

THE INFLUENCE OF ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) RATING AND FINANCIAL RATIOS ON SUSTAINABLE GROWTH RATE (SGR) MODERATED BY DIGITAL BANKING (DB) IN BANKING COMPANIES LISTED ON THE INDONESIA STOCK EXCHANGE (IDX) FOR THE 2020–2024 PERIOD

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Abstract

The purpose of this study is to obtain empirical evidence of the effect of Environmental Social and Governance (ESG) Rating and Financial Ratio, namely Loan to Deposit Ratio (LDR) and Non-Performing Loan (NPL) on Sustainable Growth Rate (SGR) moderated by Digital Banking (DB) in banking companies listed on the Indonesia Stock Exchange (IDX). Research data was obtained from the annual financial statements of the banking sector listed on the IDX for the 2020-2024 period. The data analysis technique used was multiple regression analysis with the help of the SPSS application. The results of the study show that ESG, NPL, and DB variables have an effect on SGR. For the LDR variable, there was no effect on the SGR of banking companies listed on the IDX during the research period. These findings suggest that banks' sustainable growth is affected by the quality of ESG governance, credit risk management, and digital transformation. The implication of this study is that companies need to pay attention to internal and external factors that can affect the Sustainable Growth Rate (SGR).

Keywords: *Environmental Social and Governance (ESG), Loan to Deposit Ratio (LDR), Non-Performing Loan (NPL), Digital Banking, Sustainable Growth Rate (SGR).*

INTRODUCTION

The banking industry plays a vital role in the stability and economic growth of a country. As a financial intermediary institution, banks not only serve as a bridge between parties that have funds (investors) and those that require funds (issuers), but also contribute to environmental, social, and governance sustainability (Environmental, Social, and Governance/ESG). ESG contributions must also be supported by banks' commitment to maintaining asset quality through Non-Performing Loans (NPL) and maintaining the stability of the Loan to Deposit Ratio (LDR) as an indicator of the bank's ability to distribute credit from third-party funds. The role of digital technology, such as Digital Banking (DB), is also important in improving efficiency so that the company's financial performance increases. In Indonesia, the development of the banking industry has experienced significant dynamics along with changes in monetary policy, global economic conditions, and rapid technological advancements. This can be seen from the average value of Return on Equity (ROE), which remained positive from 2020 to 2024. Financial performance indicators or financial ratios are used to measure the quality of financial performance and the achievement of company performance. Profitability ratios are considered the most appropriate ratios to measure bank financial performance. One of these ratios is Return on Equity (ROE), as it focuses on how much income a bank can generate from its equity. ROE is an important indicator for measuring the Sustainable Growth Rate (SGR), which describes the maximum growth rate that a company can achieve without adding external financing or significantly altering its leverage structure. Thus, SGR represents a company's ability to grow in a healthy and sustainable manner based on its internal capacity. The implementation of Environmental, Social, and Governance (ESG) represents management's commitment in responding to sustainability issues that have become a global concern. ESG can enhance corporate reputation, reduce non-financial risks, and strengthen the company's position. In the banking industry, ESG also affects risk management and operational efficiency, which in turn influence long-term growth capacity.

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In addition to ESG, financial ratios serve as fundamental indicators in assessing the health of the banking sector. The Loan to Deposit Ratio (LDR) reflects a bank's ability to manage liquidity, while Non-Performing Loans (NPL) indicate the level of credit risk. High NPL levels can reduce profitability, which in turn can affect the bank's sustainable growth. Advancements in information technology have encouraged digital transformation in the banking sector through Digital Banking. The digitalization of services enables improvements in operational efficiency, expansion of service reach, and strengthening of relationships between banks and customers. Theoretically, digital banking can strengthen the positive influence of ESG on growth while reducing the negative impact of credit risk.

Although many studies have examined the influence of ESG on financial performance, most still focus on profitability indicators (ROA, ROE) and firm value. Research analyzing the influence of ESG, financial ratios, and digital banking on Sustainable Growth Rate remains limited, particularly in Indonesia. Based on this background, this study aims to analyze the influence of ESG, LDR, and NPL on SGR with Digital Banking as a moderating variable. Theoretically, this research expands the ESG literature by linking it to Sustainable Growth Rate (SGR), not merely profitability. This study also integrates stakeholder theory and dynamic capability theory within the context of sustainable finance. Practically, the findings of this study provide implications for bank management in designing sustainable growth strategies based on ESG and digital transformation.

LITERATURE REVIEW

Sustainable Growth Rate (SGR)

SGR is a concept used to measure the maximum growth rate that a company can achieve without external equity financing. In the banking context, SGR reflects a bank's ability to expand its assets and credit based on internal equity or Return on Equity (ROE). SGR is influenced by profitability, dividend policy, and operational efficiency. Banks with stable profit growth and controlled risk tend to have higher SGR (Roziqin, 2024).

ESG and Sustainable Growth

Stakeholder theory states that companies that pay attention to stakeholder interests will gain public trust and achieve long-term sustainable growth. Proper ESG implementation can reduce reputational risk, increase customer loyalty, and lower the cost of capital. Therefore, ESG has the potential to improve a company's sustainable growth capacity. Although companies are required to generate profits, this does not mean that such activities should be carried out unethically, arbitrarily, or by ignoring the interests of society. In this regard, companies also have social obligations (Corporate Social Responsibility/CSR). In addition, companies need to be managed properly through Good Corporate Governance (GCG) in order to grow and provide benefits for stakeholders (Asnawi, 2025).

Loan to Deposit Ratio (LDR) and Sustainable Growth

LDR measures the proportion of loans to third-party funds. A ratio that is too high increases liquidity risk, while a ratio that is too low indicates that the distribution of funds is not optimal. The influence of LDR on growth is not always linear because banking regulations limit the range of this ratio. Banks are required to comply with regulations regarding the Minimum Reserve Requirement (Giro Wajib Minimum/GWM) based on the Loan to Deposit Ratio (LDR) to avoid penalties (disincentives) if the ratio does not comply with the provisions of Bank Indonesia Regulation No. 15/7/PBI/2013 dated September 26, 2013 (Bank Indonesia, 2013). In addition, banks are required to channel credit to productive sectors, particularly Micro, Small, and Medium Enterprises (MSMEs), in order to obtain incentives in the form of flexibility in fulfilling financial ratio requirements in accordance with Bank Indonesia Regulation No. 22/4/PBI/2020 dated March 27, 2020 (Bank Indonesia, 2020). All policies issued by regulators, both Bank Indonesia (BI) and the Financial Services Authority (OJK), aim to create a stable, liquid, and conducive banking environment for sustainable economic growth and sustainable growth for companies.

Non-Performing Loans (NPL) and Sustainable Growth

High NPL levels increase provisioning costs and reduce profits. Since SGR is highly dependent on retained earnings or Return on Equity (ROE), an increase in NPL has the potential to reduce the bank's sustainable growth capacity. Bank Indonesia, through Bank Indonesia Regulation (PBI) No. 6/9/PBI/2004 Chapter II Article 2 paragraph 2 letter f, stipulates that the ratio of non-performing loans (NPL) should not exceed 5% (Bank Indonesia, 2004). According to the Pefindo journal (IdScorel, 2024), several methods can be used to resolve Non-Performing Loans (NPL), namely rescheduling, reconditioning, restructuring, and collateral foreclosure. All these efforts aim to reduce the value of uncollectible receivables that become a burden for the company.

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Digital Banking as a Moderating Variable

Dynamic capability theory explains that an organization’s ability to utilize technology can enhance competitiveness. Digital banking enables operational cost efficiency, credit monitoring based on data analytics, increased transparency in ESG implementation, and digital-based market expansion. Therefore, Digital Banking can strengthen the influence of ESG on Sustainable Growth Rate (SGR).

METHOD

This study uses a quantitative approach with a research design aimed at understanding the relationship between independent variables moderated by one variable on a dependent variable. The quantitative approach is chosen because this study aims to measure the magnitude of the influence of independent variables (ESG, LDR, and NPL), moderated by Digital Banking (DB), on the dependent variable, Sustainable Growth Rate (SGR). The population in this study consists of all banks classified under KBMI (Core Capital Bank Group) III and IV listed on the Indonesia Stock Exchange (IDX) during the research period. The sampling technique used is purposive sampling with criteria including the publication of complete annual reports, availability of ESG data, and disclosure of digital banking data.

The operational definitions of variables are as follows:

Table 1. Operational Definitions of Variables

Variable	Indicator	Measurement
ESG (X1)	Environmental, Social, and Governance (ESG) Value	ESG Score
LDR (X2)	Loan to Deposit Ratio (LDR)	Total Loan / Total Deposit
NPL (X3)	Non-Performing Loan (NPL) Value	Total NPL / Total Credit
Digital Banking (M1)	Digital Banking (DB) Value	Total Digital Transactions / Total Transactions
SGR (Y)	Sustainable Growth Rate (SGR) Value	ROE × (1 – Dividend Payout)

Data analysis techniques were carried out using descriptive statistics, classical assumption tests, panel data regression, moderated regression analysis (MRA), with the following regression models:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4M_1_X_1 + \beta_5M_1_X_2 + \beta_6M_1_X_3 + \varepsilon$$

Hypothesis testing aims to determine whether there is sufficient evidence to support or reject the null hypothesis (initial statement) using the t-test (partial) and F-test (simultaneous), as well as the coefficient of determination (R²) to measure the strength of the relationship. The following is an overview of the research hypothesis model:

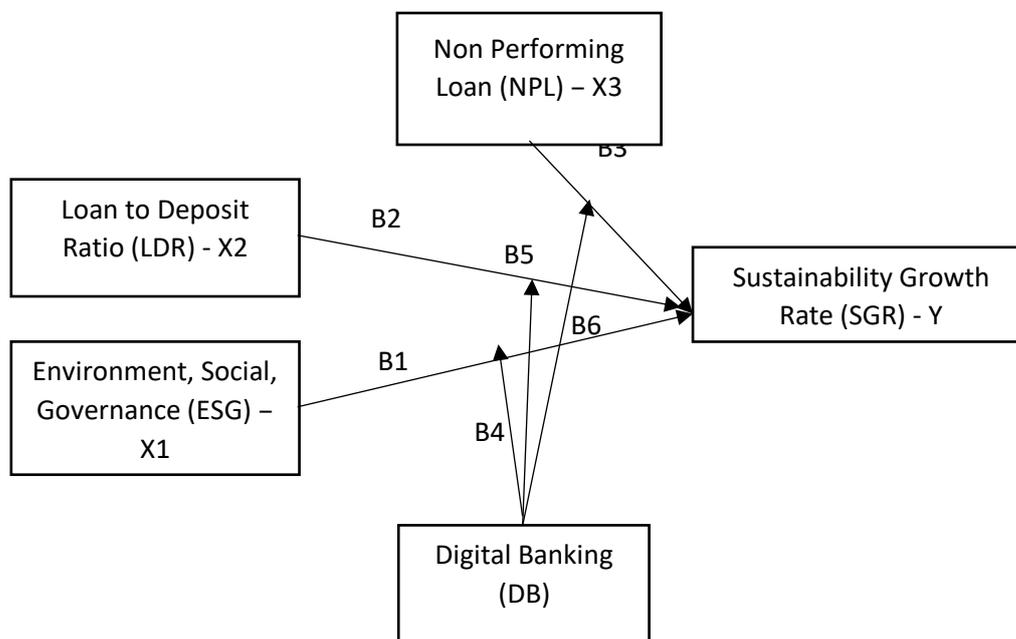


Figure 1. Research Hypothesis Model

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RESULTS AND DISCUSSION

Descriptive Statistics

Descriptive statistical analysis included the mean, maximum, minimum, and standard deviation values of the 15 research samples, with the following results:

Table 2. Descriptive Analysis Results

Variable	Sustainable Growth Rate – SGR (Y)	Environmental, Social, Governance – ESG (X1)	Loan to Deposit Ratio – LDR (X2)	Non-Performing Loan – NPL (X3)	Digital Banking – DB (M)
Mean	7.19%	25.01%	89.63%	2.41%	76.89%
Maximum	16.44%	37.71%	162.24%	4.37%	99.81%
Minimum	1.11%	9.84%	60.04%	0.55%	10.00%
Std. Deviation	8.43%	4.82%	22.31%	0.93%	24.09%

Source: (Processed with Excel and SPSS 22) 1

Descriptive statistics show that the Sustainable Growth Rate (SGR) for commercial banks has a minimum value of 1.11%, indicating very low sustainable growth of only 1.11% per year of profit. The maximum value is 16.44%, indicating very high sustainable growth due to significant net profit growth and conservative dividend distribution. The mean or average Sustainable Growth Rate (SGR) is 7.19%, indicating the bank's ability to achieve sustainable growth of 7.19% per year of net profit and pay its liabilities from total equity and assets without additional external funding from 2020 to 2024. For the Environmental, Social, and Governance (ESG) variable, the minimum ESG rating of 9.84% is categorized as Negligible, meaning it is considered to have negligible ESG risk. Meanwhile, the maximum score of 37.71% indicates an ESG rating in the High category, considered to have high ESG risk. This assessment indicates significant weaknesses in the management of environmental, social, and governance issues. The mean Environmental, Social, and Governance (ESG) score of 25.00% indicates that the average bank from 2020 to 2024 fell into the Medium category, considered to have moderate ESG risk.

The Loan to Deposit Ratio (LDR) variable had a minimum value of 60.04, indicating that Third Party Funds (TPF) grew faster than the decline in credit distribution, partly due to the COVID-19 pandemic. Meanwhile, the maximum score of 162.24% indicates that the bank disbursed more credit than Third Party Funds (TPF), thus relying on external funding sources. The mean Loan to Deposit Ratio (LDR) of 89.63% from 2020 to 2024 is considered ideal by the Financial Services Authority (OJK), indicating that the majority of Third Party Funds (DPK) collected by banks are redistributed in the form of loans, while maintaining bank liquidity. For the Non-Performing Loan (NPL) variable, the minimum value of 0.55% indicates a very low level of non-performing loans, thus categorizing asset quality and credit risk management as very good. Meanwhile, the maximum value of 4.37% indicates a relatively high level of non-performing loans, although still below the OJK's safe NPL limit of <5%. The mean Non-Performing Loan (NPL) value of 2.40% indicates that the bank's average non-performing loan level is relatively safe, despite facing the COVID-19 pandemic and economic recovery. For the Digital Banking (DB) variable, the minimum value is 10.00%, indicating that digital services are still very limited. The maximum value of 99.81% indicates the success of the bank's digital transformation, resulting in a shift in customer activities to digital systems. The mean Digital Banking (DB) value of 76.89% indicates that the digital transformation of Indonesian banking is very rapid, although it is not evenly distributed due to the fact that some banks with traditional customer profiles have not yet expanded their digital services.

Classical Assumption Test

The Normality Test is used to determine whether the confounding variables or residuals in the regression model have a normal distribution. The Kolmogorov-Sminov (KS) test method can be used to test the normality of residuals.

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Table 3. Normality Test Results

<i>Kolmogorove-Smirnove</i>	<i>Asymp.Sig</i>	Criteria	Information
0,085	0,2	> 0,05	Normally Distributed

Source: Processed data 2025

The results of the normality test show an Asymp.Sig value of 0.200, which is greater than 0.05, indicating a normal distribution of the data. The multicollinearity test aims to determine whether the regression model detects correlation between independent variables. A good regression model should have no correlation between independent variables. To determine the presence of multicollinearity in a regression model, the Variance Inflation Factor (VIF) value can be seen.

Table 4. Multicollinearity Test Results

Variable	Tolerance	VIF	Description
ESG	0.102	9.790	No Multicollinearity
LDR	0.157	6.382	No Multicollinearity
NPL	0.278	3.599	No Multicollinearity
DB	0.025	40.442	Multicollinearity Occurs
ESG × DB	0.039	25.624	Multicollinearity Occurs
LDR × DB	0.070	14.258	Multicollinearity Occurs
NPL × DB	0.205	4.882	No Multicollinearity

Source: Processed data 2025

The results of the multicollinearity test indicate that the ESG, LDR, NPL, and DB-moderated NPL variables have

tolerance values of less than 1 and VIF values of less than 10, indicating that the data do not experience multicollinearity. Meanwhile, the DB, ESG, DB-moderated, and DB-moderated LDR variables have VIF values greater than 10, indicating that the data experience multicollinearity. The heteroscedasticity test aims to determine whether there is unequal variance in the residuals or other observations in the regression model. There are several methods to determine the presence or absence of heteroscedasticity in a regression model, but this study uses the Glejser test.

Table 5. Heteroscedasticity Test Results

Variable	t-Statistic	Sig.	Description
ESG	-1.672	0.099	No Heteroscedasticity
LDR	-0.511	0.611	No Heteroscedasticity
NPL	-0.066	0.948	No Heteroscedasticity
DB	-2.137	0.036	Heteroscedasticity Occurs
ESG × DB	1.757	0.084	No Heteroscedasticity
LDR × DB	0.350	0.727	No Heteroscedasticity
NPL × DB	2.345	0.022	Heteroscedasticity Occurs

Source: Processed data 2025

Heteroscedasticity test results show that the variables ESG, LDR, NPL, ESG moderated by DB, and LDR moderated by DB have a Sig. value > 0.05, indicating no heteroscedasticity. Meanwhile, the variables DB and NPL moderated by DB have a Sig. value < 0.05, indicating heteroscedasticity.

Multivariable Regression Analysis

Multivariable regression is used to analyze multivariate data. This analysis is used to examine the extent and direction of the independent variables' influence on the dependent variable.

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Table 6. Multivariable Regression Test Results

Variable	Coefficient (β)	Description
ESG	-0.678	An increase of 1 unit in ESG decreases SGR by 0.678 units
LDR	-0.065	An increase of 1 unit in LDR decreases SGR by 0.065 units
NPL	-1.499	An increase of 1 unit in NPL decreases SGR by 1.499 units
DB	-0.279	An increase of 1 unit in DB decreases SGR by 0.279 units
ESG \times DB	0.780	An increase of 1 unit in ESG \times DB increases SGR by 0.780 units
LDR \times DB	0.031	An increase of 1 unit in LDR \times DB increases SGR by 0.031 units
NPL \times DB	1.127	An increase of 1 unit in NPL \times DB increases SGR by 1.127 units

Source: Processed data 2025 4

The results of the multivariable regression test show that the regression coefficient for Environmental, Social, and Governance – ESG (X1) is minus 0.678, indicating that every 1-unit increase in the Environmental, Social, and Governance – ESG score reduces the Sustainability Growth Rate – SGR by 0.678. The regression coefficient for Loan to Deposit Ratio – LDR (X2) is minus 0.065, indicating that every 1-unit increase in the Loan to Deposit Ratio – LDR scores reduces the Sustainability Growth Rate – SGR by 0.135. The regression coefficient for Non-Performing Loans – NPL (X3) is minus 1.499, indicating that every 1-unit increase in Non-Performing Loans – NPL scores reduces the Sustainability Growth Rate – SGR by 1.499. The regression coefficient for Digital Banking – DB (M1) of minus 0.279 indicates that every 1-unit increase in the Digital Banking – DB value decreases the Sustainability Growth Rate (SGR) by 0.279. The regression coefficient for ESG moderated Digital Banking – DB (X1M1) of minus 0.780 indicates that every 1-unit increase in ESG moderated Digital Banking – DB value increases the Sustainability Growth Rate (SGR) by 0.780. The regression coefficient for LDR moderated Digital Banking – DB (X2M1) of 0.031 indicates that every 1-unit increase in LDR moderated Digital Banking – DB value increases the Sustainability Growth Rate (SGR) by 0.031. The regression coefficient of NPL moderated by Digital Banking – DB (X3M1) of 1.127 indicates that every 1 unit increase in NPL moderated by Digital Banking – DB results in a 1.127 increase in the Sustainability Growth Rate (SGR).

Hypothesis Testing

This test was conducted to verify the hypothesis based on existing research. This test included a t-test, an F-test, and a coefficient of determination.

Table 7. Hypothesis Testing Results

Variable	t-Statistic	Sig.	Description
ESG	-2.643	0.005	Significant
LDR	-1.466	0.073	Not Significant
NPL	-1.868	0.033	Significant
DB	-2.681	0.004	Significant
ESG \times DB	2.418	0.009	Significant
LDR \times DB	0.460	0.323	Not Significant
NPL \times DB	1.208	0.115	Not Significant

Note: Significant < 0.05

Source: Processed data 2025

The hypothesis testing results obtained a calculated F-value of 2.967 with an F-significant $0.009 < 0.05$. Therefore, H_0 is rejected and H_a is accepted. This means that Environmental, Social, and Governance (ESG) (X1), Loan to Deposit Ratio (LDR) (X2), Non-Performing Loan (NPL) (X3), and Digital Banking (DB) simultaneously have a significant effect on Sustainable Growth Rate (SGR) (Y). The significance test (t-test) revealed that the Environmental, Social, and Governance (ESG) variable had a value of -2.643 with a Significant $0.005 < 0.05$, indicating that the ESG variable had a significant effect on SGR. The calculated t-value for the Loan to Deposit Ratio (LDR) variable was -1.466 with a Significant $0.073 > 0.05$, indicating that the LDR variable has no significant effect on the SGR. The calculated t-value for the Non-Performing Loan (NPL) variable is -1.868 with a Sig. of $0.033 < 0.05$, indicating that the NPL variable has a significant effect on the SGR. The Digital Banking (DB) variable is -2.681 with a Sig. of $0.004 < 0.05$, indicating that the DB variable has a significant effect on the SGR.

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The calculated t-value for the ESG variable moderated by DB is 2.418 with a Sig. of $0.009 < 0.05$, indicating that the ESG variable moderated by DB has a significant effect on the SGR. The LDR variable moderated by DB is 0.460 with a Sig. of $0.323 > 0.05$, indicating that the LDR variable moderated by DB has no significant effect on the SGR. The NPL variable moderated by DB is 1.208 with a Sig. $0.115 > 0.05$ means that the NPL variable moderated by DB has no significant effect on SGR. In conclusion, digital banking can only moderate ESG, but not LDR and NPL.

Discussion

The Effect of ESG on Sustainable Growth Rate

The results of this study indicate that ESG has a significant influence on sustainable growth. This finding suggests that banks with strong ESG performance tend to gain greater investor trust and stronger funding stability, enabling them to increase retained earnings and Return on Equity (ROE) as sources of internal growth. This finding expands previous literature that primarily linked ESG with profitability, as the results demonstrate that ESG also contributes to long-term growth capacity or Sustainable Growth Rate (SGR). A low SGR indicates a company's inability to achieve sustainable growth through net income, whereas a high SGR indicates that the company is able to grow sustainably without altering its existing capital structure. Furthermore, a high SGR level has the potential to attract investors to invest in the company because it indicates better company performance prospects and ensures the company's financial stability with a lower ESG risk level (Nimas Dewi Lestari, Nanik Wahyuni, 2025).

The Effect of LDR on Sustainable Growth Rate

The insignificant effect of the Loan to Deposit Ratio (LDR) on the Sustainable Growth Rate (SGR) indicates that bank liquidity is relatively maintained within regulatory limits and therefore does not directly affect the sustainable growth of banking institutions. A high LDR can partially influence an increase in Return on Equity (ROE) because greater credit distribution will generate higher interest income. Increased interest income will enhance company profitability and increase ROE, which is the main component of Sustainable Growth Rate (SGR) as an indicator of a bank's ability to grow sustainably without requiring additional external capital. LDR also plays an important role as an indicator reflecting the level of credit expansion carried out by banks and can therefore be used to measure the bank's intermediary function (Maramis et al., 2024).

The Effect of NPL on Sustainable Growth Rate

The negative effect of Non-Performing Loans (NPL) on SGR is consistent with financial risk theory. High NPL levels reduce net profit and Return on Equity (ROE), which are indicators of the company's financial performance, thereby narrowing the company's capacity for expansion from internal funds. Lending is the core business of banks. NPL (Non-Performing Loan) refers to bank loans that fail to be repaid by borrowers according to the agreed terms, which can have negative consequences for the bank as the lender (Khairi, 2021). One of the ratios used to assess bank performance from the perspective of business risk is the NPL ratio. A high NPL will increase costs, including provisions for productive assets and other operational expenses, which significantly affect the bank's financial performance. Therefore, in calculating the Bank Sustainable Performance (BSP) index, one of the indicators used is NPL (Jim Hoy Yam, 2023).

The Effect of Digital Banking on Sustainable Growth Rate

Digital Banking (DB) is proven to strengthen the influence of ESG on SGR. Digital transformation improves transparency and efficiency, enabling ESG implementation to become more effective in promoting sustainable growth. Digital transformation in the banking sector requires significant investment in information technology, employee training, and continuous changes in business processes. In addition, banks must also address various challenges such as data security, regulatory compliance, and resistance to change (Judijanto et al., 2024). Despite the challenges in its implementation, the adoption of more innovative technologies and policies that support sustainability can help the banking sector contribute more significantly to environmental sustainability. In the future, the integration of digital technology and sustainability principles will become a key factor in creating a greener and more sustainable banking system (Putri Amelia, 2025).

CONCLUSION

This study concludes that ESG has a significant positive effect on SGR. Meanwhile, NPL has a significant negative effect on SGR. The insignificant effect of LDR on SGR is because the level of credit distribution does not

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directly determine a bank's ability to grow sustainably, especially when the funding structure is relatively stable, credit risk is controlled, and bank profitability is stable due to good efficiency. Meanwhile, Digital Banking strengthens the influence of ESG and weakens the negative impact of NPL on SGR. This indicates that digitalization can reduce the impact of NPL through a customer data validation system before credit disbursement, thus anticipating the tendency for payment failure or non-performing loans. Thus, sustainable banking growth is determined by a combination of management commitment to sustainable growth, risk management, and digital transformation.

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