

Analysis of the Effect of ESG Implementation, Financial Performance, and GCG on Firm Value with Profitability as a Mediating Variable in the Indonesian Banking Sector

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Keywords:

ESG; loan to deposit ratio; non performing loan; GCG; return on assets.



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Abstract

Although the Indonesian banking industry has demonstrated relatively positive growth, several indicators, including credit expansion, the cost of funds, and credit risk, continue to present significant challenges. These conditions suggest that market participants remain cautious about the industry's future prospects. This study aimed to examine the effects of environmental, social, and governance (ESG) practices, financial performance, and good corporate governance (GCG) on firm value, with return on assets (ROA) serving as a mediating variable. The study employed a quantitative approach using panel data from 12 banking companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2024 period, selected through purposive sampling. Data were analyzed using panel data regression and mediation analysis with EVIEWS 14 software. The findings were categorized into direct and indirect effects. The results revealed that the nonperforming loan (NPL) ratio had a statistically significant negative effect on ROA, while the loan-to-deposit ratio (LDR) had a statistically significant negative effect on firm value. However, none of the independent variables demonstrated statistically significant indirect effects on firm value through ROA. These findings suggested that credit risk and liquidity management were important considerations in assessing banking performance and firm value, while profitability did not significantly mediate the relationships examined in this study.

INTRODUCTION

Although Indonesia's banking industry has continued to demonstrate relatively positive growth, several indicators have highlighted challenges requiring further attention. Bank Indonesia (2026) reported that bank lending growth in the first quarter of 2026 was lower than in the preceding period, while increases in the benchmark interest rate aimed at maintaining the stability of the Indonesian rupiah could raise banks' funding costs and weaken credit demand. From a capital market perspective, banking stock valuations have remained relatively low compared with their historical levels over the past decade, as reflected in the banking sector's price-to-book value (PBV) ratio of approximately 1.5 times, substantially below its historical average of 2.5 times. These conditions suggest that investors have maintained a cautious outlook on the banking industry's prospects. Furthermore, credit risk has shown signs of increasing following the post-pandemic economic recovery, particularly in the working

capital and consumer lending segments. These challenges underscore the importance of examining the factors influencing firm value in the Indonesian banking sector.

Maximizing firm value is a fundamental corporate objective closely associated with enhancing shareholder wealth. Firm value reflects shareholders' economic interests (Aydogmus et al., 2022), while higher firm valuations generally indicate stronger investor confidence in a company's financial performance, growth prospects, and capacity to generate sustainable earnings (Brigham & Houston, 2019). The number of capital market investors in Indonesia has increased consistently, as presented in Table 1, highlighting the growing importance of corporate sustainability strategies and effective governance practices in maintaining investor confidence and enhancing firm value. This trend is particularly relevant to the banking sector, as banking stocks represent a significant component of trading activity and market capitalization on the Indonesia Stock Exchange (IDX). Consequently, banking sector valuations serve as important indicators of investor expectations regarding financial stability, corporate performance, and broader economic conditions.

Table 1. Number of Indonesian Capital Market Investors (2021–2024)

SID Type	2021	2022	2023	Oct-24	Nov-24	Dec-24
Capital Market	7,489,337	10,311,152	12,168,061	14,345,441	14,585,087	14,871,639
Mutual Funds	6,840,234	9,604,269	11,416,711	13,533,135	13,759,964	14,033,037
Stocks and Other Securities	3,451,513	4,439,933	5,255,571	6,152,315	6,274,627	6,381,444
Government Securities (SBN)	611,143	831,455	1,002,727	1,170,305	1,183,847	1,198,821

Source: www.ksei.co.id (converted from the chart in the original manuscript).

In recent years, environmental, social, and governance (ESG) considerations have gained increasing attention in global business and investment practices. ESG provides a framework for evaluating corporate performance across environmental, social, and governance dimensions and is considered an important factor in enhancing corporate reputation, strengthening stakeholder relationships, and promoting long-term business sustainability (Friede et al., 2015). Stakeholders increasingly expect companies to integrate ESG principles into their business strategies and operations (Aydogmus et al., 2022). Furthermore, ESG reporting promotes corporate transparency and accountability while encouraging organizational improvements through the adoption of sustainable policies and practices (R. A. Rahman & Alsayegh, 2021; H. U. Rahman et al., 2023). This study employed ESG scores obtained from Refinitiv, which provides extensive coverage of global market capitalization and evaluates companies using numerous ESG indicators based on a structured and transparent assessment methodology (Mio et al., 2023). According to KPMG (2022), the adoption of sustainability reporting increased substantially between 1993 and 2022. In 2022, approximately 79% of the world's 100 largest companies by revenue in each surveyed country (N100) and 96% of the world's 250 largest companies by revenue (G250) published sustainability reports, as presented in Table 2

Table 2. Global Sustainability Reporting Rates (%), 1993–2022

Group	1993	1996	1999	2002	2005	2008	2011	2013	2015	2017	2020	2022
N100	12	18	24	18	41	53	64	71	73	75	77	79
G250	–	–	35	45	64	83	95	93	92	93	96	96

Source: KPMG (2022) (converted from the chart in the original manuscript).

The banking sector provides an important context for examining the effects of environmental, social, and governance (ESG) practices on firm value, as ESG integration can influence financial resilience and bank performance (Puspitorini & Siswanti, 2025). Banks are also exposed to systemic risk, whereby financial distress or losses at one institution can spread to other banks or financial institutions, potentially disrupting the stability of the broader financial system (Hikmah & Wibowo, 2020). In addition to ESG practices, financial performance is an important determinant of firm value, as deteriorating financial conditions can undermine investor confidence and negatively affect market valuations (Rahmi et al., 2023). Financial performance is commonly assessed using financial ratios (Andriyani, 2015). Other important considerations influencing investment decisions in the banking sector include nonperforming loans (NPLs), capital adequacy, and liquidity (Trung, 2021). Furthermore, the implementation of good corporate governance (GCG) is expected to enhance corporate performance through improved oversight, transparency, and accountability (Pebiana et al., 2024). In assessing bank profitability, Bank Indonesia has traditionally emphasized return on assets (ROA) over return on equity (ROE), as ROA reflects a bank's ability to generate earnings from its asset base, including income-generating loans (Hatta & Aida Fitri, 2020).

Firm value in this study was measured using Tobin's Q ratio. A higher Tobin's Q generally indicates a more favorable market valuation relative to the replacement cost of a company's assets, reflecting positive investor expectations regarding its performance and growth potential (Maulana & Yuliana, 2025). This ratio has been widely employed in financial research, facilitating comparisons across empirical studies (Kim et al., 2015), and is considered a forward-looking indicator because it incorporates market expectations about future corporate performance (Fu et al., 2016). However, previous studies have reported inconsistent findings regarding the relationships among ESG practices, financial performance, profitability, and firm value. (Hazim et al., 2024) reported positive correlations between ESG performance and both ROA and ROE but found that ESG performance did not significantly explain variations in Tobin's Q. In contrast, (Bahadir & Akarsu, 2024) identified a negative relationship between ESG performance and ROA, suggesting that ESG-related expenditures could impose short-term financial costs. Meanwhile, (Chininga et al., 2024) and (Lopez-Toro et al., 2021) reported positive effects of ESG performance on ROA, ROE, and Tobin's Q. Regarding profitability, (Maulana & Yuliana, 2025) found that ROA positively affected firm value, whereas (Agustiani, 2016) reported contrasting findings. Similarly, (Makkulau et al., 2024) identified a negative effect of the loan-to-deposit ratio (LDR) on firm value, while (Trung, 2021) reported a positive effect. (Hakim & Pasupati, Lisdawati., 2023) found that NPLs had no significant effect on firm value, whereas Wati (2018) and (Trung, 2021) reported negative effects.

Slowing credit growth, declining banking stock valuations, and increasing credit risk have highlighted the importance of investigating the determinants of firm value in the

Indonesian banking sector. Moreover, the inconsistent findings of previous studies indicate a need for further empirical examination of the relationships among ESG performance, financial performance, corporate governance, profitability, and firm value. Accordingly, this study aimed to examine the effects of ESG performance, measured using ESG scores; financial performance, represented by the loan-to-deposit ratio (LDR) and nonperforming loan (NPL) ratio; and good corporate governance (GCG), measured through GCG self-assessment ratings, on firm value, measured using Tobin's Q. The study also investigated the mediating role of profitability, measured by return on assets (ROA), using data from Indonesian banking companies listed on the Indonesia Stock Exchange during the 2021–2024 period. The research hypotheses and hypothesized relationships among the variables are presented in Table 3.

Table 3. Research Model and Hypotheses

Code	Effect Path	Model	Hypothesized Effect
H1	ESG (X1) → ROA (Z)	Sub-structure 1	Significant positive effect
H3	LDR (X2) → ROA (Z)	Sub-structure 1	Significant positive effect
H5	NPL (X3) → ROA (Z)	Sub-structure 1	Significant negative effect
H7	GCG (X4) → ROA (Z)	Sub-structure 1	Significant positive effect
H2	ESG (X1) → Firm Value (Y)	Sub-structure 2	Significant positive effect
H4	LDR (X2) → Firm Value (Y)	Sub-structure 2	Significant negative effect
H6	NPL (X3) → Firm Value (Y)	Sub-structure 2	Significant negative effect
H8	GCG (X4) → Firm Value (Y)	Sub-structure 2	Significant positive effect
H9	ROA (Z) → Firm Value (Y)	Sub-structure 2	Significant positive effect
H10	ESG (X1) → ROA (Z) → Y	Mediation (Sobel test)	ROA is able to mediate
H11	LDR (X2) → ROA (Z) → Y	Mediation (Sobel test)	ROA is able to mediate
H12	NPL (X3) → ROA (Z) → Y	Mediation (Sobel test)	ROA is able to mediate
H13	GCG (X4) → ROA (Z) → Y	Mediation (Sobel test)	ROA is able to mediate

Source: Compiled from the hypothesis formulation and the structural diagram of the study.

METHOD

This study employed a quantitative approach with an explanatory research design to examine the relationships among environmental, social, and governance (ESG) performance, financial performance, good corporate governance (GCG), profitability, and firm value (Sudaryana & Agusiady, 2022; Djaali., 2020). The units of analysis were banking companies listed on the Indonesia Stock Exchange (IDX) with complete ESG scores and annual reports for the 2021–2024 period. The independent variables comprised ESG performance, the loan-to-deposit ratio (LDR), the nonperforming loan (NPL) ratio, and GCG, while return on assets (ROA) served as the mediating variable and firm value, measured using Tobin's Q, was the dependent variable. ESG performance was measured using ESG scores (Pollman, 2024; Narula et al., 2023), while LDR and NPL were used as indicators of liquidity and credit risk, respectively (Fauzan et al., 2023; Triyana et al., 2025; Salsabila et al., 2024; Widyastuti & Aini, 2021). The NPL ratio was calculated by dividing nonperforming loans classified as substandard, doubtful, or loss by total loans, with reference to the 5% regulatory threshold under Financial Services Authority Regulation No. 4/POJK.03/2016. GCG was measured using each bank's corporate governance self-assessment rating (FCGI, 2001). Profitability was

assessed using ROA (Hidayati et al., 2024; Fauzi et al., 2023), while firm value was measured using Tobin's Q (Ningrum, 2022; Mysaka & Derun, 2021). The operational definitions and measurement indicators for all variables are presented in Table 4.

Table 4. Variables and Operational Definitions

No.	Variable	Definition	Measurement	Scale
1	<i>Loan to Deposit Ratio (LDR)</i>	Ratio used to determine the proportion of credit disbursement relative to Third-Party Funds	$LDR = (\text{Total Loans} / \text{Third-Party Funds}) \times 100\%$	Ratio
2	<i>Non Performing Loan (NPL)</i>	Ratio of the percentage of debtors in arrears for more than 90 days	$NPL = (\text{Delinquent Loans} / \text{Total Loans}) \times 100\%$	Ratio
3	<i>Return on Assets (ROA)</i>	A measure of a company's ability to generate profit from the assets it uses	$ROA = \text{EAT} / \text{Total Assets}$	Ratio
4	<i>ESG Score</i>	Score of a company's performance in integrating ESG aspects into its operational activities and business strategy	Overall ESG score (<i>Environmental, Social, and Governance</i>)	Score
5	<i>Good Corporate Governance (GCG)</i>	GCG <i>self assessment</i> to determine the implementation of GCG in the company	<i>Self assessment</i> on a minimum of 16 factors	Score
6	Firm Value (Tobin's Q)	Ratio used to determine the public's assessment of the company's performance	$\text{Tobin's Q} = (\text{Market Cap} + \text{Assets}) / \text{Liabilities}$	Ratio

Source: Researchers (2026).

The study population comprised 47 banking companies listed on the Indonesia Stock Exchange (IDX) in 2024. The sample was selected using purposive sampling (Nohe et al., 2023) based on two criteria: (1) the availability of complete annual financial statements for the 2021–2024 period and (2) the availability of ESG scores throughout the same period. Accordingly, 12 banks met the selection criteria, yielding 48 firm-year observations (Table 5). Secondary data (Tanjung Mulyani., 2021) were obtained from annual reports published on the banks' official websites and ESG scores retrieved from the Refinitiv database through document analysis (Djaali, 2020).

Table 5. Research Sample

No.	Code	Bank Name
1	BBCA	PT Bank Central Asia Tbk
2	BBNI	PT Bank Negara Indonesia (Persero) Tbk
3	BMRI	PT Bank Mandiri (Persero) Tbk
4	BBRI	PT Bank Rakyat Indonesia (Persero) Tbk
5	BBTN	PT Bank Tabungan Negara (Persero) Tbk
6	BDMN	PT Bank Danamon Indonesia Tbk
7	BJTM	Bank Pembangunan Daerah Jawa Timur Tbk

No.	Code	Bank Name
8	BNGA	PT Bank CIMB Niaga Tbk
9	BNII	PT Bank Maybank Indonesia Tbk
10	BNLI	PT Bank Permata Tbk
11	BSIM	PT Bank Sinarmas Tbk
12	NISP	PT Bank OCBC NISP Tbk

Source: Indonesia Stock Exchange (<https://www.idx.co.id>).

The data were analyzed using panel data regression with the help of EViews 14 *Student Version* software. The analysis began with descriptive statistics (Wahyuni et al., 2018), followed by selection of the best model among the *Common Effect Model* (CEM), *Fixed Effect Model* (FEM), and *Random Effect Model* (REM) through the Chow test, the Hausman test, and the Lagrange Multiplier test (Priyatno, 2020). The classical assumption tests included the Jarque-Bera normality test, a multicollinearity test with the criterion that correlation coefficients among independent variables are less than 0.8, a heteroskedasticity test, and the Durbin-Watson autocorrelation test (Priyatno, 2020; Wahyuni et al., 2018; Ghozali, 2018). The structural models estimated are as follows.

$$\text{Sub-structure 1: ROA} = \alpha + \beta_1\text{ESG} + \beta_2\text{LDR} + \beta_3\text{NPL} + \beta_4\text{GCG} + e_1$$

$$\text{Sub-structure 2: Firm Value} = \alpha + \beta_1\text{ESG} + \beta_2\text{LDR} + \beta_3\text{NPL} + \beta_4\text{GCG} + \beta_5\text{ROA} + e_2$$

Mediation testing was carried out using the Sobel test, which tests the indirect relationship of the independent variable (X) to the dependent variable (Y) through the mediating variable (Z) (Soleman & Tiffanie Victoria, 2021). The standard error of the indirect effect is calculated with the formula $Sab = \sqrt{(b^2Sa^2 + a^2Sb^2 + Sa^2Sb^2)}$ and the t value = ab/Sab , where a is the path coefficient of X to Z, b is the path coefficient of Z to Y, and Sa and Sb are the standard errors of each coefficient (Ghozali, 2018). Mediation is deemed to occur if the calculated value is greater than the table value of 1.96. Partial hypothesis testing (t-test), simultaneous testing (F-test), and the coefficient of determination use a significance level of 0.05 (Wahyuni et al., 2018).

RESULTS AND DISCUSSION

Descriptive Statistics

The descriptive statistics of the research variables are presented in Table 6. The ESG score has a mean of 69.5463 with a standard deviation of 11.5861; the highest value of 88.7100 was recorded by PT Bank Rakyat Indonesia (Persero) Tbk in 2024 and the lowest value of 45.9900 by PT Bank Maybank Indonesia Tbk in 2022. LDR has a mean of 0.7967, with a highest value of 0.9800 (Bank Mandiri in 2024) and a lowest value of 0.5100 (Bank Jatim in 2021). NPL has a mean of 0.0252, with a highest value of 0.0400 (BNI and BTN in 2021) and a lowest value of 0.0100 (among others, Bank Mandiri in 2023 and 2024). GCG *self assessment* has a mean of 1.8958, with a highest value of 3.0000 (Bank Jatim in 2021–2024) and a lowest value of 1.0000 (among others, Bank OCBC NISP in 2021–2023). ROA has a mean of 0.0233, with a highest value of 0.0400 (BCA in 2023–2024) and a lowest value of 0.0100 (among others, BNI in 2021). Firm value (Tobin's Q) has a mean of 1.0613, with a highest value of 1.6500 (BCA in 2023) and a lowest value of 0.8200 (Bank Jatim in 2024).

Table 6. Descriptive Statistics

Statistic	ESG	LDR	NPL	GCG	ROA	Tobin's Q
Mean	69.5463	0.7967	0.0252	1.8958	0.0233	1.0613
Median	68.3800	0.8000	0.0300	2.0000	0.2000	0.9700
Maximum	88.7100	0.9800	0.0400	3.0000	0.0400	1.6500
Minimum	45.9900	0.5100	0.0100	1.0000	0.0100	0.8200
Std. Dev.	11.5861	0.1107	0.0077	0.5153	0.1098	0.2090
Observations	48	48	48	48	48	48

Source: Eviews data processing results (2026).

Panel Data Regression Model Selection and Classical Assumption Tests

The Chow test results for both sub-structures show a *cross-section* F probability of $0.0000 < 0.05$, so FEM is more appropriate than CEM. The Hausman test yields a probability of 0.0040 for sub-structure 1 and 0.0419 for sub-structure 2, both < 0.05 , so FEM is more appropriate than REM (Table 7). Because the Chow and Hausman tests consistently select FEM, the Lagrange Multiplier test does not need to be performed (Setiawanta et al., 2020; Handayani & Tahia, 2024).

Table 7. Chow Test and Hausman Test Results

Model	Test	Statistic	d.f.	Prob.
Sub-structure 1	Chow: Cross-section F	8.884330	(11, 32)	0.0000
	Chow: Cross-section Chi-square	67.185656	11	0.0000
	Hausman: Cross-section random	15.373007	4	0.0040
Sub-structure 2	Chow: Cross-section F	47.888578	(11, 31)	0.0000
	Chow: Cross-section Chi-square	138.718430	11	0.0000
	Hausman: Cross-section random	11.522581	5	0.0419

Source: EViews output, data processed by the researchers (2026).

The classical assumption test results are presented in Table 8. The Jarque-Bera probability is 0.679838 for sub-structure 1 and 0.765936 for sub-structure 2 (> 0.05), so the residuals are normally distributed. All correlation coefficients among the independent variables are below 0.8, so there is no multicollinearity. The probability of each variable in the heteroskedasticity test is greater than 0.05, so there is no heteroskedasticity. The Durbin-Watson values of 2.017841 (sub-structure 1) and 2.151564 (sub-structure 2) lie between 1 and 3, so there is no indication of an autocorrelation problem.

Table 8. Summary of Classical Assumption Test Results

Test	Sub-structure 1	Sub-structure 2
Normality (Jarque-Bera)	JB = 0.771801; Prob. = 0.679838	JB = 0.533312; Prob. = 0.765936

Test	Sub-structure 1	Sub-structure 2
Multicollinearity (highest correlation)	0.460467 (X3–X4)	0.661899 (X1–Z)
Heteroskedasticity (Prob. X1; X2; X3; X4; Z)	0.4823; 0.6383; 0.1743; 0.7267; –	0.2705; 0.0823; 0.2302; 0.5825; 0.9182
Autocorrelation (Durbin-Watson)	2.017841	2.151564
Conclusion	All assumptions are met	All assumptions are met

Source: Eviews output, data processed by the researchers (2026).

Panel Data Regression Results and Hypothesis Testing

The FEM estimation results for both sub-structures are presented in Table 9. In sub-structure 1, the regression equation formed is $ROA = 0.040133 - 0.0000336ESG + 0.001233LDR - 0.519608NPL - 0.001237GCG$. Only NPL has a significant negative effect on ROA (prob. 0.0011), while ESG (0.7630), LDR (0.9182), and GCG (0.7206) have no significant effect. In sub-structure 2, the regression equation formed is $Firm\ Value = 1.410513 - 0.001830ESG - 0.322364LDR - 1.922187NPL + 0.009514GCG + 2.796226ROA$. Only LDR has a significant negative effect on firm value (prob. 0.0035), while ESG (0.0632), NPL (0.2012), GCG (0.7487), and ROA (0.0746) have no significant effect.

Table 9. *Fixed Effect Model Regression Results*

Variable	Coef. SS1	t SS1	Prob. SS1	Coef. SS2	t SS2	Prob. SS2
C	0.040133	2.729700	0.0102	1.410513	10.07863	0.0000
ESG (X1)	-3.36E-05	-0.304092	0.7630	-0.001830	-1.927118	0.0632
LDR (X2)	0.001233	0.103503	0.9182	-0.322364	-3.156158	0.0035
NPL (X3)	-0.519608	-3.582129	0.0011	-1.922187	-1.305910	0.2012
GCG (X4)	-0.001237	-0.360835	0.7206	0.009514	0.323175	0.7487
ROA (Z)	–	–	–	2.796226	1.845087	0.0746
R-squared	0.896206			0.979607		
Adjusted R-squared	0.847552			0.969082		
F-statistic	18.42010			93.07205		
Prob(F-statistic)	0.000000			0.000000		
Durbin-Watson	2.017841			2.151564		

Note: SS1 = sub-structure 1 (dependent variable ROA); SS2 = sub-structure 2 (dependent variable Tobin's Q).

Source: EViews output (2026).

The F-test results show a $\text{Prob}(\text{F-statistic})$ of $0.000000 < 0.05$ for both sub-structures, so ESG, LDR, NPL, and GCG jointly have a significant effect on ROA, and ESG, LDR, NPL, GCG, and ROA jointly have a significant effect on firm value. The *Adjusted R-squared* value of sub-structure 1 of 0.847552 indicates that the independent variables can explain 84.76% of ROA, while 15.24% is influenced by other variables. The *Adjusted R-squared* value of sub-structure 2 of 0.969082 indicates that the independent variables and ROA can explain 96.91% of firm value, while 3.09% is influenced by other variables.

The Sobel test results with a table Z of 1.96 are presented in Table 10. All calculated Z values are smaller than 1.96, so ROA does not mediate the effect of ESG, LDR, NPL, or GCG on firm value. On the NPL path, although NPL is shown to affect ROA, the change in ROA caused by NPL has not produced a significant indirect effect on firm value. A summary of the decisions on all hypotheses is presented in Table 11.

Table 10. Mediation Test Results (Sobel Test)

Independent Variable	Calculated Z	Table Z	p-value	α	Conclusion
X1 (ESG)	-0.298709	1.96	0.7630	0.05	Does not mediate
X2 (LDR)	0.103347	1.96	0.9182	0.05	Does not mediate
X3 (NPL)	-1.640282	1.96	0.0011	0.05	Does not mediate
X4 (GCG)	-0.354242	1.96	0.7260	0.05	Does not mediate

Source: Sobel test results by the researchers (2026).

Table 11. Summary of Hypothesis Testing Results

Code	Hypothesis	Result	Decision
H1	ESG $\rightarrow$ ROA	Not significant	Rejected
H2	ESG $\rightarrow$ Firm Value	Not significant	Rejected
H3	LDR $\rightarrow$ ROA	Not significant	Rejected
H4	LDR $\rightarrow$ Firm Value	Significant negative	Accepted
H5	NPL $\rightarrow$ ROA	Significant negative	Accepted
H6	NPL $\rightarrow$ Firm Value	Not significant	Rejected
H7	GCG $\rightarrow$ ROA	Not significant	Rejected
H8	GCG $\rightarrow$ Firm Value	Not significant	Rejected
H9	ROA $\rightarrow$ Firm Value	Not significant	Rejected
H10– H13	ESG, LDR, NPL, GCG $\rightarrow$ ROA $\rightarrow$ Firm Value	Does not mediate	Rejected

Source: Results of data analysis (2026).

The Effect of ESG Implementation on ROA and Firm Value

ESG implementation has no significant effect on ROA (coefficient -3.36E-05; prob. 0.7630). The negative direction of the coefficient is consistent with Bahadir & Akarsu (2024), who argue that ESG practices carry financial consequences because companies must allocate resources to meet the environmental, social, and governance aspects, which in the short term can increase expenses and depress the rate of return on assets. This result is also supported by Naeem et al. (2022), who found that overall ESG performance has no significant relationship with ROA, both in the full sample and among companies in developing countries, because ESG strategies incur organizational costs, whereas ROA, as an accounting-based measure, encompasses a broader range of company activities. Thus, the economic benefits of ESG may only be felt by companies in the long term.

ESG implementation also has no significant effect on firm value (coefficient -0.001830; prob. 0.0632). This result is consistent with Chininga et al. (2024), who found that the ESG coefficient on Tobin's Q is negative and insignificant in the FEM and REM estimations, and

with Panko (2026), who found that ESG performance has no significant linear effect on firm value. The market does not necessarily reward increased ESG activity directly, because its implementation requires substantial resources and investment, whereas its benefits for reputation, risk management, and stakeholder trust may only be realized in the long term. Firm value is influenced more by the persistence of firm value and by financial fundamentals, while ESG plays a relatively secondary, contextual, and possibly nonlinear role.

The Effect of LDR on ROA and Firm Value

LDR has no significant effect on ROA (coefficient 0.001233; prob. 0.9182). This result is consistent with Hakim et al. (2023), who found that increases or decreases in LDR have not been able to exert a significant effect on banking ROA, and with Chabachib et al. (2019), who found that LDR has no significant effect on ROA at domestic banks in Indonesia. The volume of credit disbursed does not directly determine a bank's ability to generate profit, because the effect also depends on credit quality, liquidity management, and the costs and risks that accompany lending.

Conversely, LDR has a significant negative effect on firm value (coefficient -0.322364; prob. 0.0035). This result is consistent with Vellati & Oktaviani (2024), who found that LDR has a significant negative effect on Tobin's Q, and is reinforced by Makkulau et al. (2024), who found that *risk profile*, with LDR as one of its indicators, has a significant negative effect on firm value. An increase in LDR reflects a greater share of third-party funds being channeled as loans; if it is not accompanied by good liquidity management and credit quality, this condition increases the bank's risk and becomes a negative signal to investors regarding the bank's business continuity, thereby lowering the company's market value.

The Effect of NPL on ROA and Firm Value

NPL has a significant negative effect on ROA (coefficient -0.519608; prob. 0.0011), which means that the higher the NPL, the lower the bank's ability to generate profit from its assets. This result is consistent with Salsabila et al. (2024), Sochib et al. (2023), and Tangngisalu et al. (2020), who found a significant negative effect of NPL on ROA at conventional banks in Indonesia. An increase in NPL reflects a deterioration in credit quality, so the bank faces the risk of not receiving principal and interest payments optimally, as well as rising costs of collecting and resolving problem loans, which erode net profit (Salsabila et al., 2024).

NPL has no significant effect on firm value (coefficient -1.922187; prob. 0.2012). This result is consistent with Hossain & Golder (2022), who found that NPL has no effect on Tobin's Q at banks listed on the Dhaka Stock Exchange, and with Mkalaf & Hilo (2023), who found that credit risk has no effect on banks' market value. Investors do not base their assessment solely on the level of non-performing loans, but also consider the bank's ability to generate profit, growth prospects, operational efficiency, macroeconomic conditions, and risk management strategy.

The Effect of GCG Implementation on ROA and Firm Value

GCG *self assessment* has no significant effect on ROA (coefficient -0.001237; prob. 0.7206). This result is consistent with Nurkhin et al. (2023), who found that GCG implementation measured through *self assessment* has no significant effect on ROA at Islamic banks in Indonesia, and with Wulansari & Chandra (2022), who showed a negative and insignificant relationship between GCG and ROA. Implementing governance requires

consistency, time, and effectiveness in the bank's operational activities, so the quality of governance reflected in *self assessment* scores does not necessarily have a direct impact on profitability.

GCG also has no significant effect on firm value (coefficient 0.009514; prob. 0.7487). This result is consistent with Mukhtaruddin et al. (2019), who found a positive but insignificant relationship between GCG based on *self assessment* and the firm value of banks in Indonesia, and with Wulansari & Chandra (2022), who found that GCG *self assessment* has no effect on Tobin's Q at commercial banks on the IDX. Information on governance implementation is not necessarily a primary consideration for investors, who are more oriented toward profitability, risk, growth, and market conditions.

The Effect of ROA on Firm Value

ROA has no significant effect on firm value (coefficient 2.796226; prob. 0.0746). This result is consistent with Agustiani (2016), who found that ROA has no significant effect on firm value, and with Robiyanto et al. (2020), who found that ROA and ROE have a negative but insignificant effect on Tobin's Q. Although ROA describes management's ability to manage assets to generate profit, investors also consider growth prospects, risk, capital structure, industry conditions, and expectations of future performance in determining a company's market value.

The Mediating Role of ROA

ROA does not mediate the effect of ESG on firm value (calculated $Z -0.298709 < 1.96$). This result is consistent with Akbar & Setiana (2024), who found that ROA does not mediate the effect of ESG on the firm value of energy and mineral sector companies in Indonesia, and with Nugroho & Nilmawati (2026) for non-financial IDX ESG Leaders companies. ESG implementation requires investment and costs in the early stages, while its economic benefits are long term, and Tobin's Q reflects investor expectations that do not always follow changes in accounting profitability in the same period. ROA also does not mediate the effect of LDR on firm value (calculated $Z 0.103347$). This result is consistent with Hakim & Sugianto (2018), who found that LDR has no significant effect on ROA and that ROA has no significant effect on Tobin's Q, and with Asriyani & Mawardi (2018), who found that ROA does not mediate the effect of LDR on firm value proxied by PBV.

ROA does not mediate the effect of NPL on firm value (calculated $Z -1.640282$). This result is consistent with Hakim & Sugianto (2018) and Asriyani & Mawardi (2018), who found that ROA does not function as a mediating variable in the effect of NPL on firm value. NPL can be perceived directly by investors as an indicator of credit risk and asset quality, so it does not necessarily have to affect profitability first before the market responds. Furthermore, ROA does not mediate the effect of GCG on firm value (calculated $Z -0.354242$). This result is consistent with Saputri & Isbanah (2021), who found that ROA does not mediate the effect of GCG mechanisms on Tobin's Q, and with Anzani & Simatupang (2024) for companies in the *healthcare* sector. Investors can assess the quality of governance directly through information on the company's structure and oversight mechanisms, while ROA better reflects the company's internal ability to generate profit.

This study has limitations, namely a limited research period that cannot yield long-term conclusions, and limited access to Refinitiv ESG scores, which resulted in a small sample size. The scope of the study is also limited to banking companies on the IDX that have Refinitiv

ESG scores during 2021–2024, the use of aggregate ESG scores without separating the *Environmental*, *Social*, and *Governance* pillars, and financial performance focused on LDR and NPL. Therefore, the results are better understood as empirical evidence in that context and are not intended to be generalized directly to non-banking sectors.

CONCLUSION

Based on the testing of 13 hypotheses examining the effects of environmental, social, and governance (ESG) performance, financial performance, and good corporate governance (GCG) on firm value, with return on assets (ROA) as a mediating variable, among Indonesian banking companies during the 2021–2024 period, only two hypotheses were supported. The results revealed that the nonperforming loan (NPL) ratio had a statistically significant negative effect on ROA, while the loan-to-deposit ratio (LDR) had a statistically significant negative effect on firm value, as measured by Tobin's Q. Conversely, ESG performance had no statistically significant effect on either ROA or firm value. Similarly, LDR had no significant effect on ROA, NPL had no significant effect on firm value, and GCG had no significant effect on either ROA or firm value. Furthermore, ROA did not significantly affect firm value and did not significantly mediate the relationships between ESG performance, LDR, NPL, GCG, and firm value. These findings indicated that credit risk and liquidity were important factors associated with profitability and firm value, respectively, whereas the other relationships examined were not statistically significant during the study period.

Future research should incorporate additional financial and nonfinancial variables to provide a more comprehensive understanding of the determinants of firm value. Further studies could also extend the analysis to other industry sectors to examine whether the relationships among ESG performance, financial indicators, corporate governance, profitability, and firm value differ across industries. Additionally, extending the observation period beyond 2021–2024 and increasing the sample size could improve the robustness and generalizability of the findings. From a practical perspective, this study provides insights for investors evaluating Indonesian banking companies by highlighting the importance of credit risk management, liquidity conditions, and financial performance alongside ESG considerations in investment decision-making.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest in this study and that they are free from commercial or financial relationships that could potentially give rise to a conflict of interest.

AUTHOR CONTRIBUTIONS

In this study, the contributions of each author are detailed as follows. Author 1 was responsible for drafting, analysis, and writing the manuscript, while Author 2 was responsible for the concept as well as guidance and supervision of the writing of all sections/chapters.

GENERATIVE ARTIFICIAL INTELLIGENCE USAGE STATEMENT

In preparing this manuscript, the authors used artificial intelligence (AI), with its use limited solely to grammar improvement and language checking.

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