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The Impact of Sustainable Finance Reporting, ESG Disclosure, and Ownership Structure on Financial Performance: Evidence from Indonesia's State-Owned Banks

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Abstract

This study examines the effect of the Sustainable Finance Report (SFR), ESG Disclosure, and government ownership structure on the financial performance of four major state-owned banks in Indonesia (Bank Mandiri, BRI, BNI, and BTN), and tests the mediating role of ESG Disclosure. Using a quantitative explanatory design, the study draws on 112 bank-quarter observations from 2019–2025, selected through purposive sampling, and analyzes them with Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS 4. The model shows good fit (SRMR = 0.059; GoF = 0.873) and strong explanatory power, with R^2 of 0.827 for ESG Disclosure and 0.855 for Bank Performance. SFR has a significant negative direct effect on bank performance ($\beta = -0.469$; $t = 2.398$; $p = 0.008$), as does ownership structure ($\beta = -1.101$; $t = 8.762$; $p < 0.001$), the latter being the dominant predictor ($f^2 = 0.821$). Both SFR ($\beta = 1.511$; $t = 19.918$) and ownership structure ($\beta = 0.684$; $t = 8.410$) significantly increase ESG Disclosure, which in turn improves bank performance ($\beta = 0.345$; $t = 3.174$; $p = 0.001$). ESG Disclosure significantly mediates the effects of SFR ($\beta = 0.521$; $t = 3.087$) and ownership structure ($\beta = 0.236$; $t = 2.891$) on bank performance, reversing their negative direct effects into positive indirect ones. These findings contribute to the sustainability and ownership-governance literature and suggest that managers and regulators should treat ESG Disclosure as a strategic instrument rather than a compliance obligation.

Keywords: Sustainable Finance Report, ESG Disclosure, Bank Ownership, Bank Performance, PLS-SEM.

1 INTRODUCTION

The Indonesian banking industry is one of the most dynamic and strategically important sectors of the national economy. Since 2018, the locus of competition has gradually shifted from physical scale and asset size toward digital efficiency, customer experience, and adherence to sustainability principles. This transformation has been reinforced by regulations issued by the Financial Services Authority (Otoritas Jasa Keuangan/OJK), notably POJK No. 13/POJK.03/2020 on Digital Financial Innovation and POJK No. 51/POJK.03/2017 on Sustainable Finance, which require financial service institutions, issuers, and public companies to implement sustainable finance principles as part of their business strategy. These regulations are intended to promote economic development that is aligned with social and environmental considerations while safeguarding inclusive and sustainable economic stability, and they push banks to adopt business models that are more inclusive, transparent, and technology-based.

Attention to sustainability issues in the banking sector has grown in tandem with regulatory pressure and heightened environmental awareness. At the same time, financial performance remains a key indicator of operational efficiency and profitability. Various challenges facing the industry rising credit risk, global economic volatility, and mounting demands to support sustainability can nonetheless erode financial performance. Banking performance is a fundamental indicator of the soundness and operational sustainability of a financial institution. Indonesia's sovereign wealth fund, the Daya Anagata Nusantara Investment Management Agency (BPI Danantara), has urged state-owned enterprises (SOEs) to move beyond asset growth alone and instead strengthen earnings quality and operating cash flow. SOEs are further encouraged to exercise capital expenditure discipline, maintain a healthy capital structure, and optimize financial ratios such as return on assets (ROA) and return on equity (ROE). ROA reflects a bank's ability to generate profit from its total assets, while ROE indicates the extent to which equity capital generates returns for shareholders;

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together, these ratios serve not only as profitability measures but also as strategic indicators of banking efficiency and competitiveness in the financial market [1].

The average ROA of Indonesian banks has stagnated at around 2.0% over the past five years, signaling potential pressure on profitability arising from several factors, including the additional costs associated with implementing sustainability initiatives [2]. Table 1 presents the financial performance data of Indonesia's four largest state-owned banks.

Table 1. Financial Performance of State-Owned Banks

Year	Bank	Forecast (Beginning of Year)	Realization (End of Year)	Deviation (%)
2023	Bank Mandiri	IDR 38 T	IDR 39.1 T	2.90%
	BRI	IDR 50 T	IDR 51.4 T	2.80%
	BNI	IDR 17 T	IDR 16.2 T	-4.70%
	BTN	IDR 3.1 T	IDR 3.0 T	-3.20%
2024	Bank Mandiri	IDR 40 T	IDR 41.2 T	3.00%
	BRI	IDR 52 T	IDR 53.8 T	3.50%
	BNI	IDR 16.5 T	IDR 17.0 T	3.00%
	BTN	IDR 3.0 T	IDR 3.2 T	6.70%
2025 (Sept)	Bank Mandiri	IDR 40 T	IDR 37.7 T	-5.80%
	BRI	IDR 52 T	IDR 33.9 T	-34.80%
	BNI	IDR 16 T	IDR 11.0 T	-31.30%
	BTN	IDR 3.2 T	IDR 2.0 T	-37.50%

Source: 2024 First-Semester Financial Reports and official publications of the Ministry of SOEs and the Indonesia Stock Exchange

In 2023–2024, most banks recorded favorable results, including BTN, which had previously posted a negative deviation and subsequently recovered with substantial growth. This pattern indicates improvements in corporate governance, more measured expansion strategies, and support from a relatively stable macroeconomic environment. Even so, these gains were still largely driven by nominal profit growth and therefore did not fully reflect earnings quality or cash-flow strength as required under Danantara's new SOE performance-assessment standards. Entering the third quarter of 2025, BRI, BNI, and BTN experienced sharp declines, with negative deviations exceeding -30%. This downturn points to serious structural pressure stemming from both external factors (economic slowdown, tighter monetary policy, credit risk) and internal factors (reliance on asset expansion without a corresponding strengthening of fundamentals). Bank Mandiri was relatively more stable but still posted a moderate decline, suggesting that even banks with a strong asset base are not fully insulated from macroeconomic shocks. Analytically, the core problem in the financial performance of state-owned banks lies in their failure to maintain consistency between forecasts and realizations amid a volatile economic environment. This suggests that the old paradigm one that emphasizes the magnitude of profit and assets alone is no longer sufficient. The new SOE assessment standard instead demands a focus on earnings quality, operating cash flow, and credible governance. The 2025 data thus provide concrete evidence that state-owned banks must undertake fundamental changes to their business strategy, risk management, and operational efficiency in order to remain resilient and relevant amid continuing global economic instability.

The implementation of sustainable finance through a Sustainable Finance Roadmap (SFR) is understood to contribute to higher ROA by encouraging the diversification of credit portfolios toward more stable, lower-risk sustainable sectors. The SFR functions as a policy framework that promotes the diversification of financing toward sustainable sectors, thereby reducing dependence on credit portfolios that are vulnerable to macroeconomic shocks and making bank assets more productive in generating profit [3].

ESG practices, in turn, have been shown to strengthen governance, improve operational efficiency, and build investor trust, thereby preserving asset quality and helping to sustain ROA at an optimal level. The implementation of ESG has been shown to improve operational efficiency, strengthen governance, and build investor confidence, with a direct effect on the stability of ROA and asset quality [4].

Government ownership, meanwhile, provides structural stability through supportive fiscal policy and regulation, including intervention in strategic sectors and protection against systemic risk [5]. The synergy among these three factors sustainable finance, ESG practice, and government ownership can strengthen profitability, sustain competitiveness, and secure the long-term performance of state-owned banks in the face of global economic pressure.

Legitimacy theory complements stakeholder theory by emphasizing the need for firms to focus on satisfying the expectations of their stakeholders. Banks are expected to honor an implicit social contract by prioritizing stakeholder interests and adopting responsible business practices that create value for society. Integrating ESG practices allows banks to build competitive advantage, improve operational efficiency and reputation, and reduce waste, ultimately leading to improved performance and profitability. State-owned firms have been found to excel in sustainability reporting owing to their stronger orientation toward legitimacy and social responsibility [5]. In practice, Bank Mandiri, BRI, BNI, and BTN have each published sustainability reports demonstrating their commitment to green financing, social inclusion, and transparent governance. This transformation is consistent with global expectations and national policy directions that call on

the financial sector to contribute to the achievement of the Sustainable Development Goals (SDGs).

1 LITERATURE REVIEW

The present study, which examines the effect of the Sustainable Finance Report (SFR), ESG Disclosure, and Ownership Structure on the financial performance of Indonesia's four largest state-owned banks, rests on the premise that these three variables make an important joint contribution to improving the effectiveness of financial management, transparency, and corporate accountability. Each variable operates through a distinct mechanism, yet together they may reinforce one another in shaping financial performance.

1.1 Sustainable Finance Report and Financial Performance

The Sustainable Finance Report (SFR) is a strategic report that reflects a firm's commitment to implementing sustainable finance principles. Hermawan and Marmen argue that the SFR is not merely an administrative document but an instrument that helps management and stakeholders assess resource-use efficiency, risk management, and sustainable investment decision-making [6]. Dewi et al. [7] emphasize that the consistent application of sustainability principles through the SFR can improve profitability and the stability of a firm's financial performance, while Dupopadana et al. add that publishing a sustainability report can enhance corporate image and attract institutional investors[8]. The dimensions embedded in the SFR include disclosure quality covering all material information on sustainability activities and relevant risks compliance with OJK regulations on sustainable finance, and year-on-year reporting consistency that allows sustainability trends and financial performance to be monitored over time. Prior studies lend support to this argument: Hermawan and Marmen find that the application of sustainable finance principles in state-owned banks improves transparency and financial management [6]; Dewi et al. show that profitability is more stable among banks that consistently apply sustainability principles [7]; and Dupopadana et al. highlight the role of sustainability reporting in attracting institutional investor interest[8].

1.2 Ownership Structure and Financial Performance

Ownership structure refers to the distribution of share ownership within a firm, which shapes the intensity of managerial oversight and strategic decision-making. Holly et al. contend that a larger institutional ownership stake strengthens internal monitoring and pushes management to improve firm performance [9]. Ishmah and Permatasari add that managerial ownership has a dual effect: it encourages a longer-term orientation but may also create conflicts of interest if not adequately monitored [10]. Tjakrawala emphasizes that public ownership enhances corporate transparency and accountability, with a positive effect on financial performance [11]. The dimensions embedded in ownership structure include institutional ownership, which monitors management and influences strategic decisions; managerial ownership, which aligns the interests of management and owners; and public ownership, which enhances accountability and transparency. Prior studies supporting this argument include Holly et al., who find a positive effect of institutional ownership on financial performance [9]; Ishmah and Permatasari, who highlight the effect of managerial ownership [10]; and Tjakrawala, who shows the effect of public ownership on transparency and firm performance [11].

1.3 Sustainable Finance Report and ESG Disclosure

A growing body of research indicates that sustainable finance practices including regulation, green finance, and mandatory sustainability reporting encourage firms to raise both the level and the quality of their ESG disclosure. The Sustainable Finance Disclosure Regulation (SFDR) in the European Union has been shown to induce mutual funds to raise their sustainability (ESG) ratings once sustainable finance reporting rules took effect, indicating that sustainable finance regulation and reporting tangibly strengthen ESG practice and disclosure [12]. In the context of global capital markets, other studies find that mandatory sustainability reporting significantly improves firms' ESG performance, as reporting obligations prompt firms to improve their environmental and social practices and thereby raise their ESG scores [13]. These findings support the argument that sustainable finance reporting regimes exert a positive influence on the intensity and quality of ESG disclosure.

In the domain of green financing, the integration of green finance instruments (e.g., green bonds, green credit) with ESG disclosure forms a positive, reciprocal relationship: stronger ESG disclosure is associated with greater use of green finance, while green finance in turn encourages firms to strengthen their ESG disclosure in order to meet stakeholder demands and sustain long-term legitimacy [14]. This study explicitly positions ESG disclosure as a core element of the sustainable finance ecosystem, in which ESG transparency expands as firms actively access green financing instruments. More broadly, research on how sustainable finance and green innovation relate to ESG disclosure finds that

sustainable finance instruments (green credit and green investment) are significantly associated with the level of ESG disclosure; although sales growth moderates this relationship, firms that are more deeply integrated into green financing and sustainable finance schemes tend to exhibit higher levels of ESG disclosure [15].

1.4 Ownership Structure and ESG Disclosure

Recent studies show that certain ownership structures drive higher levels and quality of ESG disclosure. Ownership that is more diversified and dominated by long-term-oriented owners tends to demand greater environmental, social, and governance transparency. In the Indonesian context, Wardani et al. find that managerial, foreign, institutional, public, and state ownership are positively and significantly related to ESG disclosure, whereas family ownership has a negative effect on ESG disclosure [16]. This suggests that a larger share of professional and institutional owners strengthens firms' incentives to disclose ESG information more broadly and transparently. A similar pattern is reported by Fuadah et al., who show that foreign and public ownership have a significant positive effect on ESG disclosure among Indonesian public companies [17].

In Jordan and the United Arab Emirates, Ellili shows that institutional and foreign ownership have a positive effect on ESG disclosure in both financial and non-financial sectors, arguing that institutional and foreign owners use ESG disclosure as a monitoring mechanism to reduce information asymmetry, so that firms with such ownership structures tend to be more transparent in disclosing their environmental, social, and governance performance [18].

Other Indonesian studies further find that institutional and managerial ownership increase firm value both directly and indirectly through ESG disclosure, indicating that these owners not only encourage greater ESG disclosure but also leverage ESG as a value-creation mechanism [19]. At the global level, Velte's literature review reports that many empirical studies find a positive effect of the institutional ownership ratio on ESG disclosure, particularly when institutional investors are long-term-oriented and "pressure-sensitive" [20].

1.5 ESG Disclosure and Financial Performance

ESG disclosure refers to the practice of disclosing corporate information related to environmental, social, and governance performance. Dewi et al. argue that transparent and comprehensive ESG disclosure reflects corporate social responsibility and enhances reputation, customer loyalty, and operational efficiency, with positive effects on financial performance [7]. Friede et al., through a global meta-analysis, document a positive correlation between ESG disclosure and financial performance [21], while Rani Putri et al. emphasize that comprehensive ESG disclosure can sustain firms' long-term performance and stock-price stability [22]. The dimensions of ESG disclosure include the environmental dimension covering energy management, emissions, waste, and sustainable use of natural resources; the social dimension covering employee-rights protection, community engagement, and social responsibility; and the governance dimension covering board structure, business ethics, internal oversight mechanisms, and regulatory compliance. Prior studies supporting this argument include Dewi et al., who show a significant effect of the environmental and social dimensions on profitability [7]; Rani Putri et al., who find a positive relationship between ESG disclosure and stock performance [22]; and Friede et al., who confirm that the majority of global studies support a positive relationship between ESG disclosure and financial performance [21].

1.6 Sustainable Finance Report, Financial Performance and ESG Disclosure

The Sustainable Finance Report (SFR), ESG Disclosure, and Ownership Structure interact to shape the financial performance of state-owned banks in complementary and mutually reinforcing ways. The SFR provides a transparent framework and clear reporting standards that allow management and stakeholders to monitor the effectiveness of risk management and sustainable resource use [6], [11]. When combined with ESG disclosure, firms report not only their financial sustainability but also communicate their social, environmental, and governance responsibilities in a comprehensive manner. This enhances the credibility of corporate information and reputation, which, according to Dewi et al. and Friede et al., can foster customer loyalty, attract investors, and support the long-term stability of financial performance [7], [21].

The conceptual framework of this study is built on the premise that the Sustainable Finance Report, ESG Disclosure, and Ownership Structure are not independent constructs but interact with one another in shaping firm financial performance. Sustainable finance reporting reflects institutional commitment to transparency and social responsibility, while ESG disclosure serves as a strategic communication instrument that strengthens reputation and market trust. Ownership structure particularly state, public, and institutional ownership creates differing incentives that either encourage or constrain the implementation of sustainability principles. This study therefore maps the relationships among these three variables and financial performance to determine whether the integration of sustainability into reporting and governance genuinely

produces measurable economic value for Indonesian state-owned banks.

1.7 Ownership Structure, Financial Performance and ESG Disclosure

Ownership structure adds an important dimension of monitoring and control to both reporting mechanisms discussed above. Institutional, managerial, and public ownership help ensure that management acts in the interests of owners and stakeholders [9], [10]. In this context, the SFR and ESG disclosure supply the information needed for strategic decision-making, while ownership structure ensures that this information is used effectively to improve performance. In other words, the three variables interact: the SFR provides systematic information, ESG disclosure adds information quality relating to social responsibility and governance, and ownership structure ensures effective monitoring mechanisms so that decisions are oriented toward improved financial performance [23], [24], [25]. This is consistent with studies by Kartiko and Firmansyah, Putri and Taurusianingsih, and Wardani et al., which emphasize that board characteristics and institutional ownership can improve sustainability disclosure, with consequent effects on financial performance [16], [19], [26]. Van Ngo finds that, among Vietnamese banks, the integration of sustainability reporting with institutional-ownership monitoring makes a positive contribution to profitability [27], while Malik and Yadav confirm that applying sustainable finance principles alongside structural oversight has a significant simultaneous effect on bank performance [28]. The simultaneous dimensions considered include the quality of sustainability reporting, regulatory compliance, reporting consistency, disclosure of environmental, social, and governance aspects, and institutional, managerial, and public ownership. Prior studies support this argument by showing that the joint integration of these three variables can strengthen firm financial performance while improving transparency, reputation, and the effectiveness of managerial oversight.

1.8 Research Gap

Prior studies on the Sustainable Finance Report (SFR), ESG disclosure, ownership structure, and bank performance yield inconsistent results. Some find SFR and ESG disclosure positively affect profitability, while others report no significant, or even negative, effects. Ownership-structure findings are similarly mixed, with government and family ownership showing inconclusive effects. Most studies also test these variables in isolation rather than as an integrated model, with few examining ESG disclosure as an intervening variable linking SFR and ownership structure to performance. Moreover, empirical evidence specific to Indonesian state-owned banks under Danantara's new performance standards and the sharp 2025 profit downturn remains scarce. This study addresses these gaps by testing an integrated model on Bank Mandiri, BRI, BNI, and BTN.

2 RESEARCH METHODS

This study employs a quantitative, explanatory design intended to test the simultaneous and partial effects of the Sustainable Finance Report (SFR), ESG Disclosure, and Ownership Structure on the financial performance of Indonesian state-owned banks. This design was chosen because it allows causal relationships among variables to be established using measurable, statistically analyzable numerical data rather than subjective interpretation. The study is causal-comparative in nature, seeking to identify cause-and-effect relationships between the independent and dependent variables without manipulating the research subjects, consistent with the non-experimental character of secondary financial-statement data.

The population comprises all state-owned enterprise (SOE) banks listed on the Indonesia Stock Exchange (IDX) during the 2019–2025 period. This population was selected because SOE banks share distinctive institutional characteristics that make them a coherent unit of analysis: majority government ownership, a national development mandate, and an explicit obligation under Financial Services Authority (OJK) regulation to implement sustainable finance principles. In practice, this population is narrow and well defined, comprising only four major SOE banks—Bank Mandiri, Bank Rakyat Indonesia (BRI), Bank Negara Indonesia (BNI), and Bank Tabungan Negara (BTN) that have consistently issued sustainability disclosures throughout the study period and that serve as the principal actors in implementing ESG principles and green financing in Indonesia. The sample was drawn using purposive sampling, guided by four criteria: SOE status and IDX listing, consistency in issuing annual and sustainability reports, public availability of ESG disclosure and ownership-structure data, and a strategic role in national sustainable finance policy implementation. Applying these criteria across the four banks over seven years, with four quarterly observations per bank per year, yields a total sample of 112 bank-quarter observations.

Data were collected through two complementary techniques appropriate to a secondary-data design: a literature review, used to build the theoretical foundation of the study from books, journal articles, and other relevant scholarly sources; and documentation, used to gather quantitative data directly from each bank's audited annual reports, sustainability reports, and ownership disclosures published on official corporate

websites and the IDX for the 2019–2025 period. The independent variables were operationalized as follows: the Sustainable Finance Report was measured through a Sustainable Report Disclosure Index encompassing green financing, MSME financing, and financial inclusion; ESG Disclosure was measured through environmental, social, and governance ratios derived from content analysis of disclosed financing and governance data; and Ownership Structure was measured through the proportional share of government, institutional, and private ownership. The dependent variable, financial performance, was measured through Return on Assets, Return on Equity, and Tobin's Q, capturing both accounting-based and market-based dimensions of profitability.

The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), estimated with SmartPLS. PLS-SEM was selected because the research model involves multiple latent variables and a network of interrelated hypotheses that would be difficult to estimate with conventional regression, and because it can accommodate unobserved constructs while explicitly modeling measurement error. Each construct in the model follows a second-order reflective specification, in which individual indicators load onto their respective dimensions, and those dimensions in turn load onto the corresponding latent research variable, allowing the composite score for each construct to capture the shared variance across its underlying indicators.

The measurement model was evaluated for convergent validity using the Average Variance Extracted, with values above 0.50 considered acceptable, and for discriminant validity through cross-loadings, requiring each indicator to load more strongly on its own construct than on any other. Reliability was assessed using Cronbach's alpha, with a minimum threshold of 0.70 indicating adequate internal consistency. The structural model was then evaluated through the coefficient of determination, interpreted as strong, moderate, or weak at values of 0.75, 0.50, and 0.25 respectively, and through predictive relevance, for which values above zero indicate adequate predictive capability. Finally, the significance of each hypothesized path was tested through bootstrapping, with a hypothesis accepted when its t-statistic exceeded the critical value of 1.658 at a 0.05 significance level and 95 percent power, and its corresponding p-value fell below 0.05.

3 RESULTS AND DISCUSSION

Indonesia's banking sector has evolved through successive waves of institutional transformation, from the colonial-era establishment of De Javasche Bank in 1828 through post-independence nation-building, the deregulation of the New Order period, and the governance reforms that followed the 1997–1998 financial crisis, including the creation of the Financial Services Authority (OJK). Over the past decade, this trajectory has extended into digitalization, financial inclusion, and sustainability, reflected in the growth of digital banking, fintech services, and OJK's green taxonomy—developments that frame the four state-owned banks examined in this study within a broader national agenda aligned with ESG principles and the Sustainable Development Goals.

The four HIMBARA member banks Bank Mandiri, BRI, BNI, and BTN progressively integrated sustainability principles into their business strategy and reporting between 2019 and 2025, in compliance with POJK 51/2017 and in support of the green economic transition, social inclusion, and transparent governance. Bank Mandiri exhibits balanced growth across the Green Financing Ratio, MSME Ratio, and Financial Inclusion Index; BRI performs strongly on the MSME Ratio and Financial Inclusion Index, consistent with its MSME and financial-inclusion focus; BNI shows marked improvement in green financing and financial inclusion but comparatively low MSME financing; and BTN records the highest MSME Ratio among the four banks but lags on financial inclusion. Overall, Mandiri and BRI report the most comprehensive sustainable finance profiles, BTN leads specifically in MSME financing, and BNI continues to balance its corporate orientation with its sustainability agenda. In parallel, ESG disclosure has evolved since 2019 into a strategic instrument for building trust, managing risk, and creating stakeholder value, marked by the adoption of international standards such as GRI, SASB, and TCFD alongside alignment with OJK's green taxonomy and the SDGs. Bank Mandiri shows balanced improvement across all ESG dimensions, BRI exhibits a stable positive trend with emphasis on the social and inclusion dimensions, BNI records significant improvement in the environmental and governance dimensions but more limited social contribution, and BTN lags overall while showing gradual commitment to improved reporting; Mandiri and BRI thus lead in ESG disclosure, BNI occupies an intermediate position with notable improvement, and BTN remains behind but continues to strengthen its reporting quality.

Ownership of the four state-owned banks remained dominated by the Government of Indonesia throughout 2019–2025, at levels of approximately 52–60 percent, with a gradual increase in institutional ownership and a corresponding decline in public ownership. Government ownership fell moderately at Bank Mandiri, from approximately 60 percent to 51.9 percent since 2019, and at BRI, from approximately 56.5 percent to 53.2 percent, in both cases offset by rising institutional ownership, whereas BNI and BTN remained relatively stable with government ownership

near 59.9 percent despite a modest upward trend in institutional holdings; overall, ownership remains concentrated in government and institutional hands, with implications for policy direction and governance. Financial performance, measured through ROA, ROE, and Tobin's Q, exhibited significant dynamics over the same period: the COVID-19 pandemic depressed profitability in 2020, followed by recovery from 2021 onward through credit restructuring, digitalization, and strengthened risk management. Bank Mandiri and BRI recovered quickly with a positive growth trend, BNI recovered at a more moderate pace, and BTN faced structural challenges stemming from its reliance on the subsidized mortgage segment—so that, overall, Mandiri and BRI display the strongest resilience, BNI a moderate recovery, and BTN the most persistent structural constraints.

Inferential analysis was conducted to draw generalizable conclusions about the population from the sample data, using Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS 4. PLS-SEM was selected for its capacity to examine relationships within a complex, variance-based model while simultaneously testing the causal relationships among latent constructs. Each construct in the model was evaluated for validity, reliability, and path significance to establish overall model–data fit, following the standard two-stage evaluation of the outer (measurement) model and the inner (structural) model.

Convergent validity was assessed through outer loadings and the Average Variance Extracted (AVE), with a minimum acceptable loading of 0.70 [29]. The initial estimation identified two indicators below this threshold—MSME Financing Ratio (UMR) under SFR (loading – 0.051) and institutional ownership under Ownership Structure (loading – 0.996) both of which were removed and the model re-estimated. Table 2 reports the final outer loadings.

Table 2. Final Outer Loadings (Convergent Validity)

Indicator	SFR	ESG Disclosure	Ownership	Bank Performance
FII	0.961	-	-	-
GFR	0.962	-	-	-
Environmental	-	1.000	-	-
Social	-	1.000	-	-
Governance	-	1.000	-	-
Government ownership	-	-	0.806	-
Public ownership	-	-	0.865	-
ROA	-	-	-	0.983
ROE	-	-	-	0.964
Tobin's Q	-	-	-	0.957

Source: Processed data, 2026

All retained indicators exceed the 0.70 threshold, confirming that they consistently and validly represent their respective constructs. AVE values, reported in Table 3, further confirm convergent validity: SFR (0.924), ESG Disclosure (1.000), Ownership Structure (0.699), and Bank Performance (0.937) all exceed the minimum acceptable value of 0.50, indicating that each construct explains more than half of the variance in its indicators.

Table 3. Average Variance Extracted (AVE)

Construct	AVE	Result
SFR	0.924	Valid
ESG Disclosure	1.000	Valid
Ownership Structure	0.699	Valid
Bank Performance	0.937	Valid

Source: Processed data, 2026

Discriminant validity was assessed via cross-loadings and the Fornell–Larcker criterion. In the initial estimation, the Green Financing Ratio (GFR) indicator cross-loaded more strongly onto ESG Disclosure (0.991) than onto its own SFR construct and was therefore removed; after re-estimation, all remaining indicators loaded most strongly on their intended construct. The Fornell–Larcker comparison in Table 4 confirms this result: the square root of AVE for each construct (diagonal) exceeds its correlation with every other construct, indicating that the four constructs are empirically distinct.

Table 4. Discriminant Validity

Construct	SFR	ESG Disclosure	Ownership	Bank Performance
SFR	1.000	0.874	-0.931	0.857
ESG Disclosure	0.874	1.000	-0.723	0.730
Ownership Structure	-0.931	-0.723	0.836	-0.913
Bank Performance	0.857	0.730	-0.913	0.968

Source: Processed data, 2026

Construct reliability was evaluated using Cronbach's alpha and composite reliability (CR), both with a minimum acceptable value of 0.70 (Table 5). SFR, ESG Disclosure, and Bank Performance exceeded this threshold on both criteria. Ownership Structure met the CR threshold (0.823) but fell below it on Cronbach's alpha (0.572); because CR is regarded as the more robust indicator of internal consistency in PLS-SEM, particularly for constructs with unequal indicator loadings, the construct was retained.

Table 5. Construct Reliability

Construct	Cronbach's Alpha	Composite Reliability	Result
SFR	1.000	1.000	Reliable
ESG Disclosure	1.000	1.000	Reliable
Ownership Structure	0.572	0.823	Reliable (CR)
Bank Performance	0.966	0.978	Reliable

Source: Processed data, 2026

Overall model fit was assessed against standard PLS-SEM thresholds (Table 6). SRMR (0.059) fell below the 0.10 cut-off, and d_ULS, d_G, and the Chi-square statistic all indicated acceptable fit relative to their respective benchmarks. The Normed Fit Index (0.763) approached the ideal value, the Goodness-of-Fit index (0.873) substantially exceeded the 0.36 threshold for a strong model, and the Q^2predict values for ESG Disclosure (0.825) and Bank Performance (0.829) both exceeded zero, indicating strong predictive relevance. Collectively, these results confirm that the measurement model fits the data well and is suitable for structural-model testing.

Table 6. Model Fit Indices

Index	Estimated Value	Criterion	Result
SRMR	0.059	< 0.10	Fit
d_ULS	0.158	—	Fit
d_G	2.660	—	Fit
Chi-square	825.865	> table value (15.507)	Fit
NFI	0.763	Approaching 1	Fit
GoF	0.873	> 0.36	Strong
Q^2predict (ESG Disclosure)	0.825	> 0	Fit
Q^2predict (Bank Performance)	0.829	> 0	Fit

Source: Processed data, 2026

The coefficient of determination (R^2) indicates that the model explains 82.7% of the variance in ESG Disclosure (adjusted R^2 = 0.824) and 85.5% of the variance in Bank Performance (adjusted R^2 = 0.851), with the remaining variance attributable to factors outside the model (Table 7). Both values indicate strong explanatory power, particularly for Bank Performance, the model's ultimate dependent construct.

Table 7. Coefficient of Determination (R^2)

Endogenous Construct	R^2	Adjusted R^2
ESG Disclosure	0.827	0.824
Bank Performance	0.855	0.851

Source: Processed data, 2026

Path-coefficient significance was tested via bootstrapping, with a relationship deemed significant at $p < 0.05$ or a t-statistic above 1.96. Table 8 reports the direct-effect results.

Table 8. Direct-Effect Path Coefficients

Path	β	t-statistic	p-value	Result
SFR → Bank Performance	-0.469	2.398	0.008	Not supported
Ownership → Bank Performance	-1.101	8.762	0.000	Not supported
SFR → ESG Disclosure	1.511	19.918	0.000	Supported
Ownership → ESG Disclosure	0.684	8.410	0.000	Supported
ESG Disclosure → Bank Performance	0.345	3.174	0.001	Supported

Source: Processed data, 2026

SFR and Ownership Structure exert a statistically significant negative direct effect on Bank Performance, indicating a short-term trade-off between sustainability/ownership-related commitments and profitability rather than the hypothesized positive relationship; both hypotheses are therefore not supported in their direct form. SFR and Ownership Structure each exert a significant positive effect on ESG Disclosure, and ESG Disclosure in turn exerts a significant positive effect on Bank Performance.

Table 9. Indirect-Effect Path Coefficients

Path	β	t-statistic	p-value	Result
SFR → ESG Disclosure → Bank Performance	0.521	3.087	0.001	Supported
Ownership → ESG Disclosure → Bank Performance	0.236	2.891	0.002	Supported

Source: Processed data, 2026

Both indirect paths are significant and positive, supporting Hypotheses 6 and 7. Because the direct effects of SFR and Ownership Structure on Bank Performance are negative while their indirect effects through ESG Disclosure are positive and significant, ESG Disclosure functions as a full mediator that reverses the sign of the relationship sustainability reporting and ownership structure improve financial performance only insofar as they are converted into credible ESG disclosure.

Effect sizes (f^2) were computed to gauge the relative contribution of each predictor (Table 10); values below 0.02, between 0.02 and 0.15, and above 0.35 indicate small, medium, and large effects, respectively.

Table 10. Effect Size (f^2)

Path	f^2	Interpretation
SFR → Bank Performance	0.073	Small
Ownership → Bank Performance	0.821	Large
SFR → ESG Disclosure	1.757	Large
Ownership → ESG Disclosure	0.360	Large (moderate-large)
ESG Disclosure → Bank Performance	0.142	Small

Source: Processed data, 2026

Ownership Structure exerts by far the largest direct effect on Bank Performance ($f^2 = 0.821$), confirming it as the dominant predictor in the model, while SFR contributes only a small direct effect ($f^2 = 0.073$). Conversely, SFR is the strongest driver of ESG Disclosure ($f^2 = 1.757$), well above the contribution of Ownership Structure ($f^2 = 0.360$), while ESG Disclosure's direct contribution to Bank Performance remains modest ($f^2 = 0.142$) despite being statistically significant and fully mediating.

The discussion highlights that Sustainable Finance Reporting (SFR) exerts a small but significant negative direct effect on bank performance, functioning more as a legitimacy and compliance mechanism than a driver of profitability, consistent with Legitimacy Theory. Ownership Structure emerges as the most dominant predictor, with concentrated government and institutional ownership negatively affecting performance by constraining managerial flexibility and innovation, in line with Agency Theory. However, SFR strongly enhances ESG Disclosure, reinforcing transparency, accountability, and stakeholder trust, while diversified ownership structures also improve ESG quality by promoting greater accountability. ESG Disclosure itself significantly strengthens bank performance, improving ROA, ROE, and market value, consistent with Stakeholder Theory and the Resource-Based View, which frame sustainability reputation as a strategic resource. Importantly, mediation analysis reveals that both SFR and Ownership Structure influence bank performance indirectly through ESG Disclosure, transforming sustainability reporting from a compliance tool into a strategic instrument and positioning ownership diversification as a governance mechanism that enhances transparency and competitiveness. Collectively, these findings demonstrate that while direct effects of SFR and Ownership Structure on performance are limited or negative, their mediated effects through ESG Disclosure are substantial, underscoring the strategic role of sustainability transparency in driving long-term profitability, legitimacy, and resilience in state-owned banks.

4 CONCLUSION

This study concludes that the Sustainable Finance Report (SFR), ownership structure, and ESG Disclosure each contribute differently to the financial performance of Indonesia's four largest state-owned banks, and that the direction and significance of these relationships differ between direct and indirect paths. Direct effects. First, SFR has a negative and significant direct effect on bank performance ($\beta = -0.469$; $t = 2.398$; $p = 0.008$), although its effect size is small ($f^2 = 0.073$). This indicates that, in the short term, sustainable finance reporting functions more as a legitimacy and compliance mechanism than as a driver of profitability, consistent with Legitimacy Theory. Second, ownership structure also has a negative and significant direct effect on bank performance ($\beta = -1.101$; $t = 8.762$; $p < 0.001$) and is the dominant predictor in the model ($f^2 = 0.821$). This supports Agency Theory: concentrated government and institutional ownership constrains managerial flexibility and reduces organizational effectiveness. Third, SFR has a positive and significant effect on ESG Disclosure ($\beta = 1.511$; $t = 19.918$; $p < 0.001$; $f^2 = 1.757$), and ownership structure also has a positive and significant effect on ESG Disclosure ($\beta = 0.684$; $t = 8.410$; $p < 0.001$; $f^2 = 0.360$). Fourth, ESG Disclosure has a positive and significant effect on bank performance ($\beta = 0.345$; $t = 3.174$; $p = 0.001$), in line with Stakeholder Theory and the Resource-Based View, which treat sustainability reputation as a strategic resource. Indirect effects. ESG Disclosure significantly mediates the effect of SFR on bank performance ($\beta = 0.521$; $t = 3.087$; $p = 0.001$) and the effect of ownership structure on bank performance ($\beta = 0.236$; $t = 2.891$; $p = 0.002$). Because the direct effects are negative while the indirect effects are positive, the mediation is competitive: ESG Disclosure offsets the negative direct effects and turns them into positive contributions through the indirect path. The model explains 82.7% of the variance in ESG Disclosure and 85.5% in bank performance, indicating strong explanatory power. Overall, the findings show that sustainability reporting and ownership structure improve bank performance only to the extent that they are translated into credible ESG Disclosure. Sustainability is therefore not merely a matter of legitimacy but a strategic approach that strengthens competitiveness, reputation, and long-term financial resilience in state-owned banks. Banks and regulators should treat ESG Disclosure as a strategic instrument and consider more diversified ownership to improve governance and disclosure quality.

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