JASa (Jurnal Akuntansi, Audit dan Sistem Informasi Akuntansi)
ISSN 2550-0732 print / ISSN 2655-8319 online
Vol. 10 No. 2 / August 2026
DOI;10.36555/jasa.v10i2.3033

An Analysis of the Impact of the RGEC Framework on Profitability in the Indonesian Banking Sector (2020–2024)

Rivai Adhi Wijaya Harmianto*[1], Andri Prastiwi[1]
Universitas Diponegoro, Indonesia[1]
*Coresponding Email : rivaiadhiwh@students.undip.ac.id

ABSTRACT

This study aims to analyze the impact of the RGEC framework (Risk Profile, Good Corporate Governance, Earnings, and Capital) on banking profitability in Indonesia, proxied by Return on Assets (ROA). The population consists of all banks operating in Indonesia, with a purposive sampling technique resulting in 230 observations over the 2020–2024 period. A quantitative approach is employed using multiple linear regression based on panel data. In addition, classical assumption tests—including multicollinearity, heteroskedasticity, autocorrelation, normality, and cross-section dependence—are conducted to ensure the validity of the model. The results indicate that BOPO, as a proxy for operational efficiency, and CAR, representing capital adequacy, have a significant effect on ROA. In contrast, NPL, LDR, NIM, and GCG do not show statistically significant effects on profitability. However, the findings also reveal violations of classical assumptions, particularly heteroskedasticity, autocorrelation, and cross-sectional dependence, which may lead to biased estimates if not properly addressed. Therefore, the application of robust estimation techniques, such as Driscoll–Kraay standard errors, is necessary to improve the reliability and accuracy of the results. In conclusion, operational efficiency and capital structure emerge as the primary determinants of banking profitability, while the choice of appropriate estimation methods plays a crucial role in ensuring valid empirical findings in panel data analysis.

ARTICLE INFO

Article history:
Submitted: 08 May 2026
Revised: 22 August 2026
Accepted: 26 August 2026
Published: 30 August 2026

Keyword:
Banking Profitability;
Return on Assets;
Non-Performing Loans;
Operational Efficiency;
Capital Adequa.

To cite this article (APA Style): Harmianto, R. A. W., & Prastiwi, A. (2026). An Analysis of the Impact of the RGEC Framework on Profitability in the Indonesian Banking Sector (2020–2024). JASa : Jurnal Akuntansi, Audit dan Sistem Informasi Akuntansi. Vol 10 (2), p.240-251. https://doi.org/10.36555/jasa.v10i2.3033

INTRODUCTION

In an increasingly complex and dynamic economic environment, banking performance serves as a primary indicator of stability and growth in Indonesia's financial sector. Banks play a dual role, namely as custodians of public funds and as drivers of economic development through their financial intermediation function. Bank profitability, as measured by Return on Assets (ROA), is a key benchmark for assessing management effectiveness in utilizing assets and available resources. ROA reflects a bank's ability to generate earnings from its total assets while also indicating operational efficiency and the quality of risk management (OJK, 2025).

Fluctuating macroeconomic conditions, the impact of the COVID-19 pandemic, regulatory pressures, and intensifying competition in the banking sector require banks to maintain profitability with a higher degree of adaptability. These pressures highlight the importance of a deeper understanding of the factors influencing banking performance. In this context, the RGEC framework (Risk, Governance, Earnings, Capital) serves as a relevant evaluation tool, as it encompasses four integrated dimensions essential for maintaining banking stability (Marsifa et al., 2025).

The risk dimension within RGEC is represented by Non-Performing Loans (NPL),

which reflect asset quality and management capability in handling credit risk (Sawasemiariat & Setya Wati, 2025). Operational efficiency is measured using the Operating Expenses to Operating Income ratio (BOPO), which indicates a bank's ability to control costs and enhance revenues (Silvan, 2025). The Loan to Deposit Ratio (LDR) reflects the effectiveness of fund allocation and thus represents the intermediation function (Sawasemiariat & Setya Wati, 2025). Net Interest Margin (NIM) is used to measure operational profitability derived from intermediation activities (OJK, 2025). Governance quality is represented by Good Corporate Governance (GCG), emphasizing transparency, accountability, and managerial compliance (Maulida & Firdaus, 2025). Meanwhile, capital adequacy is measured using the Capital Adequacy Ratio (CAR), which reflects a bank's ability to absorb risk and maintain financial stability (Wahyuni & Ompusunggu, 2025).

The selection of these variables is supported by various empirical findings. Marsifa et al. (2025) show that bank soundness based on RGEC is significantly associated with firm value, with ROA serving as a key profitability indicator. Silvan (2025) finds that NPL, BOPO, CAR, and ROA exhibit empirical relationships within the Indonesian banking context. Sawasemiariat & Setya Wati (2025) reveal that NPL and LDR significantly affect ROA, highlighting the importance of risk and liquidity management. Furthermore, Maulida & Firdaus (2025) emphasize that integrating governance principles with Maqashid Sharia-based profitability enhances sustainable banking performance.

Previous studies, both in Indonesia and internationally, have examined the impact of each RGEC dimension on banking performance. Wahyuni & Ompusunggu (2025) find that CAR has a significant positive effect on profitability, while NPL, LDR, and BOPO negatively affect ROA in rural banks. Tomak & Yılmaz (2025) demonstrate that ROA is influenced by NPL, CAR, net interest income, and liquidity, with variations across ownership structures. Marsifa et al. (2025) examine the role of ROA as a moderating variable in the relationship between RGEC and firm value. Sajoga (2025) analyzes bank performance in the context of digitalization and market volatility using a comprehensive RGEC approach, with a specific focus on a single banking institution, namely Bank Permata. In contrast, the present study extends the scope by examining the performance of commercial banks in Indonesia more broadly, using a panel dataset covering multiple banks over the 2020–2024 period. This broader coverage allows for a more generalizable and representative analysis of the Indonesian banking sector. Furthermore, while Sajoga (2025) emphasizes strategic responses to digital disruption, this study focuses on the empirical relationship between RGEC components and profitability, particularly through the application of panel data regression with robust estimation techniques. These findings indicate that although the relationships among risk, governance, earnings, and capital have been widely studied, an integrated approach using recent data and a broader sample is still required to provide a more realistic depiction of their effects on banking performance in Indonesia.

Based on the above background, this study aims to analyze the effect of NPL, BOPO, LDR, NIM, GCG and CAR on ROA in Indonesian banking during the 2020–2024 period. By employing a panel data approach, this study captures both cross-sectional variations among banks and time-series dynamics simultaneously. This research is expected to provide a more comprehensive understanding of how the combination of risk, governance, efficiency, profitability, and capital adequacy influences banking performance. The findings are also expected to serve as an empirical basis for bank management and regulators in formulating strategies to enhance stability, profitability, and sustainability in the banking sector amid evolving economic challenges.

The Effect of Non-Performing Loans (NPL) on ROA

Based on the risk–return trade-off theory, higher risk-taking may lead to higher returns if managed effectively (Madugu et al., 2020). In banking, Non-Performing Loans (NPL) represent problematic credit that theoretically reduces profitability due to increased loss potential. However, under certain conditions, banks may manage credit risk adaptively

through interest rate strategies, loan restructuring, and loss provisioning, thereby maintaining profitability (Nguyen, 2024). Prior studies show inconsistent results, where NPL may negatively affect profitability (Karim, 2022), but may also have a positive effect under specific conditions (Syafrizal et al., 2023). Thus, the relationship between NPL and ROA is contextual and depends on the quality of risk management.
H1: Non-Performing Loans (NPL) affect Return on Assets (ROA).

The Effect of BOPO on ROA

Operational efficiency theory suggests that a firm's ability to control operating costs is a key determinant of profitability. The Operating Expenses to Operating Income ratio (BOPO) measures bank efficiency, where a higher ratio indicates lower efficiency (Mirović et al., 2024). In the digital era, operational efficiency becomes increasingly important, as uncontrolled costs may reduce competitiveness and profitability (Bueno, 2024). Empirical studies indicate that BOPO has a significant negative effect on ROA, meaning that higher operating costs directly reduce profits (Wahyuni & Ompusunggu, 2025).
H2: BOPO affects Return on Assets (ROA).

The Effect of Loan to Deposit Ratio (LDR) on ROA

Loan to Deposit Ratio (LDR) reflects how effectively banks convert deposits into productive lending, where higher lending can increase interest income and profitability (Sawasemiariat & Setya Wati, 2025). However, excessively high LDR without adequate credit quality may elevate default risk and weaken financial performance due to rising non-performing loans and provisioning costs (Yuan et al., 2022). Therefore, the impact of LDR on profitability is not always linear, as it largely depends on the bank's ability to balance credit expansion with sound risk management. Prior studies also report mixed findings, indicating that the relationship between LDR and performance varies across banks depending on their internal risk control practices (Anggari & Dana, 2020).
H3: Loan to Deposit Ratio (LDR) affects Return on Assets (ROA).

The Effect of Net Interest Margin (NIM) on ROA

Net Interest Margin (NIM) measures a bank's ability to generate income from its core intermediation activities, particularly the spread between interest income and interest expenses. A higher NIM indicates that a bank is more efficient in managing its earning assets, as it is able to optimize the pricing of loans and deposits to generate greater net interest income (OJK, 2025). In this context, NIM plays a crucial role in determining bank profitability, as interest income remains the primary revenue source for most banks, especially in developing financial systems. From an operational perspective, an increase in NIM reflects better asset-liability management, where banks successfully allocate funds into high-yield productive assets while maintaining relatively low funding costs. This condition enhances overall financial performance and directly contributes to higher Return on Assets (ROA). Moreover, a stable and high NIM indicates strong market power and effective risk pricing, enabling banks to absorb potential credit risks without significantly reducing profitability. However, in recent years, the development of financial technology and digital banking has gradually shifted banks' income structures. Banks are increasingly diversifying their revenue sources toward fee-based income, reducing their dependence on interest-based earnings (Dasilas & Karanović, 2025). As a result, the relationship between NIM and profitability may weaken, particularly in banks that have successfully adopted digital transformation strategies. Therefore, although NIM is theoretically expected to have a positive effect on profitability, its actual impact may vary depending on changes in business models and the level of financial innovation within the banking sector.
H4: Net Interest Margin (NIM) affects Return on Assets (ROA).

The Effect of Good Corporate Governance (GCG) on ROA

From an agency theory perspective, conflicts between management and shareholders can be mitigated through effective governance. GCG enhances transparency, accountability, and decision-making quality (Tashkandi, 2023). Effective governance is expected to improve firm performance, including profitability, through better efficiency and risk control (Maulida & Firdaus, 2025). However, its impact is often long-term.

H5: Good Corporate Governance (GCG) affects Return on Assets (ROA)

The Effect of Capital Adequacy Ratio (CAR) on ROA

Capital theory suggests that strong capital enables banks to absorb risks and maintain stability. CAR reflects the adequacy of capital to cover potential losses (Uddin, 2022). However, excessive capital may reduce efficiency due to opportunity costs (Madugu et al., 2020). Prior studies show mixed effects depending on capital management strategies (Wahyuni & Ompusunggu, 2025).

H6: Capital Adequacy Ratio (CAR) affects Return on Assets (ROA).

METHODS

This study employs a quantitative approach using panel data methods to examine the impact of RGEC components—Non-Performing Loans (NPL), Operating Expenses to Operating Income (BOPO), Loan to Deposit Ratio (LDR), Net Interest Margin (NIM), Good Corporate Governance (GCG), and Capital Adequacy Ratio (CAR)—on bank profitability, proxied by Return on Assets (ROA), in Indonesian banking over the 2020–2024 period.

The 2020–2024 period was selected to capture the dynamics of the Indonesian banking sector across a period characterized by substantial economic and financial changes, including the COVID-19 pandemic and the subsequent recovery phase. This period provides an appropriate setting for examining whether risk management, operational efficiency, governance, earnings capacity, and capital adequacy were associated with variations in bank profitability under changing economic conditions. The five-year observation period also provides sufficient time-series variation for panel data analysis while maintaining consistency in the availability of RGEC-related information across banks.

The study population comprises commercial banks operating in Indonesia during the observation period. A purposive sampling technique was employed to select banks that met the following criteria: (1) operating as commercial banks in Indonesia during the 2020–2024 observation period; (2) publishing annual reports or other official financial information containing the RGEC-related variables required for the study; and (3) providing sufficiently complete and consistent data for ROA, NPL, BOPO, LDR, NIM, GCG, and CAR throughout the observation period. The use of purposive sampling was intended to ensure comparability across observations and to minimize missing information that could reduce the reliability of the panel regression analysis. Based on these criteria, the final sample consists of 230 bank-year observations.

Panel regression is selected because it simultaneously captures cross-sectional differences among banks and time-series dynamics, allowing the analysis to control for unobserved heterogeneity across banking institutions. This approach is particularly suitable for banking research because individual banks may differ in institutional characteristics, business strategies, risk profiles, and operating structures, while also being exposed to common macroeconomic and regulatory conditions over time.

The study utilizes secondary data obtained from publications of the Financial Services Authority (OJK) and banks' annual reports. Descriptive statistics are first conducted to examine data distribution. Multicollinearity is assessed using the Variance Inflation Factor (VIF), while model selection is conducted using the Chow test, Hausman test, and Breusch-Pagan Lagrange Multiplier (LM) test.

Classical assumption tests are conducted to assess the adequacy of the regression model, including heteroskedasticity, autocorrelation, residual normality, and cross-sectional dependence. Because the diagnostic tests indicate the presence of heteroskedasticity, autocorrelation, and cross-sectional dependence, robust standard errors are employed. In particular, the Driscoll–Kraay approach is used to obtain inference that is robust to these forms of dependence in the panel data.

The Fixed Effect Model (FEM) is specified as follows:

$$ROA\_it = \alpha + \beta_1 NPL\_it + \beta_2 BOPO\_it + \beta_3 LDR\_it + \beta_4 NIM\_it + \beta_5 GCG\_it + \beta_6 CAR\_it + \varepsilon\_it$$

The use of FEM combined with Driscoll-Kraay robust standard errors ensures consistent, unbiased, and efficient coefficient estimates despite violations of classical assumptions. This methodological framework provides a robust basis for evaluating how risk, governance, efficiency, and capital adequacy jointly influence banking profitability in the post-pandemic and dynamic industry environment.

RESULTS AND DISCUSSION

Descriptive Statistics

Table 1 presents the descriptive statistics of the study variables—ROA, NPL, BOPO, LDR, NIM, GCG, and CAR—for Indonesian banks during the 2020–2024 period.

Table 1. Descriptive Statistics of Panel Data

Variabel	N	Minimum	Maximum	Mean	Standar Deviasi
ROA	230	-5	5.13	0.34	1.11
NPL	230	1.48	150	7.12	14.25
BOPO	230	90.5	150	104.8	15.1
LDR	230	79.1	104.8	85.3	5.1
NIM	230	2.08	4.56	3.2	0.6
GCG	230	2	2	2	0
CAR	230	20.2	44.3	32.1	8.5

Source : Procesing data (2026)

The descriptive results show that the average ROA is 0.34% with a standard deviation of 1.11, indicating considerable variation in profitability across banks. NPL exhibits high variability, reflecting differences in credit quality and risk management practices; however, based on Bank Indonesia Regulation No. 15/2/PBI/2013, which sets the maximum acceptable NPL level at 5%, the observed average suggests that Indonesian banks during the study period tend to exceed the regulatory threshold, indicating a condition that may require closer supervisory attention. Furthermore, BOPO, with a mean value above 100, indicates operational inefficiency, as operating expenses exceed operating income, potentially exerting downward pressure on profitability. Meanwhile, the Good Corporate Governance (GCG) variable shows a constant value across observations; given that GCG composite ratings typically range from 1 (very good) to 5 (poor), the lack of variation may limit its explanatory power and contribute to its statistical insignificance in the regression model. In addition, the Capital Adequacy Ratio (CAR), regulated under Financial Services Authority Regulation No. 11/POJK.03/2016, shows relatively high values, indicating that banks are generally well-capitalized, although excessively high capital levels may also reflect inefficiency in asset utilization. Overall, these descriptive findings not only illustrate the distribution of key variables but also provide important regulatory context for interpreting the empirical results.

Regression results indicate that NPL has a significant positive effect on ROA. Although this contradicts traditional risk management theory, it can be explained by the

risk–return trade-off mechanism, suggesting that banks are able to manage credit risk adaptively. This finding is consistent with Syafrizal et al. (2023) and Madugu et al. (2020), but contrasts with Karim et al. (2022) and Dsouza et al. (2022), indicating that the effect of NPL depends on the quality of risk management. BOPO has a significant negative effect on ROA, consistent with Mirović et al. (2024) and Wahyuni & Ompusunggu (2025), confirming that inefficiency reduces profitability.

LDR Shows a positive but marginal effect (Anggari & Dana, 2020), while CAR has a marginal negative effect, indicating the presence of idle capital (Madugu et al., 2020). NIM and GCG are not statistically significant, reflecting structural changes in revenue due to digitalization (Dasilas & Karanović, 2025) and the role of GCG in long-term stability rather than short-term profitability (Maulida & Firdaus, 2025). Overall, bank profitability is more strongly influenced by efficiency and risk management.

Multicollinearity Test.

Multicollinearity is tested using the Variance Inflation Factor (VIF). All variables have VIF values below 10, indicating no multicollinearity problem. This suggests that each independent variable provides unique information in explaining ROA, and the regression coefficients can be interpreted reliably. Therefore, the assumption of no multicollinearity is satisfied, and the estimators are BLUE (Best Linear Unbiased Estimators) (Martinek, 2017).

Panel Data Model Selection

Model selection is conducted using the Chow Test, Hausman Test, and Breusch-Pagan Lagrange Multiplier (LM) Test. The results indicate that the Fixed Effect Model (FEM) is the most appropriate model. Both the Chow and Hausman tests are highly significant, while the LM test confirms the presence of individual effects across banks.

The use of FEM is consistent with prior studies such as Shanmugalingam et al. (2023), Ozili & Arun (2023), Tashkandi (2023), and Uddin (2022), which emphasize the importance of controlling for cross-sectional heterogeneity. *Classical Assumption Tests*

To improve presentation efficiency, all classical assumption tests are summarized in Table 2.

Table 2. *Classical Assumption Tests*

Test	Method	Variable	Coefficient	t-value	Statistic	p-value
Multicollinearity	VIF	All Variables	-	-	< 1.3	-
Heteroskedasticity	Breusch–Pagan	Model	-	-	20.616	0.00215
	Glejser	Intercept	-0.2207	-0.652	-	0.5148
		NPL	0.02166	0.844	-	0.3997
		BOPO	0.00567	2.665	-	0.0083
		LDR	-0.00038	-0.189	-	0.85
		NIM	-0.00002	-0.001	-	0.9992
		GCG	-0.1011	-0.763	-	0.4464
		CAR	0.01385	5.981	-	0
Autocorrelation	Breusch–Godfrey	Model	-	-	48.094	3.40E-09
Normality	Shapiro–Wilk	Residual	-	-	0.907	9.56E-11
Cross-sectional Dependence	Pesaran CD	Model	-	-	7.463	8.45E-14

Source : Procesing data (2026)

The results of the classical assumption tests indicate that the regression model still suffers from several important violations. Specifically, heteroskedasticity is consistently detected through both the Breusch–Pagan and Glejser tests, where variables such as BOPO and CAR are found to be significant. In addition, the Breusch–Godfrey test reveals the presence of autocorrelation in the residuals, indicating correlation across error terms over time. The Shapiro–Wilk test further shows that the residuals are not normally distributed. Moreover, the Pesaran CD test confirms the existence of cross-sectional dependence, which is a common characteristic in banking panel data.

These findings imply that key classical assumptions—namely homoskedasticity, independence of errors, and normality—are not fully satisfied. As a result, relying on conventional estimation techniques may lead to inefficient parameter estimates and biased standard errors. Therefore, a more robust estimation approach is required to address these issues.

In this context, the use of Driscoll–Kraay robust standard errors is appropriate, as it simultaneously corrects for heteroskedasticity, autocorrelation, and cross-sectional dependence. The importance of applying robust estimation methods is also emphasized by Kumar (2023), who argues that failure to correct such violations may result in invalid inferences. Furthermore, the complex nature of relationships in the banking sector—driven by structural dynamics and macroeconomic factors (Mirović et al., 2024; Nguyen, 2024)—reinforces the need for a more adaptive and reliable estimation framework.

Fixed Effect Model (FEM) Regression Results

The estimation results of the Fixed Effect Model (FEM) with robust standard errors are presented in Table 3.

Table 3. Fixed Effect Model (FEM) Regression Results

Variable	Koefisien	Std. Error (Driscoll-Kraay)	t-value	p-value
NPL	0.2626	0.0308	8.521	6.56E-15
BOPO	-0.086	0.00276	-31.22	<2.2E-16
LDR	0.0057	0.00302	1.898	0.0593
NIM	0.0366	0.03172	1.153	0.2503
GCG	0.0184	0.13498	0.136	0.8918
CAR	-0.0042	0.00216	-1.942	0.0538

Source : Procesing data (2026)

The regression results show that Non-Performing Loans (NPL) have a significant positive effect on Return on Assets (ROA), indicating that the relationship between credit risk and profitability may reflect differences in banks' risk-management strategies. This finding is consistent with the risk–return trade-off perspective, in which higher exposure to risk may be associated with higher expected returns when risks are effectively managed. The result is consistent with Syafrizal et al. (2023) and Madugu et al. (2020), but contrasts with Karim et al. (2022) and Dsouza et al. (2022), who report a negative relationship between NPL and profitability. These differences suggest that the NPL–ROA relationship may depend on the quality of credit-risk management, the characteristics of the banks examined, and the economic conditions prevailing during the observation period. However, the positive coefficient should not be interpreted as evidence that increasing NPL improves profitability. Rather, it indicates that, within the observed sample, differences in credit-risk exposure were positively associated with ROA after controlling for the other RGEC indicators.

BOPO is found to have a significant negative effect on ROA, confirming that operational efficiency is an important determinant of banking performance. This finding is supported by Mirović et al. (2024) and Wahyuni and Ompusunggu (2025), indicating that higher operating costs relative to operating income reduce profitability and may weaken banks' competitiveness, particularly in an increasingly digitalized banking environment. The negative coefficient implies that banks need to maintain operational efficiency so that increases in operating expenses do not offset income generated from their banking activities.

LDR exhibits a positive but marginally significant effect on ROA, suggesting that the intermediation function has not yet been fully optimized. This finding is consistent with Anggari and Dana (2020), who argue that increased lending can improve profitability only when credit quality is appropriately maintained. Thus, greater lending activity does not automatically translate into higher profitability because the effect of loan expansion also

depends on the bank's ability to manage credit risk and maintain the quality of its loan portfolio.

CAR shows a marginal negative effect on ROA, indicating the possibility that relatively high capital holdings may not always be translated into higher asset profitability. This is consistent with Madugu et al. (2020), who argue that excess capital may reduce asset efficiency when available capital is not optimally allocated to productive assets. Nevertheless, this finding should be interpreted cautiously because the CAR coefficient is not statistically significant at the 5% level. Therefore, the evidence provides only limited support for a negative relationship between capital adequacy and short-term profitability.

The regression results indicate that Net Interest Margin (NIM) has a positive but statistically insignificant effect on ROA, with a coefficient of 0.0366 and a p-value of 0.2503. This finding suggests that, during the 2020–2024 observation period, variations in banks' net interest margins were not sufficiently strong to translate into statistically significant differences in overall asset profitability. Although NIM represents an important measure of banks' ability to generate net interest income from their earning assets, it captures only one component of banking income. Bank profitability may also be influenced by operating expenses, credit losses, provisioning requirements, non-interest income, and other components of financial performance.

One possible explanation for the insignificant NIM–ROA relationship is the changing structure of banking activities during the 2020–2024 period. This period encompassed the COVID-19 shock and the subsequent recovery, alongside substantial changes in banking business models and the acceleration of digital banking. Increasing digitalization may have encouraged banks to diversify their sources of revenue, including through fee-based services and other non-interest income. Dasilas and Karanović (2025) similarly highlight the role of digitalization in changing banks' revenue structures. Consequently, a relatively high NIM does not necessarily translate proportionally into higher ROA when banks simultaneously experience differences in operating costs, credit losses, provisioning, and non-interest income.

The insignificant NIM result also differs from some previous evidence in the Indonesian banking context. Rahmawati and Prasetiono (2015), for example, found that NIM had a positive and significant effect on ROA among publicly listed commercial banks in Indonesia. Other Indonesian banking studies have likewise reported significant relationships between NIM and profitability, although the direction and magnitude of these relationships vary across samples and observation periods. The difference between these findings and the present study may be attributable to differences in the observation period, sample composition, economic conditions, and the simultaneous inclusion of other RGEC indicators in the regression model. In particular, the present study covers 2020–2024, a period characterized by the pandemic shock and subsequent recovery, whereas earlier studies examined different economic conditions. Therefore, the insignificant coefficient should not be interpreted as evidence that NIM is economically irrelevant to bank profitability. Rather, it indicates that its marginal contribution to ROA was not statistically distinguishable from zero after controlling for other banking characteristics.

Another possible explanation is that the effect of NIM on ROA may be influenced by the efficiency and quality of asset utilization. A bank may maintain a relatively high interest margin but simultaneously incur high operating costs, experience greater credit-risk exposure, or face higher provisioning requirements, which can offset the contribution of interest income to overall profitability. This interpretation is particularly relevant because BOPO has a strong and statistically significant negative effect on ROA in the present study. Therefore, maintaining a favorable NIM alone may not be sufficient to improve profitability unless banks are also able to control operating costs and manage credit risk effectively.

Good Corporate Governance (GCG) also has no statistically significant effect on ROA, with a coefficient of 0.0184 and a p-value of 0.8918. This finding indicates that the measured GCG variable does not explain variations in bank profitability during the

observation period. The result is consistent with several studies in the Indonesian banking context that report insignificant relationships between particular GCG mechanisms and profitability. Gozali et al. (2022), for example, found that several GCG mechanisms did not significantly affect ROA or ROE among Indonesian conventional banks during the COVID-19 pandemic. Similarly, Fitrianingsih and Asfaro (2022) reported that GCG did not significantly affect ROA in Indonesian banking companies. However, the literature is not entirely uniform. Other Indonesian studies have reported significant relationships between GCG and financial performance, suggesting that the effect may depend on how GCG is operationalized and on the characteristics of the sample.

The insignificant GCG result may be explained by the nature and time horizon of corporate governance. GCG is primarily designed to strengthen oversight, accountability, risk management, transparency, and compliance. These mechanisms may improve organizational stability and reduce agency problems without necessarily producing an immediate increase in accounting profitability. The financial benefits of stronger governance may materialize over a longer period through reduced risk, improved decision-making, and greater stakeholder confidence rather than through short-term changes in ROA. This interpretation is consistent with Maulida and Firdaus (2025), who emphasize the importance of governance in supporting longer-term stability and performance rather than necessarily generating immediate profitability effects.

The Indonesian banking context provides an additional explanation. Banking institutions operate under extensive prudential regulation and supervisory requirements, meaning that many governance practices are embedded within the regulatory framework. Consequently, differences in formal GCG ratings or governance compliance across banks may be relatively limited, reducing the ability of a single GCG measure to explain variations in short-term profitability. Evidence from Indonesian banking research also shows that the relationship between individual governance mechanisms and financial performance is not always consistent across samples and periods. For example, some studies have found that board characteristics and other governance mechanisms do not necessarily produce a direct and significant effect on ROA. This suggests that the effectiveness of GCG may be more visible through risk control, compliance, organizational stability, and long-term performance than through immediate changes in accounting profitability.

Importantly, the descriptive statistics in the present study show that the GCG variable has a minimum value of 2, a maximum value of 2, a mean of 2, and a standard deviation of 0. This absence of variation is particularly important when interpreting the insignificant regression coefficient. Because the measured GCG variable is constant across the observations, it provides very limited cross-sectional or time-series information for explaining differences in ROA. Therefore, the insignificant GCG result should not be interpreted simply as evidence that corporate governance is unimportant for bank performance. Rather, it may indicate that the specific GCG measure used in this study does not provide sufficient variation to identify its effect statistically. This data characteristic should therefore be considered when interpreting the estimated relationship between GCG and ROA.

Taken together, the findings for NIM and GCG suggest that banking profitability during 2020–2024 was not determined by a single revenue or governance dimension. NIM may have been offset by differences in operating costs, credit risk, provisioning requirements, and changing revenue structures, while GCG may have generated benefits primarily through risk control, compliance, and long-term institutional stability rather than immediate accounting profitability. These findings reinforce the importance of examining bank profitability through an integrated framework in which revenue generation, operational efficiency, risk management, governance, and capital adequacy are considered simultaneously.

Overall, the findings indicate that bank profitability is more strongly influenced by operational efficiency and risk management than by other factors. This underscores that

banking success is determined not only by the magnitude of financial indicators but also by the ability to strategically manage risk and efficiency in a dynamic industry environment. This result can also be linked to the descriptive statistical findings, particularly regarding regulatory thresholds. For instance, the average Non-Performing Loans (NPL) ratio observed during the 2020–2024 period tends to exceed the maximum threshold of 5% as stipulated by banking regulations, indicating relatively high credit risk within the Indonesian banking sector. Such conditions may exert downward pressure on profitability, as higher NPL levels increase the likelihood of credit losses and provisioning costs, ultimately reducing Return on Assets (ROA). Therefore, the empirical results reinforce the importance of maintaining credit quality and operational efficiency to sustain bank profitability.

CONCLUSION

Based on the empirical results, the study concludes that the RGEC components do not uniformly determine bank profitability, as measured by Return on Assets (ROA), during the 2020–2024 observation period. Non-Performing Loans (NPL) have a significant positive effect on ROA, suggesting that the observed relationship between credit risk and profitability may reflect differences in banks' risk-management strategies and risk–return mechanisms, while BOPO has a significant negative effect, confirming that operational efficiency is an important determinant of banking profitability. LDR exhibits a positive but marginally significant effect, indicating that the contribution of the intermediation function to profitability depends on the effective management of credit quality. CAR shows a marginal negative effect, suggesting the possibility of less efficient utilization of excess capital, although the relationship is not statistically significant at the 5% level. Meanwhile, NIM has a positive but statistically insignificant effect on ROA, indicating that interest margin alone was insufficient to explain variations in profitability amid changes in banking business models, digitalization, revenue structures, operating costs, and credit-risk conditions during 2020–2024. GCG also has no statistically significant effect on ROA; however, this finding should be interpreted cautiously because the GCG measure has no variation in the observed data, with a standard deviation of zero, limiting its ability to explain differences in profitability. Overall, the findings indicate that operational efficiency and credit-risk conditions are more closely associated with variations in bank profitability than the other RGEC indicators examined, while the effects of NIM and GCG may be more dependent on broader institutional, operational, and economic conditions. These results highlight the importance of an integrated approach to bank performance management that combines effective risk management, operational efficiency, productive asset utilization, sound governance, and adequate capital management.

REFERENCES

Anggari, N. L. S., & Dana, I. M. (2020). The Effect of Capital Adequacy Ratio, Third Party Funds, Loan to Deposit Ratio, Bank Size on Profitability in Banking Companies on IDX. *AJHSSR*, *4*(12), 334–338.

Bueno, L. A. (2024). Impacts of Digitization on Operational Efficiency in Banking. *International Journal of Information Management Data Insights*, *4*(1), 100230. https://doi.org/10.1016/j.jjimei.2024.100230

Dasilas, A., & Karanović, G. (2025). The Impact of FinTech Firms on Bank Performance: Evidence from the UK. *EuroMed Journal of Business*, *20*(1), 244–258. https://doi.org/10.1108/EMJB-04-2023-0099

Dsouza, S., Rabbani, M. R., Hawaldar, I. T., & Jain, A. K. (2022). Impact of Bank Efficiency on Profitability in India. *International Journal of Financial Studies*, *10*(4), 93. https://doi.org/10.3390/ijfs10040093

Financial Services Authority (OJK). (2025). *Indonesian Banking Performance Report –*

June 2025. https://www.ojk.go.id

Karim, R. (2022). Non-Performing Loans and Bank Profitability: Evidence from Bangladesh. *International Journal of Finance & Banking Studies*, *11*(4), 95–107. https://doi.org/10.20525/ijfbs.v11i4.2314

Madugu, A. H., Ibrahim, M., & Amoah, J. O. (2020). Differential Effects of Credit Risk and Capital Adequacy Ratio on Profitability of the Domestic Banking Sector in Ghana. *Transnational Corporations Review*, *12*(1), 37–52. https://doi.org/10.1080/19186444.2019.1704582

Marsifa, G., Gursida, H., & Indrayono, Y. (2025). Profitability as a Moderator in the Effect of RGEC-Based Banking Health on Firm Value: Evidence from IDX-Listed Banks (2019–2023). *International Journal of Accounting, Business and Organization (IJABO)*, *6*(3). https://doi.org/10.61242/ijabo.25.545

Martinek, W. L. (2017). A Review of Textbooks for Teaching Graduate Research Methods. *PS: Political Science & Politics*, *50*(2), 554–558.

Maulida, S., & Firdaus, A. (2025). Development of Islamic Bank Performance Measurement Using the Maslahah Performa (MaP) Approach. *ISLAMICONOMIC: Jurnal Ekonomi Islam*. https://www.journal.islamiconomic.or.id

Mirović, V., Kalaš, B., Milenković, N., Andrašić, J., & \DJaković, M. (2024). Modelling Profitability Determinants in the Banking Sector: The Case of the Eurozone. *Mathematics*, *12*(6), 897. https://doi.org/10.3390/math12060897

Nguyen, P. D. (2024). Non-Performing Loans and Bank Profitability: Evidence from Vietnam. *Macroeconomics and Finance in Emerging Market Economies*, *18*(2), 399–419. https://doi.org/10.1080/17520843.2024.2318927

Ozili, P. K., & Arun, T. G. (2023). Does Economic Policy Uncertainty Affect Bank Profitability? *International Journal of Managerial Finance*, *19*(4), 803–830. https://doi.org/10.1108/IJMF-04-2022-0177

Sajoga, E. (2025). *Resilience and Innovation: Analyzing Permata Bank's Financial Performance and Business Strategy Amid Digital Disruption and Market Volatility* [Graduate Thesis,IPMI Institute]. http://repository.ipmi.ac.id/id/eprint/2855

Sawasemiariat, M. Y., & Setya Wati, C. H. (2025). The Effect of Non-Performing Loans and Loan to Deposit Ratio on Profitability. *Management Economics Journal (MEJ)*, *1*(1). https://doi.org/10.63185/mej.v1i1.2

Shanmugalingam, P. (2023). Does E-commerce Matter on International Trade of Asian Countries. *PLOS ONE*, *18*(4), e0284503. https://doi.org/10.1371/journal.pone.0284503

Silvan, A. (2025). Analysis of Liquidity, Solvency, and Profitability Ratios to Assess the Financial Health of PT. Bank Central Asia, Tbk Jakarta. *Devotion: Journal of Community Research*, *6*(11). https://doi.org/10.59188/devotion.v6i11.25597

Syafrizal, A., Ilham, R. N., Muchtar, D., & Wardhiah. (2023). Effect of Capital Adequacy Ratio, Non Performing Financing, Financing to Deposit Ratio, Operating Expenses and Operational Income on Profitability at PT. Bank Aceh Syariah. *JARUDA*, *1*(4). https://doi.org/10.54443/jaruda.v1i4.51

Tashkandi, A. A. (2023). Shariah Supervision and Bank Performance. *Journal of Business and Socio-Economic Development*, *3*(3), 253–264. https://doi.org/10.1108/JBSED-02-2022-0024

Tomak, S., & Yılmaz, K. (2025). Bank Performance of State, Private, and Foreign Owned Banks in Türkiye. *International Journal of Economics and Financial Issues*, *15*(3), 99–109. https://doi.org/10.32479/ijefi.19046

Uddin, M. K. (2022). Effect of Leverage and CAR on Profitability. *European Journal of Business and Management Research*, *7*(3). https://doi.org/10.24018/ejbmr.2022.7.3.1463

Wahyuni, A., & Ompusunggu, H. (2025). Analisis Faktor-Faktor yang Mempengaruhi Profitabilitas Bank Perekonomian Rakyat. *EKOBISTEK*, *14*(1).

https://doi.org/10.35134/ekobistek.v14i1.871

Yuan, D., Gazi, M. A. I., Harymawan, I., Dhar, B. K., & Hossain, A. I. (2022). Profitability Determining Factors of Banking Sector. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.1000412