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# The Influence of Environmental, Social, and Sustainable Lending Portfolios on Financial Performance: The Mediating Role of Environmental Performance in Indonesian Banks

**Felysia[1], Lusianah[2]**

[1]Accounting Study Program, Bina Nusantara University, Jakarta, Indonesia
[2] Accounting Study Program, Bina Nusantara University, Jakarta, Indonesia
[1st]felysia@binus.ac.id, [2nd]lusianah@binus.edu
*Corresponding Author: felysia@binus.ac.id

*This paper examines the influence of sustainable lending practices—comprising environmental lending (EL), social lending (SL), and sustainable lending portfolio (SLP)—on the financial performance (FP) of banking companies in Indonesia, with environmental performance (EP) as a mediating variable. Utilizing a quantitative approach with panel data from 21 Indonesian banks over the 2020-2024 period, this study employs econometric analysis using EViews software. The findings indicate that EL, SL, and SLP have a significant positive effect on EP. Furthermore, EL, SL, SLP, and EP collectively and significantly positively influence FP, measured by Earnings Per Share (EPS). Mediation analysis using the Sobel test confirms that EP significantly mediates the relationship between sustainable lending practices and financial performance. These results underscore that the positive impact of sustainable lending on bank profitability is channeled through the improvement of environmental performance. This research provides empirical evidence supporting the integration of environmental, social, and governance (ESG) principles into banking credit portfolios as a strategy to enhance both environmental stewardship and financial sustainability in the context of Indonesia's evolving sustainable finance regulatory landscape.*

***Keywords : Environmental Lending, Social Lending, Sustainable Lending Portfolio, Environmental Performance, Financial Performance, ESG, Banking***

## INTRODUCTION

Climate change and environmental degradation pose serious challenges faced by various countries, including Indonesia, impacting the financial sector, especially banking [49]. As institutions that channel investor funds to recipients, banks perform the function of distributing credit as well as financing environmentally friendly sectors. This can help reduce environmental risks while strengthening long-term economic stability [68]. Sustainable finance policy in Indonesia has gradually developed since the issuance of the Sustainable Finance Roadmap in 2015, which became the initial basis for implementing green banking principles [65].

Regulations were further strengthened with the issuance of Financial Services Authority Regulation (POJK) No. 51/POJK.03/2017, which obliges banks to create a Sustainable Finance Action Plan (SFAP) and Sustainability Report [66]. Furthermore, the launch of the first version of the Indonesia Green Taxonomy in 2022 provided guidelines for classifying environmentally friendly economic activities, later reinforced by the Indonesia Carbon Exchange in 2023 and the Taxonomy for Sustainable Finance Indonesia in 2024 [69]. This series of regulations marks an important step in encouraging banks to expand sustainable financing [50].

In practice, sustainable financing can be viewed from three main aspects: environmental lending, social lending, and the overall distribution of financing to sectors supporting sustainable development (sustainable lending portfolio) [8]. However, the implementation of sustainable financing does not always directly improve a bank's financial performance. An evaluation of the one-year implementation of the Green Taxonomy shows that the majority of bank loan portfolios are still in the high-risk yellow and red categories, while the green category remains limited [88/89]. This condition raises the question of whether increasing sustainable financing can genuinely strengthen financial performance or merely fulfill regulatory requirements.

Based on this background, this research aims to analyze the influence of sustainable financing (consisting of environmental financing, social financing, and sustainability-related financing) on financial performance, considering environmental performance as a mediating variable in The research focuses on the 2020-2024 period, a crucial phase when Indonesia entered a new era of sustainable finance regulation through the implementation of the Green Taxonomy, the launch of the Carbon Exchange, and the Net Zero Emission commitment signed by several national banks [69]. The results of this study are expected to strengthen empirical findings regarding the extent to which sustainable financing practices influence bank financial performance through improved environmental performance.

## I.LITERATURE REVIEW

### *2.1 Theoretical Foundation*

The theoretical approaches underlying this research are Stakeholder Theory, Sustainable Finance Theory, and the Porter Hypothesis. Stakeholder Theory asserts that companies have authority and duties towards customers, investors, and regulators through sustainability financing strategies such as environmental, social, and sustainability lending portfolios. Meanwhile, Sustainable Finance Theory explains that investment and financing decision-making should consider ESG aspects to achieve a balance between economic value profit and sustainability. Good ESG aspects can increase bank profitability and lower capital costs, thereby strengthening the relationship between EP and FP. The Porter Hypothesis states that environmental regulations

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can encourage corporate innovation, productivity, and competitiveness, with increasingly stringent regulations like the green taxonomy potentially triggering product innovation and operational efficiency.

***2.2 Variable Definitions and Hypotheses***

- Environmental Lending (EL): Financing that connects investors as lenders in the process of channeling funds to the green sector. This financing is intended to encourage environmentally friendly and sustainable business activities.Figures
- Social Lending (SL): A form of financing where disbursed funds focus on social aspects, supporting businesses or projects that have a positive impact on community welfare, financial inclusion, and social development.
- Sustainable Lending Portfolio (SLP): A financing portfolio management strategy that prioritizes sustainability. This portfolio consists of projects and activities that comply with ESG principles, thus contributing to sustainable development.
- Financial Performance (FP): The company's ability to generate profit. High company value is seen from the company's profitability level. This study uses Earnings Per Share (EPS) as a proxy.
- Environmental Performance (EP): Refers to the effectiveness of an organization in managing and reducing the operational impact on the environment. This aspect includes efforts to reduce resource consumption, control pollution, manage waste responsibly, and conserve habitats and biodiversity.

## II.RESEARCH HYPOTHESES

Based on the theoretical review and previous empirical studies, the following hypotheses are proposed:
H1: Environmental lending has a positive effect on environmental performance.
H2: Social lending has a positive effect on environmental performance.
H3: Sustainable lending portfolio has a positive effect on environmental performance.
H4: Environmental lending has a positive effect on the financial performance of banking companies in Indonesia.
H5: Social lending has a positive effect on the financial performance of banking companies in Indonesia.
H6: Sustainable lending portfolio has a positive effect on the financial performance of banking companies in Indonesia.
H7: Environmental performance has a positive effect on the financial performance of banking companies in Indonesia.
H8: Environmental performance mediates the effect of environmental lending on the financial performance of banking companies in Indonesia.
H9: Environmental performance mediates the effect of social lending on the financial performance of banking companies in Indonesia.
H10: Environmental performance mediates the effect of sustainable lending portfolio on the financial performance of banking companies in Indonesia.

## III.CONCEPTUAL FRAMEWORK

The conceptual framework illustrating the relationships between variables is presented in Figure 1.

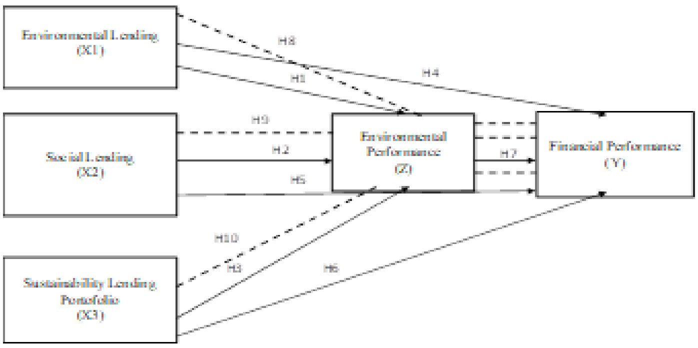


Fig 4.1 Conceptual Framework

## IV.RESEARCH METHOD

***5.1 Research Design and Data***

This research uses a quantitative method to analyze the relationships between the studied variables. The sample was selected using purposive sampling technique, namely sample selection based on specific criteria. The research sample consists of banks in Indonesia that have sustainable credit portfolios and report them through annual reports, sustainability reports, or ESG reports. Research data sources come from official publications published by all banks in Indonesia, as well as official reports available on the Financial Services Authority (OJK) website. The research period covers 2020-2024.

| **Data Availability Statement** |
|---|
| Data supporting this study cannot be made publicly available because it requires special access to the Indonesia Stock Exchange (IDX) and sustainability reports that are not publicly accessible. |

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TABLE 5.1
SAMPLE CRITERIA

| No | Criteria | Number of Company |
|---|---|---|
| 1 | Financial sector companies listed on the IDX in 2020–2024 | 100 |
| 2 | Non-bank financial sub-sector companies listed on the IDX in 2020–2024 | (55) |
| 3 | Companies that did not publish complete sustainability reports in 2020–2024 | (2) |
| 4 | Companies lacking data according to the researched variables | (22) |
| Number of companies meeting criteria (sample) | | 21 |
| Total sample data (sample × 5 years) | | 105 |

The analysis method employed is Econometrics Views (EViews), an econometric software developed by Quantitative Micro Software (QMS). This method was selected because it can test relationships between variables sourced from secondary data (data that researchers can collect directly, thus not requiring latent variables, such as official documents or publications), and can examine the mediating role in variable relationships, even when the sample size is not very large [10][93]. This study also uses panel data, which combines time-series and cross-section data, resulting in more comprehensive findings in describing the influence of sustainability lending, environmental performance, and financial performance on banking companies in Indonesia during the research period [79]

The independent variable is sustainability lending (SL), which is grouped into three main dimensions: environmental lending (EL), social lending (SL), and Sustainable Lending Portfolio (SLP). Environmental lending is measured by the proportion of green credit, such as financing for renewable energy, energy efficiency, and waste management, relative to the bank's total credit. Social lending is measured by the proportion of social credit, including financing for micro, small, and medium enterprises (MSMEs), social infrastructure, health, and education. Meanwhile, the Sustainable Lending Portfolio (SLP) is calculated based on the total financing related to achieving sustainability targets, such as emission reduction or increased financial access, by dividing the total credit extended by the company [68]. In panel data testing, the Sustainability Lending construct is analyzed as multiple regression because it is formed by three main dimensions: Environmental Lending (EL), Social Lending (SL), and Sustainable Lending Portfolio (SLP).

### *5.2 Variable Measurement and Model Specification*

#### *5.2.1 Independent Variables*

The independent variable is sustainability lending (SL), which is grouped into three main dimensions: environmental lending (EL), social lending (SL), and Sustainable Lending Portfolio (SLP). Environmental lending is measured by the proportion of green credit, such as financing for renewable energy, energy efficiency, and waste management, relative to the bank's total credit. Social lending is measured by the proportion of social credit, including financing for micro, small, and medium enterprises (MSMEs), social infrastructure, health, and education. Meanwhile, the Sustainable Lending Portfolio (SLP) is calculated based on the total financing related to achieving sustainability targets, such as emission reduction or increased financial access, by dividing the total credit extended by the company. In panel data testing, the Sustainability Lending construct is analyzed as multiple regression because it is formed by three main dimensions: Environmental Lending (EL), Social Lending (SL), and Sustainable Lending Portfolio (SLP).

#### *5.2.2 Dependent and Mediating Variables*

The dependent variable in this study is financial performance (FP), represented by Earnings per Share (EPS). EPS is calculated by dividing net income available to common shareholders by the number of outstanding shares [52]. The mediating variable is environmental performance (EP), which in the Indonesian context includes not only global ESG scores but also indicators listed in Indonesian banking sustainability reports. Some indicators used include: $CO_2$ emission intensity (Ton $CO_2$Eq), energy usage (kWh), water usage ($m^3$), and waste generation (tons) [29][32].

### *5.3 Panel Data Regression Model*

To analyze the influence of environmental lending, social lending, sustainable lending portfolio, and environmental performance on financial performance (FP), the following multiple regression model is used:

$$FP_{it} = \alpha + \beta_1 EL_{it} + \beta_2 SL_{it} + \beta_3 SLP_{it} + \beta_4 EP_{it} + \varepsilon_{it}$$

Where:

- $i$ = bank
- $t$ = year
- $\varepsilon$ = error term
- $\alpha$ = intercept
- $\beta$ = regression coefficient

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### *5.4 Variable Measurement*

Therefore, this research method combines variable operations tailored to the regulatory situation in Indonesia, data sources from official banking reports and the Financial Services Authority (OJK), and comprehensive statistical model testing using EViews software. This approach enables research that is more applicable and relevant to Indonesian banking practices while still meeting international research standards.

TABLE 5.2
VARIABLE MEASUREMENT

| Variable | Symbol | Formula | Data Source |
|---|---|---|---|
| Independent | | | |
| Environmental Lending | EL | $EL = \frac{Green\ Credit}{Total\ Bank\ Credit} x100\%$ | (S. Han, 2025; Huesn & Fitriaji, 2024; Li & Gu, 2024; Sutrisno et al., 2024) |
| Social Lending | SL | $SL = \frac{Social\ Credit}{Total\ Bank\ Credit} x100\%$ | (C. Han & Chen, 2024; Tao et al., 2024) |
| Sustainable Lending Portfolio | SLP | $SLP = \frac{Sustainable\ Portofolio}{Total\ Bank\ Credit}$ | (Angelica & Utama, 2020) |
| Dependen | | | |
| Earning Per Share | EP | $EPS = \frac{Net\ Income}{Number\ of\ Shares\ Outstanding}$ | (Kieso et al., 2014) |
| Mediating | | | |
| Environmental Performance | EP | CO2_Intensity $= \frac{Total\ Emission\ CO2\ (TonCO2Eq)}{Total\ Asset}$<br>Energy Usage $= \frac{Energy\ Intensity\ (Kwh)}{Total\ Asset}$<br>Water Usage $= \frac{Water\ Volume\ (Cubic\ Meter)}{Total\ Asset}$<br>Waste Usage $= \frac{Waste\ Intensity\ (Ton)}{Total\ Asset}$ | (Crippa et al., 2025) |

## V.RESULTS AND DISCUSSION

6.1 CLASSICAL ASSUMPTION TEST RESULTS

***NORMALITY TEST***

In this study, residual normality is tested using the Jarque-Bera (J-B) test with a significance level of α = 0.05 [16]. The decision is made by referring to the probability value of the J-B statistic according to the following criteria:

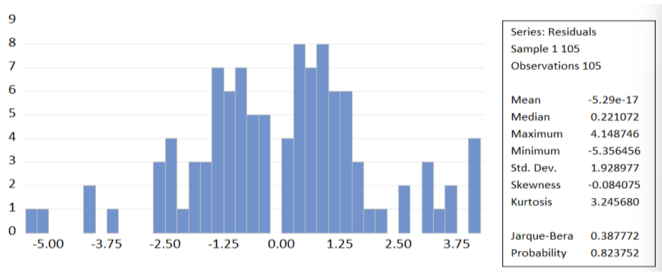


Fig 6.1 Normality Test Using Jarque-Bera Test,Structure 1: EL, SL, SLP on EP

Based on the results of the normality test in Figure 4.1, the probability value of the J-B statistic is 0.612879. Since the probability value of 0.612879 > 0.05, this means the normality assumption is met.

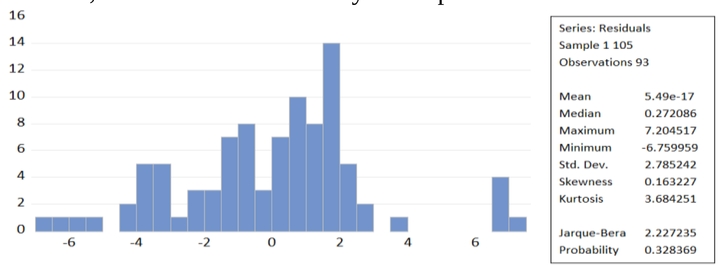


Fig 6.2 Normality Test Using Jarque-Bera Test,Structure 2: EL, SL, SLP, EP on FP

Based on the results of the normality test in Figure 6.2, the probability value of the J-B statistic is 0.142302. Since the probability value of 0.142302 > 0.05, this means the normality assumption is met. However, after running the regression, the number of observations decreased to 93 samples because the data for the dependent variable (EPS) contained extreme values (outliers). To ensure the data was well-distributed, data reduction was performed by removing 5 companies with extreme values, resulting in a total sample size of 80 companies. Subsequently, data treatment in the form of a log transformation was applied using the logarithmic (log) function on all variables to satisfy the normality assumption [27].

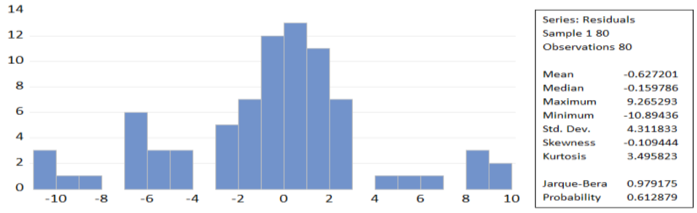


Fig 6.3 Normality Test Using Jarque-Bera Test, Structure 1: EL, SL, SLP on EP

Based on the results of the normality test in Figure 6.3, the probability value of the J-B statistic is 0.612879. Since the probability value of 0.612879 > 0.05, this means the normality assumption is satisfied.

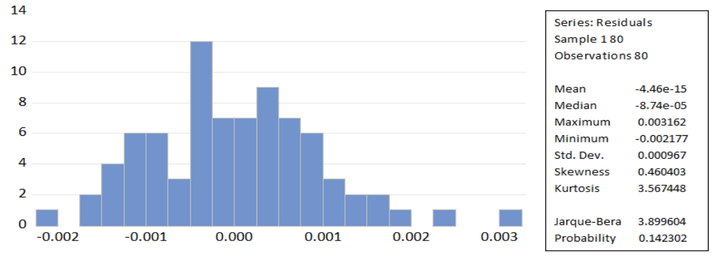


Fig 6.4 Normality Test Using Jarque-Bera Test, Structure 2: EL, SL, SLP, EP on FP

Based on the results of the normality test in Figure 6.4, the probability value of the J-B statistic is 0.142302. Since the probability value of 0.142302 > 0.05, this means the normality assumption is satisfied.

***MULTICOLLINEARITY TEST:*** Multicollinearity symptoms in this study can be observed from the VIF value, where VIF > 10 indicates the potential occurrence of multicollinearity [44].

TABLE 6.5 MULTICOLLINEARITY TEST USING VIF
STRUCTURE 1: EL, SL, SLP ON EP

Variance Inflation Factors
Date: 12/06/25 Time: 12:55
Sample: 1 80
Included observations: 80

| Variable | Coefficient Variance | Uncentered VIF | Centered VIF |
|---|---|---|---|
| C | 2.477823 | 21.39792 | NA |
| LOG_EL | 0.056501 | 3.740445 | 1.492799 |
| LOG_SL | 0.077416 | 5.284186 | 2.194169 |
| LOG_SLP | 0.316121 | 6.355697 | 2.380076 |

*Source*: EViews Software Output

Based on the results of the multicollinearity test in Table 4.5, it can be concluded that there are no symptoms of multicollinearity among the independent variables. This is because the VIF values are < 10.

TABLE 6.6 MULTICOLLINEARITY TEST USING VIF
STRUCTURE 2: EL, SL, SLP, EP ON FP

Variance Inflation Factors
Date: 12/06/25 Time: 13:13
Sample: 1 80
Included observations: 80

| Variable | Coefficient Variance | Uncentered VIF | Centered VIF |
|---|---|---|---|
| C | 6.67E-07 | 54.13861 | NA |
| LOG_EL | 6.02E-09 | 3.746392 | 1.495172 |
| LOG_SL | 8.23E-09 | 5.286245 | 2.195024 |
| LOG_SLP | 3.40E-08 | 6.431202 | 2.408350 |
| LOG_EP | 1.40E-09 | 35.20405 | 1.042463 |

*Source*: EViews Software Output

Based on the results of the multicollinearity test in Table 6.6, it can be concluded that there are no symptoms of multicollinearity among the independent variables. This is because the VIF values are < 10.

***HETEROSCEDASTICITY TEST***

To determine the presence of heteroscedasticity, this study used the Glejser test [39]. Table 6.7 and Table 6.8 present the results of heterogeneity testing using the Glejser test.

TABLE 6.7 HETEROCESDASTICITY TEST USING GLEJSER TEST
STRUCTURE 1: EL, SL, SLP, ON EP

Heteroskedasticity Test: Harvey
Null hypothesis: Homoskedasticity

| | | | |
|---|---|---|---|
| F-statistic | 3.983534 | Prob. F(4,75) | 0.1551 |
| Obs*R-squared | 14.01818 | Prob. Chi-Square(4) | 0.7237 |
| Scaled explained SS | 14.89934 | Prob. Chi-Square(4) | 0.4914 |

*Source*: EViews Software Output

Based on the result of the Glejser test in Table 6.7, it is known that the prob value. Chi-square 0.3725 > 0.05 which means it is free from the symptoms of heterocesdacity.

TABLE 6.8 HETEROCESDASTICITY TEST USING GLEJSER TEST
STRUCTURE 2: EL, SL, SLP, EP ON FP

Heteroskedasticity Test: Harvey
Null hypothesis: Homoskedasticity

| | | | |
|---|---|---|---|
| F-statistic | 3.983534 | Prob. F(4,75) | 0.1551 |
| Obs*R-squared | 14.01818 | Prob. Chi-Square(4) | 0.7237 |
| Scaled explained SS | 14.89934 | Prob. Chi-Square(4) | 0.4914 |

*Source*: EViews Software Output

Based on the result of the Glejser test in table 6.8, it is known that the prob value. Chi-square 0.7237 > 0.05 which means it is free from the symptoms of heterocesdacity.

***AUTOCORELATION TEST***

To test whether the residual is independent (non-autocorrelated), the Durbin-Watson test is used. The statistical values seen in the regression model were the sum of independent variables (k) and the number of observations (n) [39]

TABLE 6.9 AUTOCORELATION TEST USING DURBIN-WATSON TEST
STRUCTURE 1: EL, SL, SLP, ON EP

Dependent Variable: RESID
Method: Least Squares
Date: 12/07/25 Time: 21:40
Sample: 1 80
Included observations: 80
Presample missing value lagged residuals set to zero.

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.444942 | 1.146248 | -0.388173 | 0.6990 |
| LOG_EL | 0.040506 | 0.172841 | 0.234354 | 0.8154 |
| LOG_SL | 0.079018 | 0.202452 | 0.390302 | 0.6974 |
| LOG_SLP | -0.161948 | 0.410913 | -0.394119 | 0.6946 |
| RESID(-1) | 0.541466 | 0.114599 | 4.724879 | 0.0000 |
| RESID(-2) | 0.206127 | 0.114674 | 1.797498 | 0.0763 |

| | | |
|---|---|---|
| R-squared | 0.485629 | Mean dependent var |
| Adjusted R-squared | 0.450875 | S.D. dependent var |
| S.E. of regression | 2.212195 | Akaike info criterion |
| Sum squared resid | 362.1417 | Schwarz criterion |
| Log likelihood | -173.9154 | Hannan-Quinn criter. |
| F-statistic | 13.97303 | Durbin-Watson stat |
| Prob(F-statistic) | 0.000000 | |

*Source*: EViews Software Output

Based on Table 6.9, the value of the Durbin-Watson statistic is 1.943758. It is known that the number of observations (n) is 80 and the number of independent variables (k) is 3, so the Durbin Waston table is shown as follows:

TABLE 6.10 DURBIN-WATSON, SIGNIFICANCE VALUE (A)= 5%

| n | k=3 | |
|---|---|---|
| | dL | dU |
| 80 | 1.5600 | 1.7153 |

*Source*: Durbin Watson's table from Stanford.edu

Based on Table 6.10, the dL value is 1.5600 and the dU is 1.7153. The DW value is 1.9437. The DW value is located between 1.7153 < 1.9437 < 4-1.7153, hence it can be concluded that there is no positive or negative autocorrelation and therefore free from autocorrelation symptoms.

TABLE 6.11 AUTOCORELATION TEST USING DURBIN-WATSON TEST
STRUCTURE 1: EL, SL, SLP, ON EP

Dependent Variable: RESID
Method: Least Squares
Date: 12/07/25 Time: 21:49
Sample: 1 80
Included observations: 80
Presample missing value lagged residuals set to zero.

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 4.89E-05 | 0.000821 | 0.059547 | 0.9527 |
| LOG_EL | -9.99E-06 | 8.25E-05 | -0.121161 | 0.9039 |
| LOG_SL | -6.46E-06 | 9.13E-05 | -0.070734 | 0.9438 |
| LOG_SLP | 1.74E-05 | 0.000186 | 0.093682 | 0.9256 |
| LOG_EP | -3.94E-07 | 3.77E-05 | -0.010462 | 0.9917 |
| RESID(-1) | 0.084687 | 0.120013 | 0.705654 | 0.4826 |
| RESID(-2) | -0.119106 | 0.121541 | -0.979966 | 0.3303 |

| | | | |
|---|---|---|---|
| R-squared | 0.019350 | Mean dependent var | -4.46E-15 |
| Adjusted R-squared | -0.061252 | S.D. dependent var | 0.000967 |
| S.E. of regression | 0.000996 | Akaike info criterion | -10.90185 |
| Sum squared resid | 7.24E-05 | Schwarz criterion | -10.69343 |
| Log likelihood | 443.0741 | Hannan-Quinn criter. | -10.81829 |
| F-statistic | 0.240064 | Durbin-Watson stat | 1.958967 |
| Prob(F-statistic) | 0.961784 | | |

*Source*: EViews Software Output

Based on Table 6.11, the value of the Durbin-Watson statistic is 1.958967. It is known that the number of observations (n) is 80 and the number of independent variables (k) is 3, so the Durbin Waston table is shown as follows:

TABLE 6.12 DURBIN-WATSON, SIGNIFICANCE VALUE (A)= 5%

| n | k=4 | |
|---|---|---|
| | dL | dU |
| 80 | 1.5337 | 1.7430 |

*Source*: Durbin Watson's table from Stanford.edu

Based on Table 6.12, the dL value is 1.5337 and the dU is 1.7430. The DW value is 1.9589. The DW value is located between 1.5337 < 1.9589 < 4-1.7430, hence it can be concluded that there is no positive or negative autocorrelation and therefore free from autocorrelation symptoms.

***Descriptive Statistical Analysis***

Descriptive analysis aims to expose the characteristics of the data through maximum, minimum, average, and standard deviation values [39]. In this study, the variables analyzed using descriptive statistics include EL, SL, SLP, EP, and FP. Based on the descriptive statistical analysis, the following sample description was obtained.

TABLE 6.13 DESCRIPTIVE STATISTICS

| | EL | SL | SLP | EP | FP |
|---|---|---|---|---|---|
| Mean | 19.79301 | 21.45077 | 0.412242 | 3.77E-06 | 3.77E-06 |
| Median | 16.82330 | 14.13040 | 0.320684 | 2.91E-08 | 2.91E-08 |
| Maximum | 141.5503 | 103.2345 | 2.415503 | 5.47E-05 | 5.47E-05 |
| Minimum | 0.094076 | 0.033166 | 0.002359 | 6.93E-11 | 6.93E-11 |
| Std. Dev. | 22.71893 | 26.42806 | 0.357453 | 1.20E-05 | 1.20E-05 |
| Skewness | 2.895720 | 2.146875 | 2.804249 | 3.339931 | 3.338223 |
| Kurtosis | 14.01157 | 6.930988 | 14.12182 | 12.92239 | 12.91145 |
| Jarque-Bera | 515.9847 | 112.9632 | 517.1673 | 476.9145 | 476.0396 |
| Probability | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| Sum | 1583.441 | 1716.061 | 32.97938 | 0.000301 | 0.000301 |
| Sum Sq. Dev. | 40775.83 | 55176.93 | 10.09404 | 1.13E-08 | 1.13E-08 |
| Observations | 80 | 80 | 80 | 80 | 80 |

*Source*: EViews Software Output

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Based on Table 6.13, the minimum value of the EL is 0.094076, with a maximum value of 141.5503. The average is 19.79301, with a standard deviation of 22.71893. The minimum value of SL is 0.33166, with the maximum value being 103.2345. The average is 21.45077, with a standard deviation of 26.42806. The minimum value of the SLP is 0.002359, with a maximum value of 2.415503. The average is 0.412242, with a standard deviation of 0.357453. The minimum value of EP is 6.93, with a maximum value of 5.47. The average is 3.77, with a standard deviation of 1.20. The minimum value of FP is 0.286173, with a maximum value of 287542.3. The average is 13869.61, with a standard deviation of 054992.99.

***6.2 MODEL SELECTION TEST RESULTS***

TABLE 6.16 RESULTS OF THE CHOW TEST

STRUCTURE 1: EL, SL, SLP ON EP

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

| Effects Test | Statistic | d.f. | Prob. |
|---|---|---|---|
| Cross-section F | 23.722030 | (15,61) | 0.0000 |
| Cross-section Chi-square | 153.744455 | 15 | 0.0000 |

*Source*: EViews Software Output

Based on the results of the *chow* test in Table 6.14, it is known that the probability value is 0.0000. Since the probability value is 0.0000 < 0.05, the estimation model used is the *Fixed Effect Model* (FEM).

TABLE 6.15 RESULTS OF THE CHOW TEST

STRUCTURE 2: EL, SL, SLP, EP ON FP

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

| Effects Test | Statistic | d.f. | Prob. |
|---|---|---|---|
| Cross-section F | 90.221254 | (15,60) | 0.0000 |
| Cross-section Chi-square | 252.748114 | 15 | 0.0000 |

*Source*: EViews Software Output

Based on the results of the *chow* test in Table 6.15, it is known that the probability value is 0.0000. Since the probability value is 0.0000 < 0.05, the estimation model used is the *Fixed Effect Model* (FEM).

TABLE 6.16 RESULTS OF THE HAUSMAN TEST

STRUCTURE 1: EL, SL, SLP ON EP

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Cross-section random | 1.496764 | 3 | 0.6830 |

*Source*: EViews Software Output

Based on the results of *the Hausman* test in Table 6.16, it is known that the probability value is 0.6830. Because the probability value is 0.6830 > 0.05, the estimation model used is the *Random Effect Model* (REM).

TABLE 6.17 RESULTS OF THE HAUSMAN TEST

STRUCTURE 2: EL, SL, SLP, EP ON FP

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Cross-section random | 3.274204 | 4 | 0.5130 |

*Source*: EViews Software Output

Based on the results of *the Hausman* test in Table 6.17, it is known that the probability value is 0.5130. Because the probability value is 0.5130 > 0.05, the estimation model used is *the Random Effect Model* (REM).

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TABLE 6.18 RESULTS OF THE LAGRANGE MULTIPLIER (LM) TEST
STRUCTURE 1: EL, SL, SLP ON EP

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 | 102.2144<br>(0.0000) | 1.352558<br>(0.2448) | 103.5670<br>(0.0000) |

*Source*: EViews Software Output

Based on the results of the *lagrange multiplier* test in Table 6.18, it is known that the probability value is 0.0000. Because the probability value is 0.000 < 0.05, the estimation model used is the *Random Effect Model* (REM).

TABLE 6.19 RESULTS OF THE LAGRANGE MULTIPLIER (LM) TEST
STRUCTURE 2: EL, SL, SLP, EP ON FP

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 | 135.2688<br>(0.0000) | 2.110205<br>(0.2115) | 137.3791<br>(0.0000) |

*Source*: EViews Software Output

Based on the results of the *lagrange multiplier* test in Table 6.19, it is known that the probability value is 0.0000. Because the probability value is 0.000 < 0.05, the estimation model used is the *Random Effect Model* (REM).

6.3 HYPHOTESES

TABLE 6.20 STATISTICAL VALUES OF R-SQUARED, F AND T TESTS

STRUCTURE 1: EL, SL, SLP ON EP

Dependent Variable: LOG_EP
Method: Least Squares
Date: 12/06/25 Time: 12:55
Sample: 1 80
Included observations: 80

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -16.97462 | 1.574110 | -10.78363 | 0.0000 |
| LOG_EL | 0.082627 | 0.237698 | 4.347611 | 0.0290 |
| LOG_SL | 0.047883 | 0.278237 | 5.172094 | 0.0038 |
| LOG_SLP | 0.534243 | 0.562247 | 7.950192 | 0.0450 |

| | | | |
|---|---|---|---|
| R-squared | 0.040733 | Mean dependent var | -17.33905 |
| Adjusted R-squared | 0.002867 | S.D. dependent var | 3.048020 |
| S.E. of regression | 3.043648 | Akaike info criterion | 5.112697 |
| Sum squared resid | 704.0481 | Schwarz criterion | 5.231798 |
| Log likelihood | -200.5079 | Hannan-Quinn criter. | 5.160448 |
| F-statistic | 1.075721 | Durbin-Watson stat | 0.641786 |
| Prob(F-statistic) | 0.000532 | | |

*Source*: EViews Software Output

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TABLE 6.21 STATISTICAL VALUES OF R-SQUARED, F AND T TESTS

STRUCTURE 2: EL, SL, SLP, EP ON FP

Dependent Variable: LOG_FP
Method: Least Squares
Date: 12/06/25 Time: 12:29
Sample: 1 80
Included observations: 80

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.002106 | 0.000816 | 2.579227 | 0.0119 |
| LOG_EL | 0.000217 | 7.756913 | 2.799472 | 0.0065 |
| LOG_SL | 7.094215 | 9.074379 | 0.078179 | 0.0378 |
| LOG_SLP | 0.000351 | 0.000184 | 1.901035 | 0.0000 |
| LOG_EP | 1.000065 | 3.740338 | 2.673728 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 1.000000 | Mean dependent var | -17.33894 |
| Adjusted R-squared | 1.000000 | S.D. dependent var | 3.048249 |
| S.E. of regression | 0.000992 | Akaike info criterion | -10.93231 |
| Sum squared resid | 7.39E-05 | Schwarz criterion | -10.78344 |
| Log likelihood | 442.2925 | Hannan-Quinn criter. | -10.87262 |
| F-statistic | 1.86E+08 | Durbin-Watson stat | 1.840388 |
| Prob(F-statistic) | 0.000000 | | |

*Source*: EViews Software Output

***Coefficient Determination Analysis***

R-squared is a statistical indicator in measuring the magnitude of the influence of independent variables on bound variables in regression models [44]. Based on the results of structure 1 in Table 6.20, it is known that the value of the determination coefficient (*R-squared*) is $R2 = 0.040733$. This value can be interpreted as EL, SL, SLP, simultaneously or jointly affecting EP by 4.07%, the remaining 95.93% is influenced by other factors. Based on the results of structure 2 in Table 6.21, it is known that the value of the determination coefficient (*R-squared*) of $R2 = 1.000000$. These values can be interpreted as EL, SL, SLP, simultaneously or jointly affect FP by 100%, and are not influenced by other factors.

***Simultaneous Effect Significance Test (F Test)***

The F test is used to assess the influence of independent variables simultaneously on dependent variables (Savitri et al., 2021). Based on the results of structure 1 in Table 6.20, it is known that the *value of Prob.( F-statistics),* namely $0.00532 < 0.05$, then it can be concluded that all independent variables, namely, EL, SL, SLP simultaneously have a significant effect on EP. The F test aims to test the influence of independent variables together or simultaneously on non-free variables. Based on the results of structure 2 in Table 6.21, it is known that the *value of Prob.( F-statistics),* which is $0.000000 < 0.05$, then it can be concluded that all independent variables, namely, SL, EL, SLP simultaneously have a significant effect on FP.

***Panel Data Regression Equation and Partial Influence Significance Test (t-test)***

Based on the results of structure 1 in Table 6.20, the regression equation is obtained as follows

$$EP_{it} = 0.082627EL_{it} + 0.047883SL_{it} + 0.534243SLP_{it} + \varepsilon$$

Based on table 6.20, it is known:

1. EL had a positive effect on EP, with a regression coefficient value = 0.082627, and significant, with Prob. = 0.0290 < 0.05. This means that environmentally oriented financing contributes to improving environmental performance. These findings are in line with [1] that *Environmental lending* through *green loans* and other green initiatives has been proven to improve environmental performance by encouraging energy efficiency and emission reduction. Thus, H0 is rejected while H1: *Environmental lending* has a positive effect on environmental performance is accepted.
2. SL had a positive effect on EP, with a regression coefficient value = 0.047883, and significant, with Prob. = 0.0038 < 0.05. EL had a positive effect on EP, with a regression coefficient value = 0.082627, and significant, with Prob. = 0.0290 < 0.05. This means that socially oriented financing contributes to improving environmental performance. This finding is in line with [19] that *green microfinance* makes a positive contribution to reducing greenhouse gas emissions in the MSME sector through the implementation of environmentally friendly practices. Thus, H0 is rejected while H2: *Social lending* has a positive effect on environmental performance is accepted.
3. SLP had a positive effect on EP, with a regression coefficient value = 0.534243, and significant, with a Prob. = 0.0450 < 0.05. This means that overall financing that implements ESG aspects contributes to improving environmental performance. These findings are in line with [58/59] that ESG principle financing encourages environmentally friendly business activities, reduces environmental risks, and creates long-term sustainability. Thus, H0 was rejected while H3: *Sustainability Portfolio*

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*lending* had a positive effect on environmental performance was accepted.
Based on the results of structure 2 in Table 6.21, the regression equation is obtained as follows

$$FP_{it} = 0.000217EL_{it} + 7.094215SL_{it} + 0.000351SLP_{it} + 1.000065EP_{it} + \varepsilon$$

Based on table 6.21, it is known:

1. EL had a positive effect on FP, with a regression coefficient value = 0.000217, and significant, with Prob. = 0.0065 < 0.05. This means that environmentally oriented financing contributes to improving financial performance. These findings are in line with [53] that environmental regulations and initiatives encourage innovation and operational efficiency that increase the financial profitability of banks. Thus, H0 was rejected while H4: *Social lending* had a positive effect on the financial performance of banking companies in Indonesia was accepted.
2. SL had a positive effect on FP, with a regression coefficient value = 7.094215, and significant, with a Prob. = 0.0378 < 0.05. This means that socially oriented financing contributes to improving financial performance. These findings are in line with [62] that the implementation of corporate social responsibility (CSR) in the business decision-making process significantly reduces bank risk. Thus, H0 was rejected while H5: *Social lending* had a positive effect on the financial performance of banking companies in Indonesia was accepted.
3. SLP had a positive effect on FP, with a regression coefficient value = 0.000351, and significant, with Prob. = 0.0000 < 0.05. This means that overall financing that implements ESG aspects contributes to improving financial performance. This finding is in line with [60] that *sustainable portfolios, including green loans*, can increase company profitability to strengthen competitiveness in financial institutions. Thus, H0 was rejected while H6: *Social lending* had a positive effect on the financial performance of banking companies in Indonesia was accepted.
4. EP had a positive effect on FP, with a regression coefficient value = 1.000065, and significant, with Prob. = 0.0000 < 0.05. This means that good environmental performance contributes to improved financial performance. These findings are in line with [28][94] that good ESG performance is positively related to the efficiency of financial institutions as a form of innovation to improve environmental performance as well as financial performance. Thus, H0 was rejected while H7: *Social lending* had a positive effect on the financial performance of banking companies in Indonesia was accepted.

$$FP_{it} = 5.172094EL_{it} + 4.347611SL_{it} + 7.950192SLP_{it} + 2.673728EP_{it} + \varepsilon$$

Table 6.22 Mediation Test Using the Sobel Test

| Input: | | | Test statistic: | p-value: |
|---|---|---|---|---|
| $t_a$ | 5.172094 | Sobel test: | 2.37513211 | 0.01754267 |
| $t_b$ | 2.673728 | Aroian test: | 2.3408565 | 0.01923956 |
| | | Goodman test: | 2.41095881 | 0.01591065 |
| | | Reset all | Calculate | |

| Input: | | | Test statistic: | p-value: |
|---|---|---|---|---|
| $t_a$ | 4.347611 | Sobel test: | 2.27750592 | 0.02275603 |
| $t_b$ | 2.673728 | Aroian test: | 2.23501227 | 0.02541654 |
| | | Goodman test: | 2.3225193 | 0.02020499 |
| | | Reset all | Calculate | |

| Input: | | | Test statistic: | p-value: |
|---|---|---|---|---|
| $t_a$ | 7.950192 | Sobel test: | 2.53424903 | 0.01126886 |
| $t_b$ | 2.673728 | Aroian test: | 2.51642818 | 0.01185511 |
| | | Goodman test: | 2.55245393 | 0.01069671 |
| | | Reset all | Calculate | |

*Source*: Sobel Test Calculation Results

Based on the results of the mediation test in Table 6.22 using the Sobel test, the following results were obtained:

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***The Effect of Sustainable Lending on Environmental Performance***

The regression results confirm that Environmental Lending (EL), Social Lending (SL), and Sustainable Lending Portfolio (SLP) each have a positive and significant effect on Environmental Performance (EP). Therefore, H1, H2, and H3 are supported. This finding aligns with Stakeholder Theory and Sustainable Finance Theory, indicating that banks' financing directed towards green and social projects, as well as an overall sustainable portfolio, leads to tangible improvements in their environmental management and impact reduction [51][42].

***The Effect of Variables on Financial Performance***

The analysis further shows that EL, SL, SLP, and EP collectively have a positive and significant influence on Financial Performance (FP), measured by EPS. Thus, H4, H5, H6, and H7 are supported. This result demonstrates that sustainable lending practices not only fulfill regulatory and social demands but also contribute positively to bank profitability. The inclusion of EP in the model strengthens this relationship, suggesting that the operational efficiencies and risk mitigation associated with better environmental performance translate into financial gains [75].

***Mediation Role of Environmental Performance***

The Sobel test confirms that Environmental Performance (EP) significantly mediates the relationship between each dimension of sustainable lending (EL, SL, SLP) and Financial Performance (FP). Consequently, **H8, H9, and H10 are supported**. This is a key finding of the study, as it reveals the mechanism through which sustainable lending affects profitability: it is not merely a direct cost or revenue item, but its positive impact is channeled through the enhancement of the bank's own environmental performance. This mediation effect underscores the importance of banks' internal environmental management as a critical link between their external financing activities and their financial bottom line.

***Credit authorship contribution statement***

**Felysia**: Writing – original draft, Visualization, Software, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

**Lusianah**: Writing – review & editing, Supervision, Resources.

## VI.CONCLUSION

**(**EL), social lending (SL), and sustainable lending portfolio (SLP)—play a significant role in enhancing both environmental performance (EP) and financial performance (FP) of banking institutions in Indonesia. The findings confirm that EL, SL, and SLP have a positive and significant effect on EP. Furthermore, EL, SL, SLP, and EP collectively exert a positive and significant influence on FP, as measured by Earnings Per Share (EPS).

Mediation analysis using the Sobel test reveals that EP significantly mediates the relationship between sustainable lending practices (EL, SL, SLP) and financial performance. This indicates that improvements in financial performance are not solely driven by the volume of sustainable financing disbursed, but more importantly, by the extent to which such financing enhances environmental performance. Thus, environmental performance serves as the primary mechanism linking sustainable lending practices to bank profitability in Indonesia.

These findings underscore the strategic importance of integrating environmental, social, and governance (ESG) principles into banking operations and credit portfolios. For policymakers and practitioners, this research provides empirical support for the development of sustainable finance frameworks that not only comply with regulatory requirements but also generate tangible financial returns through improved environmental stewardship.

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