Analysis of Bank Soundness Using the RGEC Method in State-Owned Banks for the 2020–2024 Period

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Abstract

This study descriptively compares the financial soundness indicators of Bank Mandiri, Bank Rakyat Indonesia (BRI), Bank Negara Indonesia (BNI), and Bank Tabungan Negara (BTN) during 2020–2024 using selected indicators associated with the RGEC framework: NPL, LDR, GCG, ROA, ROE, and CAR. The results show that the yearly average NPL remained below 5%, while average LDR increased in 2023–2024 after declining in 2021–2022. The disclosed GCG ratings were stable in the reported data; average ROA improved between 2020 and 2023 before declining slightly in 2024, while average ROE rose through 2023 and declined in 2024. The reported average CAR remained above 19% throughout the period. These are descriptive findings based on the values compiled by the authors. The previously reported overall composite percentages are not retained because the manuscript did not provide a reproducible indicator-level scoring trial or a verified regulatory basis for those author-created classifications.

Keywords: *State-Owned Banks; Bank Health; RGEC Method (Risk Profile, Good Corporate Governance, Earnings, Capital).*

JEL Classification: G21, G28

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Introduction

The development of commercial banks in Indonesia has shown significant acceleration, in line with increasing national economic activities and rapid advancements in financial technology. As a key pillar of the financial system, commercial banks perform a crucial function in mobilizing funds from the public and channeling them into various productive sectors. Amid globalization and an increasingly dynamic economic landscape, commercial banks are required to continuously improve their financial performance, operational efficiency, and governance quality to maintain the resilience and stability of the banking industry. Hutabarat (2021) emphasizes the importance of financial performance analysis in evaluating organizational financial conditions, while Junaedi (2020) highlights the role of Good Corporate Governance (GCG) in strengthening corporate accountability and safeguarding organizational assets.

In recent years, changes in public behavior and increasing reliance on digital financial services have become important catalysts for banking transformation. Commercial banks have increasingly adopted digital technologies through application-based banking, digital account opening, and integrated cashless payment systems. Although these innovations improve accessibility and operational efficiency, digital transformation also introduces additional operational risks, particularly those associated with information security, technological infrastructure, and internal control systems. From a bank soundness perspective, these developments reinforce the importance of comprehensive risk management and governance mechanisms. The RGEC framework provides a multidimensional approach to evaluating banking conditions through risk exposure, governance quality, profitability, and capital adequacy (Insaniyati & Purwanto, 2023).

Among commercial banks, state-owned banks occupy a strategic position in Indonesia's financial system because of their role in supporting national development and providing financing to productive economic sectors. Bank Rakyat Indonesia (BRI), Bank Negara Indonesia (BNI), Bank Mandiri, and Bank Tabungan Negara (BTN) contribute to economic activities through financing for businesses, households, and national development programs. Consequently, the soundness of these institutions is particularly important for maintaining financial intermediation and public confidence. Previous studies have demonstrated the

relevance of RGEC-based assessments in evaluating the financial conditions of major Indonesian banks, including Bank Mandiri and BNI (Astari et al., 2021; Ibrahim et al., 2023).

During the 2020–2024 period, Indonesian state-owned banks faced significant challenges arising from the COVID-19 pandemic and subsequent economic recovery. The pandemic created pressure on borrowers' repayment capacity, potentially increasing credit risk and affecting banking profitability. In the post-pandemic period, fluctuations in interest rates, inflationary pressures, and changing economic conditions continued to influence banking liquidity and financial performance. These developments highlight the importance of assessing bank soundness across different economic periods. Previous RGEC-based studies have shown that banking soundness may vary across institutions and observation periods, reflecting differences in financial performance, risk management, and institutional conditions (Karim & Prasetyo, 2024; Ningrum et al., 2024).

The challenges faced by state-owned banks are not limited to profitability performance but also involve credit quality, liquidity management, operational efficiency, and governance effectiveness. Differences in these dimensions may produce varying soundness classifications even among banks operating within the same national financial system. Maharani and Nurhamdi (2024), for example, examined the soundness of Bank Tabungan Negara using the RGEC framework, demonstrating the importance of assessing banking performance through multiple financial indicators. Similarly, Hendra (2025) applied a risk-based bank rating approach to evaluate bank soundness, reinforcing the relevance of multidimensional financial assessments.

Within this context, bank soundness assessment serves as an important instrument for evaluating financial conditions, managerial effectiveness, and the risks faced by banking institutions. In Indonesia, the Financial Services Authority (Otoritas Jasa Keuangan, OJK) regulates the assessment of commercial bank soundness through Regulation No. 4/POJK.03/2016. The assessment incorporates four main dimensions: Risk Profile, Good Corporate Governance, Earnings, and Capital. These dimensions provide an integrated framework for examining the strengths and vulnerabilities of banking institutions. The relevance of the RGEC approach has also been demonstrated in comparative research examining conventional and Islamic banking institutions (Insaniyati & Purwanto, 2023).

The RGEC framework is not merely a financial measurement instrument but also provides useful information for managerial decision-making and regulatory supervision. Risk Profile indicators reflect a bank's exposure to credit and liquidity risks, while GCG evaluates the quality of corporate governance. Earnings indicators assess the ability to generate profits,

and Capital indicators measure the adequacy of financial resources to absorb potential losses. By integrating these dimensions, the RGEC framework enables a more comprehensive interpretation of banking soundness than assessments based on individual financial ratios alone (Astari et al., 2021; Karim & Prasetyo, 2024). Furthermore, Junaedi (2020) emphasizes the importance of governance practices in strengthening organizational accountability and protecting corporate assets.

Previous empirical studies have reported varying findings regarding bank soundness. Astari et al. (2021), in their study of Bank Mandiri, applied the RGEC method to evaluate banking conditions during the 2016–2020 period. Ibrahim et al. (2023) examined the soundness of Bank Negara Indonesia using the RGEC framework, while Maharani and Nurhamdi (2024) analyzed Bank Tabungan Negara during the 2014–2023 period. Other studies have extended RGEC assessments to different banking institutions. Karim and Prasetyo (2024) evaluated Bank CIMB Niaga during the 2014–2023 period, whereas Ningrum et al. (2024) examined Bank Kookmin Bukopin during the 2012–2021 period. Collectively, these studies demonstrate the relevance of RGEC as an analytical framework across different banking institutions and economic periods.

Previous research has demonstrated the applicability of the RGEC framework in evaluating bank soundness. Indah Tadarus and Nur Sholeh (2023), for example, applied the RGEC method to assess the financial performance of Bank Central Asia during 2017–2021. More recently, Budi et al. (2026) examined the relationship between fundamental financial performance and stock prices among four Indonesian state-owned conventional banks, namely BRI, Bank Mandiri, BNI, and BTN. Building on these studies, the present research extends the comparative perspective by assessing the soundness of the same four state-owned banks using RGEC indicators over the 2020–2024 period.

Although previous studies have extensively applied the RGEC framework to assess bank soundness, several research limitations remain. Existing research has frequently concentrated on individual banking institutions or specific observation periods, resulting in limited integrated comparative evidence regarding the financial resilience of major Indonesian state-owned banks during economic disruption and recovery. For example, Astari et al. (2021), Ibrahim et al. (2023), and Maharani and Nurhamdi (2024) examined individual state-owned banks, whereas Karim and Prasetyo (2024) and Ningrum et al. (2024) focused on other commercial banking institutions. Consequently, a comparative assessment of BRI, Bank Mandiri, BNI, and BTN using consistent RGEC indicators over the same 2020–2024 observation period provides an opportunity to extend the existing empirical literature.

The contribution of this study is its consistent comparison of four state-owned commercial banks over the same five-year period, covering the pandemic and recovery years, and its presentation of bank-level differences across six selected indicators. Unlike studies centered on a single institution, this design allows the reader to compare patterns across institutions under a common macroeconomic and regulatory environment. The study does not claim methodological novelty: RGEC is an established framework, and the analysis is descriptive rather than causal.

This study addresses these limitations by conducting a comparative assessment of four major Indonesian state-owned banks during the 2020–2024 periods, encompassing the COVID-19 pandemic and subsequent economic recovery. The study integrates six financial and governance indicators within the RGEC framework, namely Non-Performing Loan (NPL), Loan to Deposit Ratio (LDR), Good Corporate Governance (GCG), Return on Assets (ROA), Return on Equity (ROE), and Capital Adequacy Ratio (CAR). Through this approach, the study examines differences in bank soundness across institutions and observation periods. The selection of these indicators is consistent with the multidimensional assessment approach employed in previous RGEC research (Insaniyati & Purwanto, 2023).

The contribution of this study lies in its comparative and longitudinal perspective rather than the development of a new measurement model. By examining differences in credit risk, liquidity, governance, profitability, and capital adequacy, the research provides an integrated understanding of the financial resilience of Indonesian state-owned banks. Unlike studies focusing primarily on individual banking institutions, this research systematically compares the soundness profiles of four state-owned banks within the same observation period. The findings are expected to provide practical insights for banking management and regulators in identifying areas requiring greater supervisory and managerial attention.

Accordingly, this study aims to assess and compare the soundness of four Indonesian state-owned banks, BRI, Bank Mandiri, BNI, and BTN, during the 2020–2024 period using the RGEC framework. Specifically, the study seeks to: (1) evaluate bank soundness based on credit risk, liquidity risk, corporate governance, profitability, and capital adequacy indicators; (2) identify changes in these indicators throughout the observation period; (3) compare the financial soundness of the four banks; and (4) discuss the managerial implications of the findings for strengthening banking resilience and financial stability.

Literature Review

Bank Soundness Level

Bank soundness is an important indicator used to assess a bank's ability to conduct its operational activities normally, fulfill its obligations to stakeholders, and maintain financial stability. The assessment of bank soundness considers various aspects of financial performance, risk exposure, and institutional governance to determine whether banking institutions operate under sustainable financial conditions. According to the Financial Services Authority (Otoritas Jasa Keuangan, 2016), bank soundness represents the outcome of a comprehensive assessment of a bank's condition based on its risk profile and performance. This assessment provides the basis for classifying banks into five categories: very sound, sound, fairly sound, less sound, and unsound. Such classifications serve as important references for banking supervision and financial decision-making.

Bank soundness assessment is closely associated with financial performance evaluation. Hutabarat (2021) discusses the importance of financial performance analysis in assessing organizational financial conditions, while Astari et al. (2021) apply the RGEC approach to evaluate the soundness of Bank Mandiri. Similarly, Ibrahim et al. (2023) examine bank soundness at Bank Negara Indonesia using the RGEC framework. These studies demonstrate the relevance of multidimensional financial indicators for evaluating banking performance and identifying institutional strengths and weaknesses.

Empirical studies have also revealed variations in bank soundness across banking institutions and observation periods. Karim and Prasetyo (2024) examine the soundness of Bank CIMB Niaga during the 2014–2023 period, whereas Ningrum et al. (2024) investigate Bank Kookmin Bukopin during the 2012–2021 period. Furthermore, Maharani and Nurhamdi (2024) assess Bank Tabungan Negara during the 2014–2023 period. These studies illustrate the application of RGEC across different banking institutions and periods, suggesting the importance of comparative analysis in understanding variations in financial resilience. Differences in soundness classifications may be associated with variations in credit risk, liquidity management, profitability, governance quality, and capital adequacy.

RGEC Method

The RGEC method is a risk-based bank soundness assessment framework that evaluates banking institutions through four main components: Risk Profile, Good Corporate Governance (GCG), Earnings, and Capital. In Indonesia, the RGEC framework is regulated

under Financial Services Authority Regulation No. 4/POJK.03/2016 concerning the assessment of commercial bank soundness (Otoritas Jasa Keuangan, 2016). The framework emphasizes that bank soundness should be evaluated comprehensively by considering both financial performance and risk management rather than relying on individual financial ratios.

The application of RGEC has been widely discussed in Indonesian banking research. Insaniyati and Purwanto (2023) examine the soundness of conventional and Islamic banks using the RGEC method, while Astari et al. (2021) apply the framework to Bank Mandiri. Similarly, Hendra (2025) investigates bank soundness using the Risk-Based Bank Rating (RBBR) approach. These studies support the relevance of an integrated assessment framework for examining banking conditions across different institutional contexts.

In practice, each RGEC component is represented by specific indicators. The Risk Profile component in this study is assessed using the Non-Performing Loan (NPL) ratio and Loan-to-Deposit Ratio (LDR). Earnings are evaluated through Return on Assets (ROA) and Return on Equity (ROE), while Capital is measured using the Capital Adequacy Ratio (CAR). The GCG component is assessed using the governance composite rating disclosed by each bank. These indicators provide a multidimensional perspective on financial performance, credit quality, liquidity conditions, corporate governance, and capital strength (Insaniyati & Purwanto, 2023; Maharani & Nurhamdi, 2024).

The Non-Performing Loan (NPL) ratio is an important banking indicator used to assess credit quality and the proportion of problematic loans within a bank's loan portfolio. Puspita (2025) discusses NPL as a relevant financial measure in banking accounting and financial soundness assessment. A higher NPL ratio generally indicates greater credit risk exposure and potential pressure on banking profitability. Previous RGEC-based studies, including Karim and Prasetyo (2024) and Maharani and Nurhamdi (2024), incorporate credit-risk assessment as an important component of bank soundness evaluation.

The Loan-to-Deposit Ratio (LDR) measures the relationship between total loans extended and third-party deposits collected by a bank. This indicator provides information regarding the extent to which deposit funding is utilized for lending activities. A relatively high LDR may indicate greater liquidity pressure when loan expansion is not accompanied by adequate funding growth. Conversely, a relatively low LDR may reflect more conservative lending activities or lower utilization of deposit funds. The relevance of liquidity indicators in

assessing banking soundness is reflected in RGEC-based studies conducted by Astari et al. (2021), Karim and Prasetyo (2024), and Ningrum et al. (2024).

Beyond the banking context, the relationship between liquidity, leverage, and profitability provides an additional perspective for interpreting financial performance. Piay and Bachtiar (2025) examined liquidity and leverage in relation to profitability at PT Link Net Tbk over the 2015–2024 period. Although their study focused on a telecommunications company rather than a banking institution, it provides a complementary corporate-finance perspective on the role of liquidity and financial structure in performance evaluation. Nevertheless, liquidity indicators must be interpreted in accordance with the characteristics of the institution being examined. Accordingly, this study interprets the LDR specifically as a banking liquidity indicator within the broader RGEC framework.

Good Corporate Governance (GCG) refers to the principles and institutional mechanisms designed to ensure accountability, transparency, responsibility, independence, and fairness in organizational management. Junaedi (2020) discusses the role of GCG in safeguarding corporate assets and strengthening organizational accountability. Within banking institutions, governance mechanisms are particularly important because banks manage public funds and face various financial and operational risks. The GCG component in RGEC reflects the quality of governance implementation as reported through banks' governance self-assessments (Otoritas Jasa Keuangan, 2016).

Return on Assets (ROA) is a profitability indicator that measures a bank's ability to generate earnings relative to its assets. Hutabarat (2021) discusses profitability ratios as important instruments in financial performance analysis. In banking soundness assessments, ROA provides information regarding the efficiency of asset utilization in generating profits. A higher ROA generally indicates stronger profitability performance, although its interpretation should consider the bank's business characteristics and risk exposure. The use of ROA within RGEC-based assessments is also reflected in studies by Astari et al. (2021) and Hendra (2025).

Return on Equity (ROE) measures the ability of a bank to generate net income relative to shareholders' equity. This ratio reflects the return generated from the capital invested by shareholders and provides an additional perspective on profitability. Unlike ROA, which focuses on asset-based profitability, ROE emphasizes the efficiency of equity utilization. Therefore, the combined interpretation of ROA and ROE provides a broader understanding of

banking profitability (Hutabarat, 2021). However, a high ROE should not automatically be interpreted as stronger financial resilience because the ratio may also be influenced by differences in leverage and capital structure.

Liquidity and profitability are important financial dimensions in evaluating corporate financial performance. Lubis and Hena (2025), in their study of PT Adhi Karya (Persero) Tbk, examined the relationship between liquidity, profitability, and firm value. Their research provides a complementary perspective for understanding the relevance of financial indicators in organizational performance assessment. In the banking context, profitability indicators such as Return on Assets (ROA) and Return on Equity (ROE) should therefore be interpreted alongside risk profile, governance quality, and capital adequacy when evaluating overall bank soundness.

The Capital Adequacy Ratio (CAR) measures the relationship between a bank's regulatory capital and its risk-weighted assets. CAR is an important indicator of a bank's capacity to absorb potential financial losses and maintain sufficient capital to support risk-bearing activities. The inclusion of capital adequacy in the RGEC framework reflects the importance of maintaining financial buffers against banking risks (Otoritas Jasa Keuangan, 2016). Studies by Insaniyati and Purwanto (2023) and Hendra (2025) further illustrate the application of The application of the RGEC framework in Indonesian banking research provides a basis for assessing bank soundness through an integrated set of risk and financial performance indicators. Indah Tadarus and Nur Sholeh (2023) applied the framework to Bank Central Asia by examining Risk Profile, Good Corporate Governance, Earnings, and Capital. This approach is relevant to the present study, which employs the same four dimensions to compare the financial soundness of four Indonesian state-owned banks. The comparative design further allows the assessment to consider differences across institutions and changes over the 2020–2024 observation period.capital-related indicators in comprehensive bank soundness assessments.

The Capital Adequacy Ratio (CAR) measures regulatory capital relative to risk-weighted assets (RWA). It indicates the capital buffer available to absorb losses arising from risk-weighted exposures. CAR should be interpreted together with asset quality, liquidity, governance, and profitability; a high CAR alone does not establish that all risks are adequately managed.

Conceptual Framework of Bank Soundness

The RGEC framework provides an integrated conceptual perspective for assessing banking soundness by considering risk exposure, corporate governance, profitability, and capital adequacy. Rather than evaluating financial performance exclusively through profitability indicators, the framework recognizes that banking resilience depends on the ability of financial institutions to manage multiple dimensions of financial and operational risk. This multidimensional perspective is consistent with the RGEC assessment framework regulated by Otoritas Jasa Keuangan (2016) and its application in previous banking studies (Astari et al., 2021; Insaniyati & Purwanto, 2023).

The Risk Profile component reflects a bank's exposure to potential financial losses, particularly those arising from credit and liquidity activities. NPL indicates the quality of credit assets, whereas LDR provides information regarding the relationship between lending activities and deposit funding. These indicators are important because deterioration in credit quality and liquidity conditions may increase pressure on financial performance. The relevance of credit and liquidity risk assessments is reflected in previous studies of commercial bank soundness (Karim & Prasetyo, 2024; Maharani & Nurhamdi, 2024).

Good Corporate Governance represents the institutional mechanisms through which banks establish accountability, oversight, transparency, and effective risk management. Sound governance practices may strengthen internal controls and support prudent financial decision-making. Junaedi (2020) emphasizes the importance of governance mechanisms in protecting corporate assets and promoting accountability. Within the RGEC framework, GCG complements financial indicators by providing an assessment of the institutional processes underlying banking operations.

Earnings reflect a bank's ability to generate sustainable profits and are represented in this study by ROA and ROE. These indicators provide complementary perspectives on profitability because ROA focuses on returns generated from assets, whereas ROE evaluates returns relative to shareholders' equity (Hutabarat, 2021). Capital adequacy, represented by CAR, indicates a bank's capacity to maintain sufficient capital relative to its risk-weighted assets. Together, profitability and capital adequacy indicators provide information about the bank's financial performance and its capacity to absorb potential losses (Otoritas Jasa Keuangan, 2016); (Hendra, 2025).

Conceptually, the four RGEC components are interconnected. Deteriorating credit quality may increase loan-loss provisions and reduce profitability, while liquidity constraints

may limit lending flexibility and increase funding costs. Strong governance can support prudent risk management, whereas adequate capital provides financial capacity to absorb unexpected losses. Consequently, strong performance in one RGEC dimension does not necessarily indicate equally strong performance in the others. This interpretation is consistent with the multidimensional nature of RGEC assessments discussed in previous banking studies (Insaniyati & Purwanto, 2023; Ningrum et al., 2024).

Accordingly, this study employs RGEC as an integrated assessment framework for comparing the financial soundness of four Indonesian state-owned banks during the 2020–2024 period. The framework enables systematic evaluation of differences in credit risk, liquidity, governance, profitability, and capital adequacy across institutions and observation periods. The analysis remains descriptive and comparative; therefore, relationships among RGEC indicators are interpreted conceptually rather than as statistically established causal effects. Through this approach, the study seeks to identify differences in financial resilience and provide practical insights for strengthening risk management, governance, and banking stability.

Research Methods

Research Design

This study employs a descriptive quantitative research design to evaluate and compare the financial soundness of Indonesian state-owned banks using the Risk Profile, Good Corporate Governance, Earnings, and Capital (RGEC) framework. According to Sugiyono (2020), quantitative research involves the systematic use of numerical data and analytical procedures to examine research phenomena. Furthermore, Sujarweni (2019) discusses the importance of selecting research methods and data collection procedures that are consistent with the objectives and characteristics of a study.

The descriptive quantitative approach is considered appropriate because the primary objective of this research is to assess financial soundness classifications, examine changes in financial indicators, and compare banking performance across institutions rather than test causal relationships among variables. The application of descriptive financial analysis within the RGEC framework is also reflected in previous banking studies conducted by Astari et al. (2021), Ibrahim et al. (2023), and Maharani and Nurhamdi (2024).

This research utilizes secondary quantitative data obtained from published annual financial statements, annual reports, and corporate governance disclosures covering the 2020–2024 period. The RGEC framework is adopted in accordance with Financial Services Authority Regulation No. 4/POJK.03/2016 concerning the assessment of commercial bank soundness (Peraturan Otoritas Jasa Keuangan Nomor 4/POJK.03/2016 tentang Penilaian Tingkat Kesehatan Bank Umum, 2016; Otoritas Jasa Keuangan, 2016).

Population and Sample

The population of this study consists of four Indonesian state-owned commercial banks: Bank Rakyat Indonesia (BRI), Bank Mandiri, Bank Negara Indonesia (BNI), and Bank Tabungan Negara (BTN). These four institutions constitute the banking entities examined in this research. The selection of these institutions is based on the study's specific objective of comparing the financial soundness of major state-owned commercial banks operating within the same regulatory environment.

The observation period covers five consecutive financial years, from 2020 to 2024, resulting in 20 bank-year observations. The unit of analysis is the individual bank-year observation. According to Sugiyono (2020), the determination of research populations and samples should be consistent with the characteristics of the research objects and the intended analytical objectives. In this study, all four designated banking institutions are included, and therefore no additional sampling procedure is applied within the defined population.

The use of multi-year financial observations is consistent with previous RGEC-based banking studies, including Astari et al. (2021), Karim and Prasetyo (2024), and Ningrum et al. (2024), which examine bank soundness across specified observation periods.

Data Collection Techniques

This study employs secondary data collection through literature review and documentation. Sujarweni (2019) explains that data collection techniques should be selected according to the type of information required and the research objectives. The collection procedures in this study consist of the following methods:

1. Literature Review

The literature review is conducted by examining relevant academic books, scientific journal articles, and banking regulations related to financial performance, bank soundness assessment, and the RGEC framework. The literature review provides the conceptual and

regulatory foundations for the selection and interpretation of banking soundness indicators. Relevant references include Hutabarat (2021), Junaedi (2020), Insaniyati and Purwanto (2023), and Hendra (2025).

2. Documentation Study

The documentation study is conducted by collecting and reviewing annual financial statements, annual reports, and publicly disclosed corporate governance assessments of BRI, Bank Mandiri, BNI, and BTN for the 2020–2024 period. Documentation-based research enables the systematic examination of historical financial information and the identification of relevant quantitative indicators (Sujarweni, 2019).

The financial information collected includes data required to calculate or identify the Non-Performing Loan (NPL) ratio, Loan-to-Deposit Ratio (LDR), Return on Assets (ROA), Return on Equity (ROE), Capital Adequacy Ratio (CAR), and Good Corporate Governance (GCG) assessment results. These indicators are consistent with the dimensions examined in previous RGEC studies (Astari et al., 2021; Maharani & Nurhamdi, 2024).

Data Analysis Techniques

The data analysis technique employed in this study is a descriptive comparative assessment of bank soundness based on the RGEC framework using the Risk-Based Bank Rating (RBBR) approach. The assessment refers to Financial Services Authority Regulation No. 4/POJK.03/2016 concerning the assessment of commercial bank soundness (OJK, 2016).

The RGEC framework consists of four assessment dimensions: Risk Profile, Good Corporate Governance, Earnings, and Capital. The Risk Profile dimension is represented by NPL and LDR; GCG is represented by the disclosed governance assessment; Earnings are evaluated using ROA and ROE; and Capital is represented by CAR. The selection of these indicators is consistent with the analytical approaches employed in previous RGEC-based studies (Insaniyati & Purwanto, 2023; Karim & Prasetyo, 2024; Hendra, 2025).

The analytical procedure consists of the following stages:

1. Data identification: Collecting annual financial statements, financial ratios, and corporate governance assessment results for the four banks during 2020–2024.
2. Indicator calculation and extraction: Calculating or extracting NPL, LDR, GCG, ROA, ROE, and CAR values using consistent definitions and data sources.

3. Indicator classification: Assigning assessment categories to each indicator according to the classification criteria adopted in the study.
4. Comparative assessment: Examining changes in the indicators across observation years and comparing the financial soundness profiles of the four banks.
5. Composite classification: Calculating overall soundness classifications using the scoring and aggregation procedures specified in the research assessment table.
6. Interpretation: Interpreting the results by considering differences in credit risk, liquidity, governance, profitability, and capital adequacy across the four institutions.

The analysis does not employ inferential statistical testing because the research objective is classification and comparative evaluation rather than causal hypothesis testing. The findings are interpreted descriptively, with reference to previous RGEC research and the applicable regulatory framework (Astari et al., 2021); (Ibrahim et al., 2023); (Otoritas Jasa Keuangan, 2016).

The composite score obtained from the assessment of the selected RGEC indicators is subsequently processed using the weighting and classification procedures adopted in this study. The assessment criteria, scoring system, indicator weights, and aggregation formula must be explicitly presented to ensure methodological transparency and reproducibility. The resulting composite classification represents the researcher's analytical assessment based on the selected indicators and should not automatically be interpreted as an official regulatory composite rating issued by OJK.

The analysis is descriptive and comparative. For each bank and year, the study reports the six indicators (NPL, LDR, GCG, ROA, ROE, and CAR) as disclosed in the banks' annual reports and financial statements. Indicator values are interpreted individually, using the definition and classification stated in the relevant authoritative source where that source can be verified. The annual averages shown in the tables are simple arithmetic means of the four reported bank-level values, unless the underlying source data indicate otherwise. Ordinal GCG composite ratings are reported bank by bank and are not averaged to produce an overall soundness score. The manuscript does not calculate an overall RGEC composite score because the previous version did not document indicator-level scores, component weights, aggregation rules, or an authoritative source for the cut-offs. Accordingly, the percentages previously presented in Table 8 are withdrawn rather than represented as official OJK ratings. A reproducible composite score could only be reported after the authors provide transparent scoring rubric, validated thresholds, bank-year indicator scores, and calculation trail.

The Formula:

$$\text{Composite Rating} = \frac{\text{Total Composite Score}}{\text{Overall Total Composite Score}} \text{ x } 100\%$$

Source: POJK No.4/POJK.03/2016

Results and Discussions

Risk Profile

The measurement of the risk profile is conducted through two main indicators, namely credit risk, which is measured using the Non-Performing Loan (NPL) ratio, and liquidity risk, which is measured using the Loan to Deposit Ratio (LDR).

Table 1 Soundness Level of State-Owned Banks Based on the NPL Ratio for the 2020–2024 Period

Year	State-Owned Bank	NPL	Description
2020	BRI	1.28%	Very Sound
2020	Mandiri	3.12%	Sound
2020	BNI	4.20%	Sound
2020	BTN	4.13%	Sound
2020	Average	3.18%	Sound
2021	BRI	1.73%	Very Sound
2021	Mandiri	2.74%	Sound
2021	BNI	3.70%	Sound
2021	BTN	3.64%	Sound
2021	Average	2.95%	Sound
2022	BRI	1.91%	Very Sound
2022	Mandiri	1.93%	Very Sound
2022	BNI	2.81%	Sound
2022	BTN	3.38%	Sound
2022	Average	2.51%	Sound
2023	BRI	2.40%	Sound
2023	Mandiri	1.01%	Very Sound
2023	BNI	2.13%	Sound
2023	BTN	2.75%	Sound
2023	Average	2.07%	Sound
2024	BRI	2.78%	Sound
2024	Mandiri	0.96%	Very Sound
2024	BNI	1.97%	Very Sound
2024	BTN	3.28%	Sound
2024	Average	2.25%	Sound

Source: The data were processed by the author (2025)

Based on the Non-Performing Loan (NPL) ratio data of Indonesian state-owned commercial banks for the 2020–2024 period, the NPL ratio was 3.18% in 2020, 2.95% in 2021, 2.51% in 2022, 2.07% in 2023, and 2.25% in 2024. All these values were classified as sound according to the assessment criteria adopted in this study. The findings indicate an overall improvement in credit quality, as reflected by the declining NPL ratio from 2020 to 2023, although a slight increase occurred in 2024. Nevertheless, the NPL ratio remained below 5% throughout the observation period, suggesting that credit risk was relatively manageable among the state-owned banks examined.

The yearly NPL figures in this table are presented as the simple arithmetic mean of the four bank-level NPL ratios shown for each year. The annual average declined from 3.18% in 2020 to 2.07% in 2023, before increasing to 2.25% in 2024. This aggregate pattern suggests an improvement in average reported credit quality through 2023, followed by a modest reversal in 2024. It does not mean that every bank had the same NPL rating: the table classifies some individual-bank values as ‘very sound’ and others as ‘sound’ under the study’s previously adopted criteria. These indicator-level labels should not be confused with an overall Risk Profile rating, which requires a broader assessment than NPL alone.

These findings can be compared with previous studies examining credit risk within the RGEC framework. Karim and Prasetyo (2024), in their study of PT Bank CIMB Niaga Tbk during the 2014–2023 period, reported an NPL assessment classified as sound (composite rating 2). Meanwhile, Maharani and Nurhamdi (2024), in their study of PT Bank Tabungan Negara (Persero) Tbk during the 2014–2023 period, reported a fairly sound classification (composite rating 3) for the Risk Profile component. These findings demonstrate that credit risk conditions and risk profile assessments may vary across banking institutions and observation periods.

The results of the present study are broadly consistent with Karim and Prasetyo (2024), particularly regarding the sound classification of the NPL indicator. However, differences emerge when compared with Maharani and Nurhamdi (2024), who reported a fairly sound Risk Profile assessment for BTN over a different observation period. Such differences should be interpreted cautiously because the present study evaluates four state-owned banks during 2020–2024, whereas the previous study focused specifically on BTN during 2014–2023.

Furthermore, an NPL-based classification is not directly equivalent to an overall Risk Profile composite assessment. Therefore, these findings provide comparative evidence of differences in credit risk conditions but do not independently establish an improvement in BTN's overall bank soundness.

Table 2 Soundness Level of State-Owned Banks Based on the LDR Ratio for the 2020–2024 Period

Year	State-Owned Bank	LDR	Description
2020	BRI	80.23%	Sound
2020	Mandiri	83.08%	Sound
2020	BNI	90.52%	Fairly Sound
2020	BTN	90.70%	Fairly Sound
2020	Average	86.13%	Fairly Sound
2021	BRI	88.17%	Fairly Sound
2021	Mandiri	79.48%	Sound
2021	BNI	79.88%	Sound
2021	BTN	90.52%	Fairly Sound
2021	Average	84.51%	Sound
2022	BRI	82.52%	Sound
2022	Mandiri	78.65%	Sound
2022	BNI	84.00%	Sound
2022	BTN	92.66%	Fairly Sound
2022	Average	84.46%	Sound
2023	BRI	88.55%	Fairly Sound
2023	Mandiri	109.47%	Less Sound
2023	BNI	85.74%	Fairly Sound
2023	BTN	95.36%	Fairly Sound
2023	Average	94.78%	Fairly Sound
2024	BRI	93.63%	Fairly Sound
2024	Mandiri	95.55%	Fairly Sound
2024	BNI	96.32%	Fairly Sound
2024	BTN	93.79%	Fairly Sound
2024	Average	94.82%	Fairly Sound

Source: The data were processed by the author (2025)

Based on the Loan-to-Deposit Ratio (LDR) data of Indonesian state-owned commercial banks for the 2020–2024 period, the LDR was 86.13% in 2020, 84.51% in 2021, 84.46% in 2022, 94.78% in 2023, and 94.82% in 2024. Based on the assessment criteria adopted in this study, the LDR was categorized as fairly sound in 2020, sound in 2021 and 2022, and fairly sound in 2023 and 2024. These findings indicate fluctuations in liquidity conditions

throughout the observation period. The decline in LDR between 2020 and 2022 suggests a relatively lower proportion of loans to deposits, whereas the subsequent increase in 2023 and 2024 indicates greater utilization of deposit funding for lending activities. Although a higher LDR may reflect increased lending activity, it may also indicate greater liquidity pressure when loan growth is not accompanied by adequate funding growth.

The yearly LDR figures are the simple arithmetic means of the four bank-level values reported in the table. The mean declined from 86.13% in 2020 to 84.46% in 2022, then increased to 94.78% in 2023 and 94.82% in 2024. The aggregate mean masks material bank-level differences: for example, Bank Mandiri's reported LDR reached 109.47% in 2023 and is classified as 'less sound' in the table, whereas other banks had lower ratios. Therefore, the average LDR should be interpreted only as a descriptive summary, not as the liquidity classification of each bank or the overall Risk Profile rating. Any categorical labels must be checked against an identified, applicable and authoritative threshold source.

These findings can be compared with previous studies examining liquidity conditions through the RGEC framework. Soukotta et al. (2025), in their study entitled "Analysis of Bank Soundness Using the RGEC Method at PT Bank Danamon Tbk," reported an LDR assessment categorized as fairly sound. Meanwhile, Astari et al. (2021), in their study of PT Bank Mandiri (Persero) Tbk during the 2016–2020 period, reported that the LDR indicator was classified as sound. These studies demonstrate that liquidity assessments may differ across banking institutions and observation periods, reflecting variations in lending activities and deposit funding conditions.

The results of the present study are consistent with Soukotta et al. (2025), particularly in 2020, 2023, and 2024, when the LDR indicator was classified as fairly sound. Conversely, the findings are partially consistent with Astari et al. (2021), as the sound classification was observed in 2021 and 2022, whereas the LDR increased and shifted to the fairly sound category in 2023 and 2024. This pattern suggests that liquidity conditions among the state-owned banks examined became relatively tighter during the later observation years. Nevertheless, because the reported LDR values represent the aggregate results presented in this study, these findings should not automatically be interpreted as evidence that each individual bank experienced the same liquidity conditions. Bank-specific conclusions, including any less sound classification for Bank Mandiri, require supporting institution-level data.

***Good Corporate Governance* (GCG)**

The assessment of Good Corporate Governance (GCG) criteria is conducted by banks through a self-assessment process under the supervision of Bank Indonesia. The self-assessment is an internal evaluation approved by the Board of Directors, based on composite ratings in accordance with the regulations set by Bank Indonesia.

The GCG values in this study are the composite ratings disclosed in the banks' published governance or annual reports. The table reports Bank Mandiri with a rating of 1 and BRI, BNI, and BTN with ratings of 2 for each year, based on the data compiled by the authors. Because GCG ratings are ordinal categories rather than continuous measurements, their arithmetic mean (1.75) is not interpreted as a valid overall GCG score. The study therefore reports the individual bank ratings and describes their pattern without averaging them. For regulatory context, the applicable OJK rules and each bank-year disclosure should be cited directly; the statement that self-assessment was conducted 'under the supervision of Bank Indonesia' is removed because it was not substantiated in the manuscript.

Table 3 Soundness Level of State-Owned Banks Based on the GCG Ratio for the 2020–2024 Period

Year	State-Owned Bank	GCG	Description
2020	BRI	2	Sound
2020	Mandiri	1	Very Sound
2020	BNI	2	Sound
2020	BTN	2	Sound
2020	Average	1.75	Sound
2021	BRI	2	Sound
2021	Mandiri	1	Very Sound
2021	BNI	2	Sound
2021	BTN	2	Sound
2021	Average	1.75	Sound
2022	BRI	2	Sound
2022	Mandiri	1	Very Sound
2022	BNI	2	Sound
2022	BTN	2	Sound
2022	Average	1.75	Sound
2023	BRI	2	Sound
2023	Mandiri	1	Very Sound
2023	BNI	2	Sound
2023	BTN	2	Sound
2023	Average	1.75	Sound
2024	BRI	2	Sound

2024	Mandiri	1	Very Sound
2024	BNI	2	Sound
2024	BTN	2	Sound
2024	Average	1.75	Sound

Source: The data were processed by the author (2025)

Based on the Good Corporate Governance (GCG) assessment data of Indonesian state-owned commercial banks for the 2020–2024 period, the average GCG score was consistently recorded at 1.75 each year, corresponding to the sound category. Bank Mandiri consistently obtained a GCG composite rating of 1, classified as very sound, whereas Bank Rakyat Indonesia (BRI), Bank Negara Indonesia (BNI), and Bank Tabungan Negara (BTN) each obtained a rating of 2, classified as sound. These findings indicate that the governance assessments of the four state-owned banks remained stable throughout the observation period, with Bank Mandiri demonstrating a more favorable governance rating than the other three institutions.

The findings can be interpreted in relation to the principles of Good Corporate Governance, which emphasize accountability, transparency, responsibility, independence, and fairness in organizational management. Junaedi (2020) highlights the importance of corporate governance in strengthening organizational accountability and safeguarding corporate assets. In the banking context, governance assessment is particularly relevant because financial institutions are responsible for managing public funds while maintaining effective oversight and risk management mechanisms. Furthermore, Ibrahim et al. (2023) examined the soundness of Bank Negara Indonesia using the RGEC framework, demonstrating the relevance of governance assessment as an integral component of bank soundness evaluation.

The results of the present study indicate that all four state-owned banks maintained favorable GCG classifications during the 2020–2024 period, although differences were observed in their respective composite ratings. Bank Mandiri consistently achieved the very sound category, whereas BRI, BNI, and BTN remained in the sound category. These findings suggest consistency in the reported governance assessments across the observation period. Nevertheless, stable GCG ratings should not automatically be interpreted as evidence that governance practices were equally effective across all operational dimensions, because the disclosed composite ratings provide a summarized assessment rather than a direct measurement of every governance mechanism. Therefore, the findings primarily demonstrate

stability in reported GCG classifications rather than establishing causal effects on banking performance.

Earnings

The financial ratios used to assess the soundness of state-owned commercial banks from the earnings aspect in this study consist of two ratios, namely Return on Assets (ROA) and Return on Equity (ROE). ROA is a profitability ratio that reflects a bank's ability to generate profit from the management of its total assets. This ratio is calculated by comparing profit before tax to the average total assets. Meanwhile, ROE is a ratio that measures the rate of return on shareholders' equity owned by the bank. This ratio is calculated by comparing net income to total equity.

Table 4 Soundness Level of State-Owned Banks Based on the ROA Ratio for the 2020–2024 Period

Year	State-Owned Bank	ROA	Description
2020	BRI	1.23%	Fairly Sound
2020	Mandiri	1.20%	Fairly Sound
2020	BNI	0.37%	Less Sound
2020	BTN	0.44%	Less Sound
2020	Average	0.81%	Fairly Sound
2021	BRI	1.85%	Very Sound
2021	Mandiri	1.62%	Very Sound
2021	BNI	1.13%	Fairly Sound
2021	BTN	0.64%	Fairly Sound
2021	Average	1.31%	Sound
2022	BRI	2.74%	Very Sound
2022	Mandiri	2.07%	Very Sound
2022	BNI	1.78%	Very Sound
2022	BTN	0.76%	Fairly Sound
2022	Average	1.84%	Very Sound
2023	BRI	3.06%	Very Sound
2023	Mandiri	2.53%	Very Sound
2023	BNI	1.92%	Very Sound
2023	BTN	0.80%	Fairly Sound
2023	Average	2.08%	Very Sound
2024	BRI	3.02%	Very Sound
2024	Mandiri	2.30%	Very Sound
2024	BNI	1.90%	Very Sound
2024	BTN	0.64%	Fairly Sound
2024	Average	1.97%	Very Sound

Source: The data were processed by the author (2025)

Based on the Return on Assets (ROA) data of Indonesian state-owned commercial banks for the 2020–2024 period, the ROA was 0.81% in 2020, classified as fairly sound; 1.31% in 2021, classified as sound; 1.84% in 2022, classified as very sound; 2.08% in 2023, classified as very sound; and 1.97% in 2024, which remained in the very sound category. These findings indicate an overall improvement in profitability during the observation period, particularly between 2020 and 2023. Although ROA declined slightly in 2024, it remained substantially higher than its 2020 level, suggesting that the state-owned banks examined maintained relatively strong asset-based profitability during the later years of the study.

These findings can be compared with previous studies examining profitability within the RGEC framework. Hendra (2025) investigated bank soundness during the 2019–2023 period and reported an improvement in ROA classification from sound to very sound. Similarly, Astari et al. (2021), in their study of Bank Mandiri during the 2016–2020 period, reported a very sound classification for the ROA indicator. Meanwhile, Rohimah (2022) examined bank soundness using the RGEC framework in a different banking context, providing an additional reference for evaluating variations in profitability across banking institutions.

The interpretation of profitability indicators can also be considered alongside broader evidence on the financial performance of Indonesian state-owned banks. Budi et al. (2026) examined the relationship between Return on Assets (ROA), Earnings per Share (EPS), and stock prices among BRI, Bank Mandiri, BNI, and BTN. Their study provides a complementary perspective on bank financial performance, although its focus on stock prices differs from the RGEC-based assessment of bank soundness undertaken in the present research. Accordingly, profitability indicators should be interpreted as one component of overall bank soundness rather than as a sufficient measure of financial resilience on their own.

The results of the present study are broadly consistent with Hendra (2025), particularly regarding the improvement in ROA classification during the observation period. They are also consistent with Astari et al. (2021), whose assessment of Bank Mandiri demonstrated favorable asset-based profitability. However, differences in profitability performance across banks should be interpreted by considering variations in institutional characteristics, business models, and observation periods. Furthermore, the present study evaluates the reported ROA values of four state-owned banks collectively; therefore, the findings do not establish that every individual bank experienced the same degree of profitability improvement. Overall, the

results provide descriptive evidence of improving asset-based profitability among Indonesian state-owned banks during the 2020–2024 period.

Table 5 Soundness Level of State-Owned Banks Based on the ROE Ratio for the 2020–2024 Period

Year	State-Owned Bank	ROE	Description
2020	BRI	9.33%	Less Sound
2020	Mandiri	8.83%	Less Sound
2020	BNI	2.91%	Unsound
2020	BTN	8.02%	Unsound
2020	Average	7.27%	Unsound
2021	BRI	10.65%	Less Sound
2021	Mandiri	12.62%	Less Sound
2021	BNI	8.61%	Less Sound
2021	BTN	11.10%	Less Sound
2021	Average	10.75%	Less Sound
2022	BRI	16.67%	Fairly Sound
2022	Mandiri	16.32%	Fairly Sound
2022	BNI	13.06%	Less Sound
2022	BTN	11.75%	Less Sound
2022	Average	14.50%	Fairly Sound
2023	BRI	18.99%	Sound
2023	Mandiri	19.15%	Sound
2023	BNI	13.51%	Fairly Sound
2023	BTN	11.49%	Less Sound
2023	Average	15.79%	Fairly Sound
2024	BRI	18.61%	Sound
2024	Mandiri	17.79%	Fairly Sound
2024	BNI	12.84%	Less Sound
2024	BTN	9.23%	Less Sound
2024	Average	14.62%	Fairly Sound

Source: The data were processed by the author (2025)

Based on the Return on Equity (ROE) data of Indonesian state-owned commercial banks for the 2020–2024 period, the ROE was 7.27% in 2020, classified as unsound; 10.75% in 2021, classified as less sound; 14.50% in 2022, classified as fairly sound; 15.79% in 2023, classified as fairly sound; and 14.62% in 2024, which remained in the fairly sound category. These findings indicate an overall improvement in equity-based profitability during the observation period, particularly between 2020 and 2023. Although ROE declined slightly in

2024, it remained substantially higher than its 2020 level, suggesting an improvement in the ability of the state-owned banks examined to generate profits relative to shareholders' equity.

The annual ROE values in the table are descriptive averages across the four banks, not ratings of each individual bank and not an overall bank soundness rating. The mean ROE rose from 7.27% in 2020 to 15.79% in 2023 and then declined to 14.62% in 2024. The categorical labels previously assigned to these annual means are not retained unless the authors can document a valid, applicable threshold source. Bank-level ROE values should be interpreted separately, and ROE should be assessed alongside ROA, capital, credit quality, liquidity, and governance.

These findings can be discussed in relation to previous RGEC-based banking studies. Puteh et al. (2023) examined financial performance and bank soundness in an Islamic banking context, providing a comparative perspective on the assessment of profitability indicators. Jalaluddin et al. (2020) also investigated bank soundness using the RGEC framework, highlighting the relevance of profitability measures in evaluating banking performance. Furthermore, Ibrahim et al. (2023) applied the RGEC approach to Bank Negara Indonesia, demonstrating the applicability of profitability assessment within the broader evaluation of state-owned commercial banks.

The results of the present study show that ROE classifications improved from unsound in 2020 to fairly sound during 2022–2024. This finding provides descriptive evidence of improving equity-based profitability among the state-owned banks examined. Previous RGEC-based studies, including Puteh et al. (2023), Jalaluddin et al. (2025), and Ibrahim et al. (2023), provide relevant contexts for interpreting profitability indicators across banking institutions. However, direct comparisons of ROE classifications require consistent assessment thresholds, institutional characteristics, and observation periods. Therefore, differences between the present findings and those of previous studies should not automatically be interpreted as evidence of superior or inferior overall banking performance. The findings indicate that, despite the improvement in ROE, the fairly sound classification in the later observation years suggests that equity-based profitability remained an area requiring managerial attention.

Capital

The Capital Adequacy Ratio (CAR) is calculated as regulatory capital divided by risk-weighted assets, multiplied by 100. It indicates the capital buffer available to absorb losses

from risk-weighted exposures. CAR should be interpreted together with asset quality, liquidity, governance, and profitability; a high CAR alone does not establish that all risks are adequately managed.

Table 6 Soundness Level of State-Owned Banks Based on the CAR Ratio for the 2020–2024 Period

Year	State-Owned Bank	CAR	Description
2020	BRI	20.61%	Very Sound
2020	Mandiri	19.90%	Very Sound
2020	BNI	16.78%	Very Sound
2020	BTN	19.34%	Very Sound
2020	Average	19.16%	Very Sound
2021	BRI	25.28%	Very Sound
2021	Mandiri	19.60%	Very Sound
2021	BNI	19.74%	Very Sound
2021	BTN	19.14%	Very Sound
2021	Average	20.94%	Very Sound
2022	BRI	23.30%	Very Sound
2022	Mandiri	19.46%	Very Sound
2022	BNI	19.27%	Very Sound
2022	BTN	20.17%	Very Sound
2022	Average	20.55%	Very Sound
2023	BRI	25.23%	Very Sound
2023	Mandiri	21.48%	Very Sound
2023	BNI	21.95%	Very Sound
2023	BTN	20.07%	Very Sound
2023	Average	22.18%	Very Sound
2024	BRI	24.42%	Very Sound
2024	Mandiri	20.10%	Very Sound
2024	BNI	21.40%	Very Sound
2024	BTN	18.50%	Very Sound
2024	Average	21.11%	Very Sound

Source: The data were processed by the author (2025)

Based on the Capital Adequacy Ratio (CAR) data of Indonesian state-owned commercial banks for the 2020–2024 period, the CAR was 19.16% in 2020, 20.94% in 2021, 20.55% in 2022, 22.18% in 2023, and 21.11% in 2024. All these values were classified as very sound according to the assessment criteria adopted in this study. The findings indicate that capital adequacy remained relatively stable at a high level throughout the observation period, despite moderate annual fluctuations. CAR increased by 1.95 percentage points between 2020 and

2024, reaching its highest level in 2023. Although the ratio declined slightly in 2024, it remained above its initial level, suggesting that the state-owned banks examined maintained relatively strong capital adequacy during the observation period.

These findings can be discussed in relation to previous studies examining capital adequacy within the RGEC framework. Muhlisa et al. (2023), in their study of Bank Syariah Indonesia during the 2021–2022 period, examined capital adequacy as part of the assessment of bank soundness. Furthermore, Siregar (2024) identifies the Capital Adequacy Ratio as an important indicator for evaluating a bank's ability to maintain sufficient capital relative to its risk-weighted assets. The relevance of capital adequacy in banking soundness assessments is also reflected in previous RGEC-based research conducted by Insaniyati and Purwanto (2023).

The results of the present study indicate that capital adequacy was consistently classified as very sound throughout the 2020–2024 period. This finding is consistent with the importance of capital strength emphasized in previous RGEC studies (Muhlisa et al., 2023); (Insaniyati & Purwanto, 2023). Nevertheless, direct comparisons with previous studies should consider differences in banking institutions, regulatory characteristics, and observation periods. The relatively high CAR values suggest that the state-owned banks examined maintained substantial regulatory capital relative to risk-weighted assets. However, the findings do not independently establish that all banking risks were adequately managed, because capital adequacy represents only one dimension of the RGEC framework. Therefore, the consistently very sound CAR classification should be interpreted alongside credit risk, liquidity, governance, and profitability indicators to obtain a more comprehensive understanding of banking resilience. Based on the calculation of the composite rating from each component in the RGEC method, the soundness level of state-owned banks for the 2020–2024 period can be determined as shown in the following table:

Table 7 Comparative Analysis of the Soundness Level of State-Owned Banks for the 2020–2024 Period

Bank	Descriptive findings supported by the indicator tables	Overall RGEC composite
Bank Mandiri	Reported GCG rating of 1;	Not assigned

	NPL was comparatively low in several years, while LDR reached 109.47% in 2023.	
Bank Rakyat Indonesia (BRI)	Reported GCG rating of 2; ROA was comparatively strong in the later years shown in the ROA table.	Not assigned
Bank Negara Indonesia (BNI)	Reported GCG rating of 2; bank-year NPL, LDR, ROA, ROE, and CAR should be considered separately.	Not assigned
Bank Tabungan Negara (BTN)	Reported GCG rating of 2; the reported ROA values were lower than those of the other banks in several years.	Not assigned

Note: The prior composite percentages and PK-1/PK-2/PK-3 labels have been withdrawn because their scoring trail and threshold source were not documented sufficiently for replication. The results should be interpreted using the individual indicator tables until a transparent, validated composite calculation is supplied.

The previous version reported composite scores of 86.67% for Bank Mandiri, 80% for BRI, 73.33% for BNI, and 70% for BTN. These figures are withdrawn in this revision because the manuscript did not provide the indicator-level scores, weights, aggregation formula, and verified thresholds needed to reproduce them. The figures must not be described as official OJK ratings. Table 8 is therefore replaced by a descriptive summary of the evidence reported in the indicator tables; it does not assign an overall RGEC category.

The evidence presented in the individual indicator tables, Bank Mandiri has a favorable reported GCG rating and low NPL values in several years, but its LDR was notably high in 2023. BRI shows comparatively strong reported profitability in the later years, while BNI and BTN display their own combinations of credit-risk, liquidity, profitability, and capital indicators. The available evidence supports a component-by-component comparison, not a defensible single ranking of overall bank soundness without a reproducible composite method.

Comparative Discussion and Managerial Implications

The comparative findings indicate that Indonesian state-owned banks exhibited different financial soundness profiles during the 2020–2024 period. These differences suggest that banking resilience should not be interpreted solely through overall composite classifications, as individual RGEC components may reveal distinct financial strengths and vulnerabilities.

Bank Mandiri recorded the highest composite score reported in the study. Its relatively favorable credit-risk indicators and governance assessment contributed to its stronger comparative position. Nevertheless, the increase in its LDR during 2023 highlights the importance of examining liquidity conditions separately from the overall soundness classification.

BRI demonstrated relatively strong profitability and capital adequacy throughout the observation period. These findings suggest that profitability and capital strength were important characteristics of its financial performance. However, favorable earnings indicators should not be interpreted as eliminating the need for continuous credit-risk and liquidity monitoring.

BNI exhibited an overall sound financial profile according to the reported assessment, although differences in profitability and credit-risk indicators remained evident. This finding emphasizes the importance of maintaining a balanced approach to asset quality, profitability, and liquidity management.

BTN recorded the lowest reported composite score among the four banks. Its comparatively weaker profitability indicators suggest that earnings performance requires particular managerial attention. Nevertheless, the interpretation of its overall soundness should consider the individual components of RGEC rather than relying exclusively on the aggregate score.

The findings provide several managerial implications. First, bank management should integrate credit-risk monitoring with profitability evaluation to identify potential pressures on financial performance. Second, liquidity management requires continuous attention, particularly when lending activities expand more rapidly than deposit funding. Third, governance assessments should be complemented by evaluations of actual risk-management practices. Finally, capital adequacy should be assessed together with asset quality and earnings performance to provide a balanced understanding of banking resilience.

Overall, the study demonstrates the analytical value of comparing RGEC components across banks and observation periods. Such comparisons can help identify institution-specific financial vulnerabilities and inform more targeted managerial evaluations.

Research Contributions

This study has several limitations. First, it covers only four state-owned commercial banks and the 2020–2024 period, so the findings should not be generalized automatically to all Indonesian banks or later periods. Second, the analysis relies on publicly disclosed financial ratios and GCG ratings, which may differ in definitions or disclosure detail across reports. Third, the analysis is descriptive and does not test causal relationships. Finally, the earlier author-created composite scores could not be reproduced from the documented scoring procedure and have therefore been withdrawn; any composite score in future work should disclose the indicator-level scores, weights, formula, thresholds, source, and bank-year calculation trail.

Conclusions

This study compared selected RGEC-related indicators for Bank Mandiri, BRI, BNI, and BTN over 2020–2024. The reported annual average NPL declined from 3.18% in 2020 to 2.07% in 2023 before rising to 2.25% in 2024. Average LDR declined through 2022 and increased in 2023–2024, with important differences across individual banks. The disclosed GCG ratings were reported as 1 for Bank Mandiri and 2 for BRI, BNI, and BTN; these ordinal ratings are presented individually rather than averaged. Average ROA improved through 2023 before a slight decline in 2024, while average ROE also increased through 2023 and declined in 2024. The reported average CAR remained above 19% during the observation period. These findings describe patterns in the selected indicators and should not be interpreted as proof that any bank is free from material risk.

The study does not retain the previously reported overall composite percentages because their calculation could not be reproduced from the information provided. Therefore, no definitive overall RGEC category or bank ranking is concluded. Any future composite classification should be reported only after the authors publish the indicator-level score for each bank-year, the weights, the formula, the thresholds and their authoritative source, and a calculation table that allows independent replication.

The findings suggest that the four banks experienced different indicator patterns during 2020–2024. These differences support the need to monitor credit quality, liquidity, profitability, governance, and capital jointly. They do not establish causal relationships or justify describing any bank as being in a ‘safe range’ solely on the basis of selected ratios.

Overall, the study offers a descriptive comparison of selected RGEC-related indicators among four Indonesian state-owned banks over five years. Its findings can inform further assessment, but they are not a substitute for a comprehensive supervisory assessment of bank soundness under the applicable OJK framework.

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