



The Role of Green Strategy in Moderating the Relationship between Board Diversity, Corporate Activities, and Green Commitment to Sustainability Report Disclosure

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ABSTRACT

This study aims to analyze the influence of board diversity, company activities, and green commitment on sustainability report disclosure, with green strategy as a moderating variable. Sustainability reporting represents a form of corporate accountability to stakeholders regarding environmental, social, and governance (ESG) performance. The sample of this study consists of companies listed in the SRI KEHATI Index on the Indonesia Stock Exchange (IDX) during the 2019–2023 period. Secondary data were collected from annual reports and sustainability reports using a purposive sampling technique. Data analysis was conducted using a panel data approach with a moderated regression analysis model. The results of the study show that board diversity and company activities have no significant effect on sustainability report disclosure, while green commitment has a significant positive effect. Green strategy does not moderate the relationship between board diversity, company activities, and green commitment on sustainability report disclosure. These findings reinforce the importance of green strategies in enhancing sustainability disclosure practices and support the legitimacy theory underlying study.

INTRODUCTION

In the era of globalization, which is marked by increasing awareness of environmental and social issues, companies around the world are facing growing pressure to integrate sustainability principles into their business strategies. Demands from consumers, investors, and regulators have driven companies not only to pursue financial profits but also to take responsibility for the environment and society. The Global Reporting Initiative (GRI, 2021) reported that around 90% of large companies globally have published sustainability reports, indicating that transparency and accountability in Environmental, Social, and Governance (ESG) aspects have become an integral part of corporate strategy.

This trend is also evident in Indonesia, as reflected by the significant increase in the number of companies publishing sustainability reports. The Financial Services Authority (OJK, 2023) reported that by 2023, 97% of companies listed on the Indonesia Stock Exchange had published sustainability reports, a substantial increase from only 54 companies in 2015. This demonstrates a growing corporate awareness of the importance of ESG disclosure in enhancing reputation, attracting investors, and ensuring long-term sustainability.

The SRI-KEHATI Index is one of the key instruments for assessing corporate sustainability in Indonesia. This index identifies companies with outstanding performance in ESG aspects and serves as a reference for sustainability-conscious investors. Companies included in this index are expected to implement better sustainability practices, including more transparent and comprehensive sustainability reporting.

Green commitment is another important element that reflects the extent to which companies are dedicated to sustainability through policies and concrete actions, such as energy efficiency, emission reduction, and the adoption of environmentally friendly technologies (Delmas & Toffel, 2004; Hart & Dowell, 2011). This commitment is highly relevant for companies included in the SRI-KEHATI Index, which are normatively expected to demonstrate a high level of compliance with ESG principles. However, such commitment is not always accompanied by accurate disclosure and can, in some cases, be symbolic or amount to greenwashing (Delmas & Burbano, 2011).

The results of this study are expected to provide theoretical contributions to the development of sustainability literature and practical contributions for companies in strengthening sustainability governance. In addition, the findings may serve as valuable input for regulators in formulating policies that encourage more effective corporate transparency and social responsibility (Siregar & Utama, 2008; Ghozali, 2016; Khan et al., 2013).

The influence of these variables may be strengthened or weakened by the green strategies implemented by companies. Therefore, it is important to consider green strategy as a moderating variable. Yenni Nuraini & Hexana Sri Lastanti (2024), in the *Trisakti Accounting Journal*, examined the influence of diversity and equal opportunity, green strategy, and green commitment on sustainability report disclosure in the transportation and logistics sectors in Indonesia and Singapore, and found significant results across all variables.

Furthermore, Ramadhani (2023) and Wulandari (2023) also confirmed that green strategy has a positive effect on carbon emission disclosure.

The choice of the title *“The Moderating Effect of Green Strategy on the Relationship Between Board Diversity, Corporate Activity, and Green Commitment Toward Sustainability Report Disclosure”* is therefore both relevant and important. This title was selected to address current empirical phenomena, enrich the sustainability accounting literature, and offer practical contributions to corporate management and regulators in strengthening sustainability disclosure that is substantive and strategic – not merely a reporting formality.

CONCEPTUAL FRAMEWORK

The Influence of Board Diversity on Sustainability Report Disclosure

Board diversity refers to the variety among board members in terms of gender, age, race, ethnicity, and professional backgrounds, which can positively affect sustainability report disclosure. A study by Bear et al. (2010) found that diverse boards enhance sustainability because members from different backgrounds can offer various perspectives in decision-making, enabling companies to better identify and manage environmental and social risks. Based on theory and previous research, the research hypotheses can be formulated as follows:

H1a: Gender diversity influences sustainability report disclosure.

H1b: Educational diversity influences sustainability report disclosure.

The Influence of Corporate Activity on Sustainability Report Disclosure

Corporate activity refers to the business opportunities companies can gain through sustainability practices, which also motivate them to engage in sustainability report disclosure. A study by Porter and Kramer (2011) found that as customers and investors increasingly demand sustainable products and services, companies that implement sustainable practices will gain a competitive advantage and improve profitability.

Furthermore, research by Eccles et al. (2014) found that companies prioritizing sustainability issues tend to have better financial performance and are more likely to attract sustainability-focused investors. Based on theory and previous research, the following hypothesis is proposed:

H2: Corporate activity influences sustainability report disclosure.

The Influence of Green Commitment on Sustainability Report Disclosure

Green commitment, which refers to a company's efforts to reduce environmental impact and improve sustainability performance, can also influence sustainability report disclosure. A study by Wang and Li (2017) found that companies more committed to environmental issues tend to disclose sustainability reports as part of their efforts to reduce environmental impact and enhance sustainability performance.

Moreover, research by Chen et al. (2018) showed that companies with better environmental practices tend to have stronger sustainability performance

and are more likely to engage in sustainability report disclosure. Based on theory and previous studies, the hypothesis is as follows:

H3: Green commitment influences sustainability report disclosure.

Green Strategy as a Moderator in the Relationship Between Board Diversity and Sustainability Report Disclosure

The diversity of board composition reflects variations in educational background, experience, and perspectives that can influence corporate policy direction, including sustainability aspects. When this diversity is combined with a structured green strategy, the potential to improve the quality of sustainability report disclosure becomes more significant. Therefore, green strategy acts as a reinforcing factor in the relationship between board diversity and sustainability disclosure.

H4a: Green strategy moderates the relationship between gender diversity and sustainability report disclosure.

H4b: Green strategy moderates the relationship between educational diversity and sustainability report disclosure.

Green Strategy as a Moderator in the Relationship Between Corporate Activity and Sustainability Report Disclosure

Corporate activities that support sustainable practices—such as waste management, energy efficiency, and the implementation of social responsibility—reflect active engagement in environmental and social issues. When these activities are implemented alongside a well-planned green strategy, their influence on improving sustainability report disclosure becomes more optimal. Thus, green strategy may strengthen the relationship between corporate activity and sustainability reporting.

H5: Green strategy moderates the relationship between corporate activity and sustainability report disclosure.

Green Strategy as a Moderator in the Relationship Between Green Commitment and Sustainability Report Disclosure

A company's commitment to environmental sustainability reflects management's determination to realize responsible business practices. However, this commitment requires support from a comprehensive green strategy to be consistently implemented in reporting. Green strategy functions as a reinforcing mechanism that clarifies the direction of this commitment's implementation toward sustainability report disclosure.

H6: Green strategy moderates the relationship between green commitment and sustainability report disclosure.

RESEARCH METHODS

Quantitative research uses numerical or numeric data. Positivism-based quantitative research is used to investigate specific populations or samples. According to Sugiyono (2019), the associative method aims to explain causal relationships and influences between variables through hypothesis testing. The data analysis technique used in this study used panel data regression. Panel or polling data is a combination of cross-sectional and time series data, namely a number of variables observed across several categories and collected over a specific period.

RESULTS AND DISCUSSION

Descriptive Statistical Testing

The descriptive statistical testing in this study aims to provide a comprehensive overview of the data. Through descriptive statistical calculations such as the average (mean), median (median), maximum (maximum), minimum (lowest) value, and standard deviation (standard deviation), the characteristics of each research variable can be identified. The following are the results of the descriptive analysis of the research data:

Table 4.2 Results of Descriptive Statistical Testing

	SR_Y	BD_X1A	BD_X1B	AP_X2	GC_X3	GS_Z
Mean	0.598188	0.146912	0.442212	4.762759	0.589744	0.740097
Median	0.641304	0.150000	0.444444	2.972916	0.615385	0.782609
Maximum	0.880435	0.444444	0.666667	45.97204	0.923077	0.956522
Minimum	0.163043	0.000000	0.263158	0.623774	0.076923	0.043478
Std. Dev.	0.163393	0.098043	0.097021	8.080189	0.204660	0.198010
Skewness	-0.737456	1.109795	0.171125	4.161813	-0.786326	-1.297004
Kurtosis	2.939330	5.303412	2.253511	19.52965	2.692819	4.689711
Jarque-Bera	8.171418	38.37107	2.528930	1284.420	9.628481	35.94001
Probability	0.016811	0.000000	0.282390	0.000000	0.008113	0.000000
Sum	53.83696	13.22209	39.79905	428.6483	53.07692	66.60870
Sum Sq. Dev.	2.376052	0.855508	0.837769	5810.762	3.727811	3.489519
Observations	90	90	90	90	90	90

Source: Output of ereviews 13 processed by researchers, 2025

Based on Table 4.2, the results of descriptive statistical tests present a summary of descriptive statistics for all research variables during the period 2019–2023 across 18 sampled companies, totaling 90 observations. The descriptive statistical results are as follows:

Board Diversity

Based on the descriptive statistics for 90 observations, the average (mean) values were 0.1469 for gender diversity and 0.4422 for educational diversity, with median values of 0.1500 and 0.4444, respectively. The maximum value for gender board diversity (0.4444) was achieved by PT Unilever Indonesia Tbk (UNVR) in 2022 and 2023, while the maximum educational diversity value (0.6666) was recorded by PT Jasa Marga (Persero) Tbk (JSMR) in 2022 and 2023. This indicates that these companies had the highest levels of board diversity in terms of gender and education.

On the other hand, minimum values of 0.0000 and 0.2631 were found in PT Astra Agro Lestari Tbk (AALI) from 2019–2022, PT Aneka Tambang Tbk (ANTM) in 2019–2020, PT Indocement Tunggul Prakarsa Tbk (INTP) from 2019–2023, and PT Aneka Tambang Tbk (ANTM) in 2021, indicating very low diversity levels. The standard deviations of 0.098 and 0.097 reflect relatively low variability in board diversity across companies, suggesting that most companies still have limited diversity and have not yet fully leveraged diverse perspectives in strategic decision-making.

Corporate Activity

The Corporate Activity variable, which reflects a company's efficiency and effectiveness in utilizing assets to generate revenue, is measured by the ratio of total revenue to total assets. From the 90 observations, the mean value was 4.7627, and the median was 2.9729. The maximum value, 45.9720, was recorded by PT Jasa Marga (Persero) Tbk (JSMR) in 2022, showing a very high level of operational activity relative to its assets.

Conversely, the minimum value of 0.6237 was found in PT Semen Indonesia (Persero) Tbk (SMGR) in 2021, indicating very low operational activity that year. The standard deviation of 8.0801 reveals significant variation among companies in asset utilization efficiency, suggesting disparities due to differences in business scale, industry sector, and operational strategy.

Green Commitment

The Green Commitment variable, which describes the extent of a company's commitment to implementing sustainability principles and environmental protection, is measured based on the disclosure of environmental policies and practices in sustainability reports. For 90 observations, the mean value was 0.5897, and the median was 0.6153. The maximum value of 0.923 was recorded by PT Bank Tabungan Negara (Persero) Tbk (BBTN) in 2022, indicating strong commitment to comprehensive and sustainable environmental programs. In contrast, the minimum value of 0.0769 was found for PT Bank Rakyat Indonesia Tbk (BBRI) and PT Kalbe Farma Tbk (KLBF) in 2019, reflecting limited disclosure and implementation of environmental practices. A standard deviation of 0.2046 indicates significant variation in environmental commitment among the companies in the sample. This suggests differing approaches and levels of environmental concern among companies listed in the SRI-KEHATI index.

Green Strategy

The Green Strategy variable, which measures the extent to which companies implement sustainable strategies in their business and operational processes, is based on disclosures of green strategies in corporate sustainability reports. From 90 observations, the mean value was 0.7400, and the median was 0.7826.

The maximum value of 0.9565 was achieved by PT Astra Agro Lestari Tbk (AALI) in 2019, 2020, 2022, 2023; PT Japfa Comfeed Indonesia Tbk (JPFA) in 2019; PT Jasa Marga (Persero) Tbk (JSMR) in 2021 and 2022; PT Timah Tbk (TINS) in 2022 and 2023; and PT Unilever Indonesia Tbk (UNVR) in 2019 and 2020. These values reflect comprehensive and consistent implementation of green strategies. Meanwhile, the minimum value of 0.0434 was found for PT Bank Negara Indonesia (Persero) Tbk (BBNI) in 2019, showing a lack of integration of environmental strategy into corporate policy. The standard deviation of 0.1980 indicates relatively low variability among companies, suggesting that most firms within the SRI-KEHATI index have started to implement green strategies consistently.

Sustainability Report Disclosure

The dependent variable, Sustainability Report Disclosure, reflects the level of sustainability information disclosure by companies, measured using indicators based on the Global Reporting Initiative (GRI) standards. For 90 observations, the mean value was 0.5981 and the median was 0.6413. The maximum value of 0.8804 was recorded by PT Wijaya Karya (Persero) Tbk (WIKA) in 2022, reflecting a highly comprehensive and standard-compliant sustainability report disclosure.

Conversely, the minimum value of 0.1630 was found for PT Bank Negara Indonesia (Persero) Tbk (BBNI) in 2019, indicating a low level of sustainability disclosure. A standard deviation of 0.1633 indicates moderate variability in sustainability disclosure across companies. This implies that most companies in the SRI-KEHATI index are showing commitment to sustainability transparency, although significant differences remain in the depth and consistency of disclosure.

Panel Data Regression Model

Panel data regression employs three general modeling approaches: the Common Effect Model, the Fixed Effect Model, and the Random Effect Model. Each model has its own strengths and weaknesses. The selection of an appropriate model depends on the research assumptions and the characteristics of the data. Below is an explanation of each of these models:

Common Effect Model Approach

The Common Effect Model (CEM) is the simplest panel data regression approach, as

It combines time series and cross-sectional data without considering differences between individuals (entities) or time periods. Parameter estimation in this model is performed using the Ordinary Least Squares (OLS) method.

This model assumes that the data structure is homogeneous, meaning that each observation unit (company) is considered to have uniform characteristics in

both the intercept and slope coefficients. In other words, the model does not account for specific differences between companies or time periods. Therefore, the Common Effect Model is most appropriate in situations where the independent variables are assumed to have the same effect on the dependent variable across all observational units.

Below is the result of the estimation using the Common Effect Model approach:

Table 4.3: Common Effect Model Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.253464	0.077314	3.278384	0.0015
BD_X1A	0.106059	0.175852	0.603111	0.5480
BD_X1B	0.289010	0.194835	1.483362	0.1417
AP_X2	0.000569	0.002039	0.279101	0.7808
GC_X3	0.336806	0.079053	4.260493	0.0001
R-squared	0.263651	Mean dependent var		0.598188
Adjusted R-squared	0.228999	S.D. dependent var		0.163393
S.E. of regression	0.143470	Akaike info criterion		-
Sum squared resid	1.749604	Schwarz criterion		-
Log likelihood	49.61443	Hannan-Quinn criter.		-
F-statistic	7.608579	Durbin-Watson stat		0.587238
Prob(F-statistic)	0.000027			

Source: Output of ereviews 13 processed by researchers, 2025

Fixed Effect Model Approach

The fixed effect model is an approach that assumes that differences between individuals can be accommodated through differences in intercepts. Panel data model estimation using the fixed effect model approach uses a dummy variable technique to capture differences in intercepts between companies. This estimation model is often referred to as the Least Squares Dummy Variable (LSDV) technique. The Fixed Effect Model approach is considered more appropriate when panel data demonstrates heterogeneity between cross-sectional units (in this case, companies) that is fixed or unchanged throughout the observation period. By using the Least Squares Dummy Variable (LSDV) technique, this model is able to capture differences in fixed characteristics between companies through the use of dummy variables for each entity, so that each company has its own intercept in the regression model.

Table 4.4 Fixed Effect Model Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.302048	0.096753	3.121838	0.0026
BD_X1A	-0.042333	0.401046	-0.105557	0.9162
BD_X1B	0.375261	0.251919	1.489607	0.1410
AP_X2	-0.003552	0.004334	-0.819530	0.4153
GC_X3	0.259998	0.061320	4.240016	0.0001
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.735872	Mean dependent var	0.598188	
Adjusted R-squared	0.654303	S.D. dependent var	0.163393	
S.E. of regression	0.096068	Akaike info criterion	-1.638925	
Sum squared resid	0.627582	Schwarz criterion	-1.027860	
Log likelihood	95.75161	Hannan-Quinn criter.	-1.392508	
F-statistic	9.021468	Durbin-Watson stat	1.615760	
Prob(F-statistic)	0.000000			

Source: Output of ereviews 13 processed by researchers, 2025

Random Effects Model Approach

The random effects model assumes that in panel data, the disturbance variable (error term) can be correlated across time and between individuals. In the random effects model, differences in intercepts between individuals are accommodated by the error component of each company. This model assumes that differences between entities (companies) are not represented by fixed parameters, as in the fixed effects model, but are instead considered part of the error term, which is random and uncorrelated with the independent variable. Therefore, REM is more efficient than FEM if these assumptions are met, because REM does not waste degrees of freedom due to the use of dummy variables.

Table 4.5 Random Effects Model Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.281723	0.087066	3.235732	0.0017
BD_X1A	0.033701	0.265825	0.126778	0.8994
BD_X1B	0.354920	0.218003	1.628056	0.1072
AP_X2	-0.001179	0.002988	-0.394679	0.6941
GC_X3	0.271612	0.059878	4.536083	0.0000
Effects Specification				
			S.D.	Rho
Cross-section random			0.119307	0.6067
Idiosyncratic random			0.096068	0.3933
Weighted Statistics				
R-squared	0.287651	Mean dependent var	0.202670	
Adjusted R-squared	0.254129	S.D. dependent var	0.109734	
S.E. of regression	0.094770	Sum squared resid	0.763421	
F-statistic	8.580883	Durbin-Watson stat	1.321455	
Prob(F-statistic)	0.000007			
Unweighted Statistics				
R-squared	0.250145	Mean dependent var	0.598188	

Sum squared resid	1.781693	Durbin-Watson stat	0.566217
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Source: Output of ereviews 13 processed by researchers in 2025

Panel Data Regression Selection Test

The appropriate model in panel data analysis, among the three choices: the common effects model, the fixed effects model, or the random effects model, requires a series of tests. These tests identify the model that best fits the data characteristics, including the Chow test, the Hausman test, and the Lagrange Multiplier test. However, the Lagrange Multiplier test is not performed if the results of the Chow and Hausman tests indicate that the fixed effects model is the most appropriate model.

Chow Test

The Chow test is used to compare the common effects model with the fixed effects model. Decision-making is based on the cross-section F value. If the probability value is $< (\alpha = 0.05)$, then the fixed effects model is more appropriate. However, if the probability value is $> (\alpha = 0.05)$, then the common effects model is more appropriate. The following are the results of the Chow test in this study:

Table 4.6 Chow Test Results

Redundant Fixed Effects Tests				
Equation: FEM				
Test cross-section fixed effects				
Effects Test	Statistic	d.f.	Prob.	
Cross-section F	7.151399	(17,68)	0.0000	
Cross-section Chi-square	92.274355	17	0.0000	

Source: Output of ereviews 13 processed by researchers in 2025

Based on Table 4.6, the cross-section probability F value in the Chow test is 0.0000, which is $< (\alpha = 0.05)$. Therefore, it can be concluded that the fixed effects model is more appropriate for this study.

Hausman Test

The Hausman test is used to compare random effects models with fixed effects models. The decision to select a model is based on the cross-section random value. If the probability value is $< (\alpha = 0.05)$, then the fixed effects model is more appropriate. Conversely, if the probability value is $> (\alpha = 0.05)$, then the random effects model is more appropriate. The following are the results of the Hausman test in this study:

Table 4.7 Hausman Test Results

Correlated Random Effects - Hausman Test			
Equation: REM			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.718436	4	0.7874

Source: Output of ereviews 13 processed by researchers in 2025

Based on Table 4.7, the random cross-section probability value in the Hausman test is 0.7874, which is $> (\alpha = 0.05)$. Therefore, it can be concluded that the random effects model is more appropriate for this study.

Lagrange Multiplier Test

According to Ghozali (2018:260), to determine whether the Random Effects model is superior to the Common Effects model, the Lagrange Multiplier (LM) is used. This Random Effects Significance Test was developed by Breusch-Pagan.

Table 4.8 Lagrange Multiplier Test Results

Lagrange Multiplier Tests for Random Effects			
Null hypotheses: No effects			
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided			
(all others) alternatives			
	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	51.38079	1.905945	53.28673
	(0.0000)	(0.1674)	(0.0000)
Honda	7.168039	-1.380560	4.092366
	(0.0000)	(0.9163)	(0.0000)
King-Wu	7.168039	-1.380560	1.886250
	(0.0000)	(0.9163)	(0.0296)
Standardized Honda	8.311776	-1.145256	1.453394
	(0.0000)	(0.8739)	(0.0731)
Standardized King-Wu	8.311776	-1.145256	-0.521836
	(0.0000)	(0.8739)	(0.6991)
Gourieroux, et al.	--	--	51.38079
			(0.0000)

Source: Output of ereviews 13 processed by researchers in 2025

Based on Table 4.8, the Breusch-Pagan cross-section value in the Lagrange multiplier test is 0.0000, which is $< (\alpha = 0.05)$. Therefore, it can be concluded that a random effects model is more appropriate for this study.

Table 4.9 Panel Data Regression Model Selection

No	Model Determination Test	Test Results	Selected Models
1	Uji Chow	$0,0000 < (\alpha = 0,05)$	FEM
2	Uji Hausman	$0,7874 > (\alpha = 0,05)$	REM
3	Uji Lagrange Multiplier	$0,0000 < (\alpha = 0,05)$	REM
Selected Models			REM

Source: Output of ereviews 13 processed by researchers in 2025

Based on Table 4.9, the test results indicate that the Chow test, the Hausman test, and the LM test indicate a random effects model. Therefore, it can be concluded that the random effects model is the most appropriate method for this study. 1.1.2 Panel Data Regression Analysis

Panel data regression analysis is used in this study to test the effect of two or more independent (explanatory) variables on one dependent variable. The following are the results of the panel data regression analysis:

Table 4.10 Panel Data Regression Analysis Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.281723	0.087066	3.235732	0.0017
BD_X1A	0.033701	0.265825	0.126778	0.8994
BD_X1B	0.354920	0.218003	1.628056	0.1072
AP_X2	-0.001179	0.002988	-0.394679	0.6941
GC_X3	0.271612	0.059878	4.536083	0.0000

Source: Output of eviews 13 processed by researchers in 2025

Based on Table 4.10, a panel data regression equation can be formulated as follows:

$$Y = 0.2617 + 0.0337(X1A) + 0.3549(X1B) - 0.0011(X2) + 0.2716(X3) + 0.087$$

The results of the panel data regression equation can be explained as follows:

1. Based on the regression equation results, the constant (intercept) has a value of 0.2617. This value indicates that if all independent variables in the model – namely Board Diversity (X1A and X1B), Company Activity, Green Commitment, and Green Strategy – are at zero (0), then the expected value of Sustainability Report Disclosure is 0.2617.
2. A regression coefficient of 0.0337 indicates that every one-percentage-point increase in gender diversity on the board of directors is associated with an increase in the Sustainability Report Disclosure score of 0.0337, assuming other independent variables are held constant (*ceteris paribus*). This positive relationship suggests that, theoretically, greater female representation on the board can drive better sustainability disclosure practices.
3. A regression coefficient of 0.3549 indicates that an increase in the educational background diversity of board members is associated with an increase in the Sustainability Report Disclosure score of 0.3549, assuming other independent variables remain unchanged. This means that the more diverse the educational levels or academic disciplines of board members, the more theoretically capable they are of formulating comprehensive and strategic sustainability policies.
4. Company Activity (AP_X2) The regression coefficient of -0.0011 indicates that each one-percentage-point increase in company operational activity correlates with a decrease in the Sustainability Report Disclosure (SR_Y) score by 0.0011, assuming the other independent variables remain constant. This negative relationship can be interpreted to mean that an increase in the scale or intensity of a company’s activities is not always followed by improved compliance or transparency in sustainability

reporting.

5. Green Commitment (GC_X3) The regression coefficient of 0.2716 indicates that an increase in the company's commitment to environmental aspects correlates with an increase in the SR_Y score by 0.2716, assuming other variables are held constant. This positive relationship shows that companies that are more environmentally conscious tend to be more open and proactive in reporting their sustainability initiatives.

Hypothesis Testing

Coefficient of Determination Test (R-Square)

The R-square coefficient of determination test is used in this study to assess how well the regression model explains the variation in the dependent variable.

The R-square coefficient of determination test is used in this study to assess the extent to which the regression model can explain the variation in the dependent variable. The R-square value indicates the proportion of total variation in the dependent variable that can be explained by the independent variables included in the model.

Below is the result of the R-square coefficient of determination test in this study:

Table 4.11 Result of the R-Square Coefficient of Determination Test

	Weighted Statistics		
R-squared	0.287651	Mean dependent var	0.202670
Adjusted R-squared	0.254129	S.D. dependent var	0.109734
S.E. of regression	0.094770	Sum squared resid	0.763421
F-statistic	8.580883	Durbin-Watson stat	1.321455
Prob(F-statistic)	0.000007		

Source: Output of ereviews 13 processed by researchers in 2025

Based on Table 4.11, the regression results show an Adjusted R-squared value of 0.254, indicating that after adjusting for the number of variables and sample size, 25.4% of the change in the dependent variable can still be explained by the model. Although this value is not high, it still reflects a sufficient influence between the independent variables on the dependent variable.

Partial Test (t-Statistic Test)

This statistical test was used in this study to determine the extent of influence of each independent variable individually or partially on the dependent variable, assuming the other dependent variables are constant. The t-test was conducted using a significance level of 0.05. If the probability is <0.05, then the independent variable individually or partially influences the dependent variable. Conversely, if the probability is >0.05, then the independent variable does not individually or partially influence the dependent variable. The following are the results of the t-test in this study:

Table 4.12 Partial Test Results (t-Statistic Test)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.281723	0.087066	3.235732	0.0017
BD_X1A	0.033701	0.265825	0.126778	0.8994
BD_X1B	0.354920	0.218003	1.628056	0.1072
AP_X2	-0.001179	0.002988	-0.394679	0.6941
GC_X3	0.271612	0.059878	4.536083	0.0000

Source: Output of ereviews 13 processed by researchers in 2025

Based on Table 4.12, the test results show the influence of the independent variables consisting of gender diversity (BD_X1A), educational diversity (BD_X1B), company activity (AP_X2), and green commitment (GC_X3) on the dependent variable, namely sustainability report disclosure. The detailed interpretation is as follows:

Gender Diversity Variable (X1A)

Based on the regression results, the interaction between gender diversity and green strategy shows a coefficient value of -0.6041 with a probability value (p-value) of 0.5092 . Since this value is > 0.05 , it is not statistically significant, which means that green strategy does not strengthen or weaken the relationship between gender diversity and sustainability report disclosure. In other words, gender diversity on the board of directors is not yet sufficient to influence the level of corporate transparency in reporting sustainability issues, even when green strategies are implemented.

Educational Diversity Variable (X1B)

This variable has a coefficient value of 0.3549 with a p-value of 0.1072 . It is not significant at the 5% significance level, suggesting that educational diversity within the board structure has the potential to influence sustainability disclosure, although the effect is not yet statistically strong. This could imply that the presence of board members from diverse educational backgrounds might encourage companies to pay more attention to sustainability reporting practices, even if the statistical evidence is still limited.

Company Activity Variable (X2)

The coefficient value for company activity is -0.0012 with a p-value of 0.6941 , indicating no significant effect. This shows that the level of company activity does not influence the extent of sustainability disclosure. Practically, more active or larger companies do not necessarily have better sustainability reporting.

Green Commitment Variable (X3)

The green commitment variable has a coefficient of 0.2716 and a p-value of 0.0000 , indicating a statistically significant and positive effect on sustainability report disclosure. This suggests that the stronger a company's commitment to environmental and sustainability issues, the more likely it is to disclose sustainability information transparently and comprehensively. In other words, green commitment is a key factor driving sustainability disclosure.

Panel Data Regression Model: Moderated Regression Analysis (MRA)

The panel data regression model involves three commonly used regression models: the Common Effect Model, Fixed Effect Model, and Random Effect Model. Each model has its own strengths and weaknesses. The selection of

an appropriate model highly depends on the assumptions used by the researcher, particularly in determining the most suitable model for Moderated Regression Analysis. These three models serve as a guide for researchers in choosing the most appropriate approach to analyze the relationships among the studied variables. The explanation of these models is as follows:

Common Effect Model (MRA) Approach

The common effect model approach is the simplest method in panel data analysis, as it only combines time series and cross-section data. This method utilizes the Ordinary Least Squares (OLS) approach to estimate parameters. This test is reused to test moderated regression analysis and helps determine the most appropriate model for the analysis. The following are the estimation results obtained using the common effect model:

Table 4.13 Results of the MRA Common Effect Model Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.028409	0.194860	-0.145792	0.8845
BD_X1A	0.499010	0.716462	0.696493	0.4881
BD_X1B	0.006998	0.704047	0.009939	0.9921
AP_X2	0.006006	0.009009	0.666646	0.5069
GC_X3	0.218808	0.202711	1.079409	0.2836
GS_Z	0.568386	0.261151	2.176460	0.0325
BDX1A_GS	-0.604058	0.911117	-0.662987	0.5092
BDX1B_GS	0.182973	0.920041	0.198875	0.8429
AP_GS	-0.007929	0.010576	-0.749718	0.4556
GC_GS	0.019078	0.279559	0.068245	0.9458

Source: Output of ereviews 13 processed by researchers, 2025.

Fixed Effects Model Approach (MRA)

The fixed effects model approach is a method that assumes that differences between individuals can be explained by variations in the intercept. In panel data estimation using the fixed effects model, the dummy variable technique is used to capture differences in intercepts across companies. This estimation model is often referred to as the Least Squares Dummy Variable (LSDV) technique. The fixed effects model is applied to test moderated regression analysis and helps determine the most appropriate model for the analysis. The following are the estimation results obtained from applying the fixed effects model:

Table 4.14 Results of the Fixed Effect MRA Model Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000232	0.228677	-0.001016	0.9992
BD_X1A	0.562722	0.788579	0.713590	0.4781
BD_X1B	0.556944	0.756672	0.736043	0.4644
AP_X2	-0.001410	0.008810	-0.160067	0.8733
GC_X3	0.061393	0.183934	0.333779	0.7397
GS_Z	0.574560	0.301861	1.903395	0.0616
BDX1A_GS	-0.672606	0.898556	-0.748541	0.4569
BDX1B_GS	-0.554651	1.001594	-0.553769	0.5817

AP_GS	-0.001118	0.010002	-0.111821	0.9113
GC_GS	0.174881	0.252726	0.691977	0.4915

Source: Output of ereviews 13 processed by researchers in 2025.

Random Effects Model (MRA) Approach

The random effects model approach is a method that assumes that in panel data, disturbance variables can be interrelated both across time and individuals. In this model, differences in intercepts are accommodated by the errors of each company's model. The random effects model is applied to test moderated regression analysis and helps determine the most appropriate model for the analysis. The following are the estimation results obtained from using the random effects model:

Table 4.15 Results of the Random Effects MRA Model Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.002650	0.186600	-0.014203	0.9887
BD_X1A	0.527285	0.650801	0.810209	0.4202
BD_X1B	0.164794	0.655344	0.251463	0.8021
AP_X2	0.004390	0.007869	0.557883	0.5785
GC_X3	0.134855	0.175320	0.769195	0.4440
GS_Z	0.549399	0.250035	2.197291	0.0309
BDX1A_GS	-0.630979	0.820332	-0.769176	0.4441
BDX1B_GS	-0.025313	0.858963	-0.029469	0.9766
AP_GS	-0.005834	0.009244	-0.631072	0.5298
GC_GS	0.099287	0.240867	0.412205	0.6813

Source: Output of ereviews 13 processed by researchers in 2025.

MRA Panel Data Regression Selection Test

Selecting the appropriate model for panel data analysis among the three models: the common effects model, the fixed effects model, and the random effects model, requires a series of tests to identify the appropriate model. These tests include the Chow test, the Hausman test, and the Lagrange Multiplier test. The Lagrange Multiplier test is not necessary if the results of the Chow and Hausman tests have determined that the fixed effects model is the most appropriate model. The purpose of this model selection is to test moderated regression analysis and determine which model to apply in the analysis.

MRA Chow Test

Table 4.16 Results of the Chow MRA Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.999224	(17,63)	0.0008
Cross-section Chi-square	53.365325	17	0.0000

Source: Output of ereviews 13 processed by researchers in 2025.

Based on Table 4.16, the test results obtained a probability value of 0.0008 < 0.05, indicating that the best model is the fixed effects model.

Hausman MRA Test

Table 4.17 Hausman MRA Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	20.348414	9	0.0159

Source: Output of ereviews 13 processed by researchers in 2025.

Based on Table 4.17, the probability value is $0.0159 > 0.05$, which concludes that the Fixed Effects (FEM) model is more appropriate than the Random Effects (REM) model.

Table 4.18 Selection of MRA Panel Data Regression Models

No	Model Determination Test	Test Results	Selected Models
1	Uji Chow	$0.0008 < (\alpha = 0.05)$	FEM
2	Uji Hausman	$0.0159 < (\alpha = 0.05)$	FEM
3	Uji Lagrange Multiplier	Are not done	
Selected Models			FEM

Source: Output of ereviews 13 processed by researchers in 2025.

Based on Table 4.18, the selection of the panel data regression model in this study was carried out through the Chow test and the Hausman test. According to Gujarati and Porter (2009), the Chow test is used to determine whether the Common Effect Model or the Fixed Effect Model is more appropriate, while the Hausman test is used to choose between the Fixed Effect Model and the Random Effect Model. Meanwhile, the Lagrange Multiplier (LM) test is only used to compare the Common Effect Model with the Random Effect Model.

Since the results of both the Chow and Hausman tests in this study indicate that the Fixed Effect Model is the most suitable, the LM test is not required.

Moderated Regression Analysis (MRA) Test

The Moderated Regression Analysis (MRA) is a technique used to evaluate the interaction between two or more independent variables through multiplication (interaction terms). In this study, the MRA was applied to control for the influence of a moderator variable. Therefore, the panel data regression equation that involves a moderator variable can be expressed using the moderated regression analysis approach.

A variable Z can be categorized as a moderator variable if its regression coefficient is negative and its level of significance is less than $\alpha = 5\%$ (Ghozali et al., 2013). The following is the output result of the Moderated Regression Analysis test:

Table 4.19 Results of the Moderated Regression Analysis (MRA)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000232	0.228677	-0.001016	0.9992
BD_X1A	0.562722	0.788579	0.713590	0.4781
BD_X1B	0.556944	0.756672	0.736043	0.4644
AP_X2	-0.001410	0.008810	-0.160067	0.8733
GC_X3	0.061393	0.183934	0.333779	0.7397
GS_Z	0.574560	0.301861	1.903395	0.0616
BDX1A_GS	-0.672606	0.898556	-0.748541	0.4569
BDX1B_GS	-0.554651	1.001594	-0.553769	0.5817
AP_GS	-0.001118	0.010002	-0.111821	0.9113
GC_GS	0.174881	0.252726	0.691977	0.4915

Source: Output of ereviews 13 processed by researchers in 2025.

Based on the results of the Moderated Regression Analysis presented in Table 4.19, several important findings were obtained regarding the role of Green Strategic (Z) as a moderating variable in the relationship between independent variables and Sustainability Report Disclosure (Y).

Green Strategic Moderates the Relationship between Gender Diversity and Sustainability Report Disclosure

Based on Table 4.19, the interaction probability between gender diversity (BD_X1A) and green strategic on sustainability report disclosure is recorded at $0.4569 > 0.05$. This indicates that green strategic does not moderate the effect of gender diversity on sustainability report disclosure. This interaction falls into the category of potential moderating variables (homologiser moderation), since the coefficient b of $-0.6726 > 0.05$ is declared not significant. Furthermore, coefficient c of $0.4569 > 0.05$ is also statistically insignificant. Therefore, the fourth hypothesis (H4a) in this study is rejected.

Green Strategic Moderates the Relationship between Educational Diversity and Sustainability Report Disclosure

The interaction probability between educational diversity (BD_X1B) and green strategic on sustainability report disclosure is recorded at $0.5817 > 0.05$. This indicates that green strategic does not moderate the effect of educational diversity on sustainability report disclosure. This interaction also falls under potential moderating variables (homologiser moderation), since the coefficient b of $-0.5547 > 0.05$ is not significant. Additionally, coefficient c of $0.5817 > 0.05$ is statistically insignificant. Hence, the fourth hypothesis (H4b) in this study is rejected.

Green Strategic Moderates the Relationship between Company Activity and Sustainability Report Disclosure

Based on the interaction test results between Company Activity (X2) and Green Strategic (Z), the interaction probability between company activity (AP_X2) and green strategic on sustainability report disclosure is recorded at $0.9113 > 0.05$. This indicates that green strategic does not moderate the effect of company activity on sustainability report disclosure. This interaction falls under potential moderating variables (homologiser moderation), as coefficient b of $-0.0011 > 0.05$ is not significant. Additionally, coefficient c of $0.9113 > 0.05$ is

statistically insignificant. Therefore, the fifth hypothesis (H5) in this study is rejected.

Green Strategic Moderates the Relationship between Green Commitment and Sustainability Report Disclosure

The interaction probability between green commitment (GC_X3) and green strategic on sustainability report disclosure is recorded at $0.4915 > 0.05$. This indicates that green strategic does not moderate the effect of green commitment on sustainability report disclosure. This interaction is categorized as a potential moderating variable (homologiser moderation), since coefficient b of $0.1749 > 0.05$ is not significant. Furthermore, coefficient c of $0.4915 > 0.05$ is statistically insignificant. Hence, the sixth hypothesis (H6) in this study is rejected.

CONCLUSION

This study aims to analyze the influence of board diversity, company activity, and green commitment on sustainability report disclosure, as well as to analyze the role of green strategy as a moderating variable in companies listed in the SRI-KEHATI index on the Indonesia Stock Exchange during the 2019–2023 period. Based on the analysis results, the following conclusions were drawn:

1. It is statistically proven that the board diversity variable does not have a significant effect on sustainability report disclosure.
2. It is proven that the company activity variable also does not have a significant effect on sustainability disclosure.
3. It is statistically proven that the green commitment variable has a positive and significant effect on sustainability report disclosure.
4. It is not statistically proven that the green strategy variable moderates the relationship between board diversity and sustainability disclosure.
5. It is not statistically proven that the green strategy variable moderates the relationship between company activity and sustainability report disclosure.
6. It is not statistically proven that the green strategy variable moderates the relationship between green commitment and sustainability disclosure.

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