopt sustainable business practices. Meanwhile, Buallay and Elsayed (2020) in Bahrain show that environmental disclosure has a positive effect on the environmental and financial performance of companies. Research by Gray et al. (2019) in New Zealand found that environmental disclosure can help companies manage environmental risks and improve environmental performance.

Research in other countries also shows similar results. For example, research by Albassam et al. (2020) in Saudi Arabia shows that environmental disclosure has a positive effect on corporate value and environmental performance. Research by Zhang et al. (2019) in China found that environmental disclosure can help companies to reduce greenhouse gas emissions and improve environmental performance.

In addition to the impact of environmental disclosures on business practices, several studies have also analyzed the board of directors' characteristics as a factor influencing environmental disclosures. These factors include meeting attendance, number of directors, directors' education, and directors with family ties.

A study by Yuliani et al. (2021) shows that stakeholder pressure is the most influential factor in environmental disclosure. Another study by Firdaus et al. (2020) found that company size also has an effect on environmental disclosure, where larger companies tend to make more complete and detailed environmental disclosures. In addition, the industrial sector also affects environmental disclosure. A study by Choi et al. (2020) shows that companies in the manufacturing sector are more likely to make environmental disclosures than companies in the service sector. The company's environmental performance also affects environmental disclosure. The study by Rahman et al. (2018) found that companies with better environmental performance also tend to make better environmental disclosures. In fact, several studies have specifically examined the board of directors' characteristics on environmental disclosures (Yuyetta et al., 2021; Afriyanti and Rahmawati, 2019; Abbas et al., 2021).

Thus, research on environmental disclosure can help companies understand and improve the environmental impacts generated by their business activities and improve the company's image in the public eye. This will provide long-term benefits for the company and the environment. In addition, through research activities, the factors that influence the motive for environmental disclosure are also known.

II. LITERATURE REVIEW

A) Stewardship Theory

Stewardship theory is a concept that emphasizes the importance of responsible and accountable corporate resource management, including environmental sustainability. In the context of energy companies, this theory also considers the role of the board of directors in ensuring decision-making that considers all stakeholders' interests and the environmental impacts produced by the company. Stewardship theory views that energy companies must be responsible for managing natural resources and the existing environment, including efficient and sustainable energy use. In this regard, the board of directors has an important role as a strategic decision-maker and supervisor in ensuring that the company adopts socially and environmentally responsible practices.

In addition, several studies have shown that the board of directors' characteristics can affect environmental disclosure in energy companies. According to Setiawan et al. (2021), boards of directors with awareness and commitment to environmental issues tend to encourage companies to be more transparent in reporting the environmental impacts of company activities. In addition, a board of directors who have knowledge and experience in the environmental field can also assist companies in managing the environmental risks they face.

However, the effect of the characteristics of the board of directors on environmental disclosures in energy companies is not always consistent in every situation. According to Menassa et al. (2020), the influence of the board of directors' characteristics on environmental disclosure can be influenced by contextual factors, such as pressure from stakeholders and regulatory conditions in force in the country where the company operates.

Overall, stewardship theory provides an important framework for understanding how energy companies can consider the interests of the environment and other stakeholders in decision-making. In this regard, the board of directors has a key role in ensuring that the company behaves in an environmentally responsible manner, taking into account the board of directors' characteristics that support stewardship principles.

B) Environmental Disclosure

Environmental disclosure is the practice of disclosing information by companies about the environmental impacts caused by their operations and the efforts made to manage these impacts. The purpose of environmental disclosure is to provide sufficient information for stakeholders, such as investors, consumers, governments and the general public so that they can understand the environmental impact of company activities and make decisions based on complete and accurate information. Environmental disclosure can be done voluntarily by companies or required by government regulations (Gray et al. (1995).

According to the Global Reporting Initiative (GRI) report, environmental disclosure includes aspects such as greenhouse gas emissions, energy use, water and waste management, biodiversity, use of raw materials, and the environmental impact of the supply chain (Global Reporting Initiative, 2016).

Environmental disclosure is important in the context of sustainability because companies need to consider the social and environmental impacts of their operations and take action to minimize these impacts. Environmental disclosure can also help companies to build a good image in the eyes of stakeholders and increase public trust (Freeman, 1984).

However, environmental disclosure is not an easy thing to do because companies must involve many parties and collect accurate and complete data. In addition, environmental disclosures must also be prepared in a format that is clear and easily understood by stakeholders (de Villiers et al., 2014).

C) Directors Meeting Attendance Rate

The study results show that the attendance rate of directors' meetings has a significant relationship with environmental disclosure. The study by Li et al. (2019) found that the higher the level of attendance at directors' meetings, the better the level of corporate environmental disclosure.

Another study by Alam et al. (2021) in India shows that the presence of directors' meetings also has an effect on the types of environmental disclosures made by companies. Companies with higher attendance levels at director meetings tend to make more detailed and in-depth environmental disclosures, including information on greenhouse gas emissions, waste management, and the company's efforts to reduce environmental impact.

Overall, the results of this study indicate that companies need to pay attention to the attendance level of directors' meetings in an effort to increase environmental disclosure and demonstrate their commitment to the environment. Therefore, companies must ensure that directors are actively involved in the board of directors meetings and pay attention to environmental issues in corporate decision-making.

Therefore, the first hypothesis is:
H1: The level of attendance at board of directors' meetings has an effect on environmental disclosure in energy companies

D) Number of Female Directors

The results of the study show that the number of female directors has a significant effect on corporate environmental disclosures. The study by Yuyetta et al. (2021) in Indonesia shows that companies with a greater number of female directors tend to make better environmental disclosures.

Another study by Wu et al. (2020) in China found similar results, where companies with a higher number of female directors tended to make better environmental disclosures. This research also shows that this positive effect mainly occurs in companies in the industrial sector which is more labor-intensive and consumer-oriented.

In addition, research by Wang et al. (2021) in China show that the presence of female directors on corporate audit committees also positively affects environmental disclosure. Female directors on company audit committees tend to be more sensitive to social and environmental issues and can influence company decisions and policies related to environmental disclosures.

The importance of the presence of female directors on the company's board of directors increases environmental disclosure to demonstrate the company's commitment to environmental issues. Therefore, companies need to pay attention to diversity and inclusivity in the composition of their board of directors and ensure the presence of sufficient female directors to reflect the perspectives and interests of various stakeholders in corporate decision-making.

Therefore, the second hypothesis is:
H2: The number of female directors has an effect on environmental disclosure in energy companies

E) Director Education

Several research results show that the educational level of directors has a significant effect on corporate environmental disclosures. The study by Li et al. (2019) in China shows that companies with directors with higher levels of education tend to make better environmental disclosures.

Another study by Taha et al. (2020) in Malaysia found that director education also had an effect on the quality of environmental disclosure. Companies with directors with higher education levels tend to make more detailed and in-depth environmental disclosures, including information about the company's environmental policies and programs.

In addition, research by Wang et al. (2017) in China show that the education level of directors also influences a company's ability to obtain better environmental resources. Companies with directors with higher education levels tend to have more access to environmental resources and a greater ability to manage their environmental impact.

Based on the results of this study, it shows the importance of director education in increasing corporate environmental disclosure. Therefore, companies need to consider the educational qualifications of directors in the process of selecting and appointing members of their board of directors. In addition, companies need to provide training and development for their directors to have the necessary knowledge and skills to understand and manage their environmental impact.

Therefore, the third and fourth hypotheses are:
H3: Education level of directors influences environmental disclosure in energy companies
H4: Educational background of directors in the financial sector influences environmental disclosure in energy companies

III. RESEARCH METHODS

A) Population and Sample

This study uses a population of energy companies in Indonesia that are listed on the Indonesia Stock Exchange from 2018 to 2021. From the entire population, a purposive sampling method was used to select the sample to be used in this study—a collection of the population taken in that period with consideration due to the limitations of researchers in obtaining data.

62 energy companies were used as research samples, namely companies listed on the Indonesia Stock Exchange from 2018 to 2021.

B) Research Variables

This study uses 2 types of variables, namely:

1. Dependent Variable
   The dependent variable in this study is environmental disclosure based on the GRI component.

2. Independent variables, namely predictor variables, consist of:
   - The level of attendance at the board of directors' meetings
   - Number of female directors
   - Educational level of directors
   - Directors who have family relations
   - Meanwhile, to refine the model used control variables consisting of:
   - Profitability (ROA)
   - Liquidity (Current ratio)
   - Leverage (DER)
   - Company size (size)

C) Data Analysis Methods

The data processing method used in this study is multiple regression analysis. The steps taken are to analyze the quality of the data using the classic assumption test followed by model selection and hypothesis testing analysis.

The basic model can be formulated as follows:

$$ENVdisc = a + b_1\,AttDIR\ it + b_2\,WomDIR_{it} + b_3\,EduDIR_{it} + b_4\,FinEdu.DIR_{it} + b_5\,ROA_{it} + b_6\,CR_{it} + b_7\,DER_{it} + b_8\,Size + e$$

Where :
ENVdisc: Environmental disclosures
AttDIR: Attendance of the directors' meeting
WomDIR: Number of female directors
EduDIR : Education director
FinEdu.DIR: A director with a background in financial education
ROA: Return on assets
CR: Current ratio
DER: Debt to equity ratio

IV. RESEARCH RESULTS AND DISCUSSION

A) Research Result

The data that has been collected is based on the categories specified in Chapter 3, namely energy companies in Indonesia that are listed on the Indonesia Stock Exchange from 2018 to 2021, namely, there are 42 companies. Based on the purposive sampling method, namely companies that provide environmental disclosure reports, this study found that many companies had not issued these reports during the study period, so the research data could not be optimized according to the specified period.

B) Descriptive Analysis

The following describes descriptive statistics for each variable, namely environmental disclosure, attendance at board of directors' meetings, educational level of directors, educational background in finance for directors, number of female directors, company size, leverage, liquidity, and ROA.

Table 1: Descriptive Analysis

	Minimum	Maximum	Mean	Std. Deviation
AttDIR	4.00	73.00	21.5341	17.02193
WomDIR	.00	3.00	.5682	.84139
EduDIR	2.00	4.00	2.5227	.66050
FinEdu.DIR	.00	1.00	.1591	.36786
ROA	-.21	.50	.0586	.11796
CR	.01	7.42	1.8513	1.29050
DER	-29.14	24.85	1.1614	4.52230
Size	26.93	32.39	29.8969	1.50305
EnvDISC	.00	1.00	.4022	.25109

Table 1 shows that there is a summary of the descriptive analysis of each variable which consists of minimum, maximum, average and standard deviation. From the table, it is known that there are variables with the smallest minimum value, namely the ratio of ROA with a value of -0.21% and DER with a value of -29.14%. At the same time, there is also a standard deviation value greater than the average, such as female directors, directors with an educational background in finance, ROA, and DER. All of that shows a value with quite a variety of variations.

C) Correlation Analysis

This analysis is intended to look at the directional relationship between each variable used, including the environmental disclosure variable—analysis using Pearson Correlation of all variables. The results can be seen in Table 2.

In analyzing the data processing results regarding the influence of each independent variable, this table can be used as material for analysis in addition to presenting descriptive data. Therefore, readers can use the analysis results to estimate the relationship between variables.

Table 2 can show the relationship between variables. The significance value is also shown to see whether there is a close relationship or not. In addition, this analysis also shows the relationship between the independent variables and the dependent variable to assist in explaining the effect that will be analyzed in the next sub-chapter.

Table 2: Correlation Analysis

		AttDIR	WomDIR	EduDIR	FinEdu.DIR	ROA	CR	DER	Size	EnvDISC
AttDIR	Pearson Correlation	1								
	Sig. (2-tailed)									
	N	88								
WomDIR	Pearson Correlation	.345**	1							
	Sig. (2-tailed)	.001								
	N	88	88							
EduDIR	Pearson Correlation	.185	-.024	1						
	Sig. (2-tailed)	.084	.828							
	N	88	88	88						
FinEdu.DIR	Pearson Correlation	-.170	.002	.080	1					
	Sig. (2-tailed)	.114	.988	.461						
	N	88	88	88	88					
ROA	Pearson Correlation	-.081	-.156	.223*	.219*	1				
	Sig. (2-tailed)	.454	.147	.037	.041					
	N	88	88	88	88	88				
CR	Pearson Correlation	.087	-.068	.058	.130	.305**	1			
	Sig. (2-tailed)	.418	.531	.589	.226	.004				
	N	88	88	88	88	88	88			
DER	Pearson Correlation	-.029	.086	-.230*	-.047	-.052	-.090	1		
	Sig. (2-tailed)	.787	.427	.031	.666	.631	.406			
	N	88	88	88	88	88	88	88		
Size	Pearson Correlation	.151	.077	.166	-.139	.036	-.089	.343**	1	
	Sig. (2-tailed)	.160	.478	.122	.197	.737	.410	.001		

	N	88	88	88	88	88	88	88	88	
EnvDISC	Pearson Correlation	.262*	.169	.023	-.009	.074	.015	.122	.425**	1
	Sig. (2-tailed)	.014	.115	.831	.936	.495	.893	.257	.000	
	N	88	88	88	88	88	88	88	88	88
**. Correlation is significant at the 0.01 level (2-tailed).										
*. Correlation is significant at the 0.05 level (2-tailed).										

D) Classic Assumption Test

Before the hypothesis is tested, the classical assumption test is performed to see the data quality to ensure that the data is feasible for hypothesis testing. The classical assumption test consists of an autocorrelation test, normality test, multicollinearity test, and heteroscedasticity test.

The first test is the autocorrelation test. The results showed that the DW value was 1.801. This value is between dU (1.8553) and 4-DU (2.1447) so that the data does not occur autocorrelation.

Table 3: Autocorrelation Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.500[a]	.250	.174	.22826	1.801

The second data quality test is the multicollinearity test. Multicollinearity data tests can be done with a correlation matrix by looking at the VIF (variance inflation factor) value and the tolerance value. A regression model free from multicollinearity has a VIF number around number 1 and a tolerance number close to number 1 or not more than number 10. The results of the multicollinearity test can be seen in Table 4.

Table 4 shows that the VIF value of each independent Islamic insurance company in Indonesia is around number 1 (less than number 10). Moreover, the tolerance value (TOL) obtained shows a value greater than 0.10. From these results, it can be seen that the regression model is free from multicollinearity between independents.

Table 4: Multicollinearity test

Model	Collinearity Statistics	
	Tolerance	VIF
AttDIR	.780	1.282
WomDIR	.841	1.189
EduDIR	.806	1.241
FinEdu.DIR	.889	1.125
ROA	.809	1.235
CR	.869	1.150
DER	.790	1.265
Size	.783	1.277

Next is the normality test. A good regression model has a normal or close to the normal distribution, which is intended to test whether the independent variable (bound) and the dependent variable (free) in the regression model have a normal distribution. Testing the normal distribution is done by the Kolmogorov-Smirnov test. If the Asymp. Sig (2-tailed) is greater than 0.05, and the data is declared normally distributed.

Based on the output above, we can see that the Asymp. Sig (2-tailed) is 0.093. This value is greater than 0.05 or 5%. So thus, it is concluded that the data is stated to be normally distributed, and it can be said that the regression model meets the assumption of normality so that the data is feasible to use.

Table 5: Normality Test

		Unstandardized Residual
N		88
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	.21751090
Most Extreme Differences	Absolute	.093
	Positive	.093
	Negative	-.048
Test Statistic		.093
Asymp. Sig. (2-tailed)		.059[c]

The next data quality test is the heteroscedasticity test. To detect whether there is heteroscedasticity, the Glejser test is used. The results can be seen in Table 6.

From the table, it can be seen that the sig. All independent variables are greater than 0.05. This indicates no symptoms of heteroscedasticity in the regression model in this study.

Table 6: Heteroscedasticity Test

Model		t	Sig.
	AttDIR	1.726	.088
	WomDIR	.742	.460
	EduDIR	.069	.945
	FinEdu.DIR	-.502	.617
	ROA	-1.612	.111
	CR	.834	.407
	DER	-.551	.583
	Size	1.875	.064

E) Regression Analysis

To test the first to fourth hypotheses that have been proposed previously, it is done using the t-test. This test was conducted to determine whether the independent variable partially has a significant effect on the dependent variable. Based on the test results using the regression analysis tool, the results are obtained in Table 7.

Table 7: Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.727	.533		-3.237	.002
	AttDIR	.003	.002	.211	1.913	.059
	WomDIR	.024	.032	.080	.750	.455
	EduDIR	-.047	.041	-.124	-1.138	.259
	FinEdu.DIR	.050	.071	.073	.707	.482
	ROA	.203	.231	.095	.880	.382
	CR	.001	.020	.004	.041	.967
	DER	-.003	.006	-.046	-.420	.676
	Size	.072	.018	.430	3.905	.000
R						0.500
R-square						0.250
F Sign.						0.003
a. Dependent Variable: EnvDISC						

In this model, an analysis is conducted to determine the factors that influence environmental disclosure. The F test shows a significance value of 0.003, and this value is below 0.05, so it is significant; then, the model is declared FIT and can be continued on the t-test.

The results of the analysis found that in this model, there is not a single independent variable that influences environmental disclosure except for company size, which is a control variable that has a significant value.

F) Effect of Characteristics of the Board of Directors on Environmental Disclosure

a. Directors meeting attendance rate

The level of attendance at directors' meetings is important in the context of sustainability and corporate social responsibility (CSR). Environmental disclosure refers to the transparency and reporting of information regarding the environmental impacts of company activities. The level of attendance at directors' meetings usually reflects the directors' level of involvement and concern about environmental issues. Some of the reasons include a form of direct involvement in strategic decisions, awareness of environmental responsibility, increased accountability, influence on company policies and standards, and company reputation.

However, this study failed to prove that the quantity of directors' presence can affect environmental disclosure. Actually, there are many reasons for this; for example, the attendance at directors' meetings does not always reflect the extent of their responsibility for environmental disclosure. Some directors may have roles that are more focused on finance

or operations than their primary responsibility for managing environmental issues. In addition, environmental disclosure is often the responsibility of specific teams or departments involved in sustainability or corporate social responsibility. Attendance levels at directors' meetings may not directly influence the awareness or activity of these teams.

Although attendance levels may reflect directors' involvement in meetings, the board often makes important decisions collectively. Therefore, the presence of an individual may not have a significant impact on the overall decision-making regarding environmental disclosure. Every company has a different culture, structure and priorities. Environmental disclosures may be more influenced by the characteristics and values of the company than the attendance rate of directors' meetings.

b. Director of Women

Several studies have shown that the presence of female directors on the board of directors can increase sensitivity to environmental issues. They tend to pay more attention and care about the environmental impact of company activities, which in turn can encourage companies to be more active in disclosing information about environmental issues.

However, this study shows that the presence of female directors does not have a significant impact on environmental disclosure in energy companies in Indonesia. This could be because the presence of female directors may not be directly related to the level of environmental disclosure, as decision-making regarding these disclosures involves the entire board of directors and executive management, not just the female directors. In the context of industry and companies, the impact of the presence of female directors can vary depending on the industry sector and company characteristics. Some industries may be more advanced in adopting sustainability practices and environmental disclosures, while others may focus less on these aspects.

In addition, organizational culture and values can influence how the presence of female directors impacts company policies and actions. If the organizational culture does not support inclusivity and diversity, then the positive impact expected from the presence of female directors may be hampered.

Decision-making on the board of directors involves all board members, including male and female directors. The impact of the presence of one individual will usually be integrated with the overall dynamics of the board of directors.

c. Director education level

The level of education is an important capital for directors in carrying out company management. However, related to environmental disclosure, the level of education has not been able to provide a significant effect. The complexity of environmental disclosure factors can cause this. Environmental disclosure is a complex process influenced by many factors, such as executive management commitment, stakeholder pressure, government regulations and organizational culture. The director's education level is only one of many variables in this equation. Meanwhile, the director's education usually comes from various backgrounds and has nothing to do with the environment, so its ability is defeated by other factors.

G) Effect of Control Variables (company size, leverage, ROA, and liquidity) on Environmental Disclosure

This control variable isolates the effect of firm size, leverage, and liquidity on environmental disclosure. This allows the writer to see the effects of the independent variables being researched more specifically and accurately. In addition, this control variable is used to eliminate the influence of confounding variables. In this analysis, there are many factors that can influence the observed results. Using control variables helps eliminate or reduce the influence of confounding factors unrelated to the study's independent variable. Thus, this study can focus more on understanding the relationship between the independent and specific dependent variables.

With the four independent variables tested, none of the variables has a significant effect on environmental disclosure in energy companies in Indonesia. Likewise, of the four variables included in the model, only firm size significantly influences the control variable. This is related to the size of large companies that tend to have more resources and capabilities to implement comprehensive environmental programs. They may have a dedicated team or department responsible for managing environmental initiatives and reporting, thus facilitating better disclosure.

In addition, large companies usually have a more diverse and large number of stakeholders, including investors, clients, governments and the general public. Moreover, energy companies are very closely related to the environment and many regulations. This pressure from stakeholders often encourages companies to increase transparency and be responsible for their environmental impacts by disclosing more detailed information.

V. CONCLUSION

This research found important things in looking at the company's motivation in disclosing the environment in the annual report. There is no single variable that can influence environmental disclosure other than the control variable, namely

company size. In legitimacy theory, large companies tend to get a lot of public attention. So that the efforts made by management to inform the environmental impact are greater. This is an effort to make the existence of energy companies acceptable to the community. The governance mechanism that occurs in energy companies is not the determining variable, and this is an important finding as a novelty that can be conveyed in academia.

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