



## Analysis of Gender Diversity in the Board of Commissioners and Its Influence on the Profitability of State-Owned Enterprises (SOEs) in Indonesia

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Received: 2 April 2026; Revised: 13 April 2026; Accepted: 21 April 2026

### Abstract

This study examines the association between gender diversity on the Board of Commissioners and the financial performance of Indonesian State-Owned Enterprises (SOEs) listed on the Indonesia Stock Exchange (IDX) over the 2020–2024 period. Grounded in Resource Dependence Theory and Agency Theory, a quantitative explanatory approach was applied to a balanced panel dataset of 125 observations from 26 SOEs. Profitability was proxied by Return on Assets (ROA), while firm size, leverage, and firm age served as control variables. Panel data regression using the Fixed Effects Model (FEM) was employed, with robust standard errors clustered at the firm level. The results reveal that gender diversity—specifically the proportion of female commissioners—has a statistically significant positive association with ROA ( $\beta = 1.7654$ ,  $p < 0.05$ ), whereas the dummy variable for the mere presence of women is positive but not statistically significant ( $p = 0.063$ ). This finding suggests that the *extent* of female representation matters more than token presence. The study concludes that gender diversity in Indonesian SOEs is not merely a compliance mechanism but is positively associated with enhanced profitability. However, given the observational design and potential endogeneity concerns (Durbin-Wu-Hausman test  $p = 0.233$ ), findings are reported as associations rather than causal effects. These results offer critical insights for policymakers in emerging markets to evaluate the effectiveness of

**How to Cite:** Kartawinata, B. R., Nugraha, D. W., & Abu Sujak, A. F. (2026). Analysis of Gender Diversity in the Board of Commissioners and Its Influence on the Profitability of State-Owned Enterprises (SOEs) in Indonesia. *Government & Resilience*, 4(1), 223-237. <https://doi.org/10.62503/gr.v4i1.60>

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gender diversity mandates beyond formalistic tokenism and provide a foundation for future research exploring mediating mechanisms such as board dynamics and risk committee effectiveness.

**Keywords:** Gender Diversity; Board of Commissioners; State-owned Enterprises; Corporate Governance; Indonesia

## Introduction

Good Corporate Governance has transformed from just a compliance instrument to a key driver of sustainable economic value creation. One of the fundamental pillars of modern governance, which is closely intertwined with the principles of *Environmental, Social, and Governance* (ESG), is inclusivity and gender diversity at the top managerial level (Kuzmina & Melentyeva, 2021). In Indonesia, State-Owned Enterprises (SOEs) play a dual role as an agent of economic value creation as well as an agent of *national development*. Given this strategic role, the Government through the Ministry of SOEs is aggressively encouraging governance transformation, one of which is through an inclusivity policy that targets a minimum of 25% female representation on the board of directors and board of commissioners by 2023. The Board of Commissioners has a crucial function in strategic oversight and advisory. The presence of women on this board is theoretically seen as able to reduce groupthink, improve the quality of supervision of management, and provide a more prudent perspective on risk (Terjesen et al., 2015). Therefore, examining the influence of board gender composition on company profitability is an empirical urgency.

Specifically, examining this relationship within the context of Indonesian SOEs, which often operate with unique political and economic considerations, can elucidate how diverse perspectives mitigate potential agency conflicts and enhance strategic decision-making, thereby contributing to robust financial performance (Abbas & Frihatni, 2023). For instance, some research on Indonesian firms has found a positive association between female board representation and firm performance as measured by Tobin's Q and ROA (Ermawati & Soewarno, 2024; Zakaria et al., 2021), whereas others report no significant impact on certain performance metrics like ROE or market-to-book value.

In the financial literature, the existence of women on boards is often analyzed through two main lenses: *Resource Dependence Theory* (Jeffrey & R., 1978) and *Agency Theory* (Jensen & Meckling, 1976). Previous studies have shown mixed results. The board of commissioners are supervisory agents; gender diversity reduces "Groupthink," thereby lowering agency costs through more rigorous monitoring. On the one hand, fundamental research by (Carter et al., 2003) suggest that gender diversity significantly increases supervision which has a positive impact on *Return on Assets* (ROA) and company value. These findings are reinforced by (Campbell & Mínguez-Vera, 2007) stated that gender balance in boards The proportion of female commissioners correlates with higher ROA improves the efficiency of strategic decision-making. However, on the other hand, Adams & Ferreira (2009) found that in companies with strong governance, the addition of gender diversity can actually trigger *over-monitoring* which is counterproductive to profitability. In the Indonesian context, (Darmadi, 2011) found that women's representation on boards tends to be low and often does not have a significant impact on financial performance, a phenomenon often associated with *tokenism*—where the appointment of women is only done to meet regulatory demands without providing real decision-making authority (Joecks et al., 2012).

The urgency of this research is based on the significant gap between regulatory aspirations and empirical reality on the ground. The Ministry of State-Owned Enterprises (SOEs) has set a strategic target of 25% female representation on boards of directors and commissioners, to be achieved by

2024 (Ministry of SOEs, 2021; Srikandi BUMN, 2023). This policy is part of the human resource transformation to create an inclusive and competitive work environment. However, recent data shows that achieving this still faces significant challenges; as of 2023, female representation at the leadership level of SOEs has only reached 15-18%, still far below the established threshold (Thohir, 2023). This disparity is further evident in the research data, where the average proportion of women in the sample of listed SOEs is only 6.69%. This suggests the existence of structural barriers, or a glass ceiling, that are slowing the pace of gender leadership transformation despite strong policy mandates from central stakeholders.

Based on the inconsistencies of previous findings, this study offers scientific *novelty* in three main aspects. *First*, the specific institutional context; if previous studies such as Low et al. (2015) conducted a cross-Asian study, this study isolated the sample exclusively on SOE entities in Indonesia that have unique agency characteristics due to the intervention of the state as the majority shareholder. *Second*, the observation time span; this study uses cutting-edge panel data for the 2020–2024 period, a crucial time window that captures the relationship of SOE transformation policies in the during and post-pandemic era as well as the acceleration of women's representation targets from the Ministry of SOEs.

This empirical framework will employ sophisticated panel data regression models, controlling for potential endogeneity with variables such as firm size and leverage, to isolate the specific influence of gender diversity (Ariadi et al., 2024; Buchdadi et al., 2023). Moreover, this study will distinguish the relationship of female directors in SOEs from those in non-SOEs, addressing a critical gap in prior research that largely focused on non-SOEs and did not account for the unique governance structures and public service mandates inherent to state-owned entities (Santosa et al., 2022). The study also aims to explore whether the positive effects of gender diversity on financial performance, as observed in some international contexts (Muzanni & Yuliana, 2021), are similarly manifested in the unique operational environment of Indonesian SOEs, or if contextual factors lead to divergent outcomes. This distinction is vital given the differing stakeholder priorities and oversight mechanisms that characterize state-owned enterprises compared to their privately held counterparts (Yuniar & Purbawangsa, 2023).

Based on the gap in the literature and novelty, the formulation of the problem in this study is: "To what extent does gender *diversity* in the Board of Commissioners empirically affect profitability (ROA) in state-owned companies listed on the Indonesia Stock Exchange?" Referring to the argument of *Resource Dependence Theory* which views diversity as a competitive resource (Jeffrey & R., 1978), this study proposes the following hypothesis:

**H1:** Gender diversity in the Board of Commissioners has a positive and significant effects with the profitability (ROA) of state-owned companies..

The main objective of this study is to empirically test the effectiveness of the implementation of gender diversity policies on financial performance in SOEs in Indonesia. The results of this study are expected to make a theoretical contribution to the corporate governance literature in developing countries, as well as provide a basis for regulators and practitioners to evaluate whether the mandate of women's representation has gone beyond mere compliance with formalities (*tokenism*) towards a functional contribution to strengthening the commercial performance of state companies.

Given that efficient management is crucial for financial success, and women often bring different values and ethical assessment standards to decision-making, it is anticipated that increased female representation will positively influence financial outcomes (Sari et al., 2024). This perspective is reinforced by Resource Dependence Theory, which suggests that diverse boards can leverage a

broader array of external resources and perspectives, thereby enhancing organizational adaptability and competitive advantage. This framework implies that greater gender diversity in leadership roles within SOEs could lead to more robust strategic formulation and implementation, ultimately driving improved profitability (Ariadi et al., 2024). The study will also delve into how the unique institutional environment and cultural norms prevalent in Indonesia might modulate these theoretical relationships, potentially uncovering context-specific nuances regarding gender diversity and firm performance. The nuanced impact of such factors, including the potential for gender diversity to moderate the relationship between corporate governance disclosure and company performance, will be critically examined (Marheni et al., 2024).

This study adopts a focused empirical approach to test the direct association between board gender diversity and financial performance, so this study focuses exclusively on testing the direct association between board gender diversity (measured as the proportion of female commissioners) and financial performance (ROA) in Indonesian SOEs from 2020 to 2024. While broader frameworks such as ESG disclosures, board committee dynamics, and capital structure effects are valuable research avenues, they are beyond the scope of this paper and are proposed for future research. The theoretical framework is limited to Resource Dependence Theory and Agency Theory, which directly inform the hypothesized relationship. No causal claims are made; findings are reported as associations.

## Research Methods

This analytical approach is particularly relevant given that earlier studies predominantly employed conditional mean regression models, which may obscure the nuanced relationship of gender diversity at various points of performance distribution (Varouchas et al., 2023). Additionally, the study will incorporate control variables such as firm size, liquidity, leverage, growth, and cash flow to isolate the specific effect of gender diversity on profitability, aligning with methodologies established in prior research (Ahmad et al., 2024).

This study employs a quantitative approach with an explanatory research design to examine the causal relationship between variables. Following the framework by (Bougie & Sekaran, 2016) deductive approach is applied to test the hypotheses derived from Agency Theory and Resource Dependence Theory. The data consists of secondary data retrieved from the annual reports and audited financial statements of Indonesian State-Owned Enterprises (SOEs) listed on the Indonesia Stock Exchange (IDX). The observation period spans from 2020 to 2024 to capture the financial dynamics following the strategic transformation of SOE governance.

The population includes all SOEs listed on the IDX. A purposive sampling technique is utilized based on specific criteria to ensure data consistency (Saunders et al., 2019): (1) SOEs listed on the IDX throughout the 2020–2024 period; (2) Entities publishing audited financial statements in Indonesian Rupiah; and (3) Availability of comprehensive data regarding the gender composition of the Board of Commissioners. Based on these criteria, 26 companies were selected, resulting in a balanced panel of 125 observations. This purposive sampling approach ensures that the selected companies meet specific benchmarks aligned with the research objectives (Taufiq & Fadila, 2021). This sampling strategy is critical for isolating the effects of board gender diversity within a homogeneous group of state-owned entities, thereby enhancing the internal validity of the findings (Septiani et al., 2024; Tania & Hesniati, 2022).

**Hypothesis Testing:** Evaluating the t-statistic for partial significance and the F-statistic for simultaneous significance.: Summarizing the mean, median, and variance to identify data distribution and potential outliers.

To ensure empirical validity, the variables are operationally defined based on established literature in corporate finance and governance:

1. **Dependent Variable:** Profitability is proxied by *Return on Assets* (ROA). ROA is a widely accepted measure of managerial efficiency in utilizing total assets to generate net income (Brigham & Houston, 2019). Return on Equity will also be utilized to capture the profitability relative to shareholders' equity, providing a complementary perspective on financial performance. (Rahmat, 2024)

$$ROA = \frac{NetIncome}{TotalAset}$$

2. **Independent Variable:** Gender Diversity is measured using two distinct approaches to ensure the robustness of the findings:
  - **Gender Proportion (X1):** Calculated as the ratio of female commissioners to the total number of board members (Campbell & Mínguez-Vera, 2008).
  - **Gender Dummy (X2):** A dichotomous variable assigned a value of 1 if at least one woman serves on the board, and 0 otherwise (Adams & Ferreira, 2009).
3. **Control Variables:** To isolate the effect of gender diversity, this study incorporates three control variables consistently used in firm performance literature:
  - **Firm Size (Ln\_Asset):** Measured as the natural logarithm of total assets to control for economies of scale and resource availability (Dang et al., 2017).
  - **Leverage (DER):** Measured as the Debt-to-Equity Ratio to control for the relationship of capital structure on firm risk and performance (Myers, 2001).
  - **Firm Age:** Measured as the number of years since the company's Initial Public Offering (IPO) to control for the organizational life cycle effects (Loderer & Waelchli, 2010).

**Classical Assumption Testing:** Testing for Multicollinearity (VIF), Heteroscedasticity, and Autocorrelation to ensure the reliability of the BLUE (Best Linear Unbiased Estimator) properties

The study utilizes panel data regression analysis to account for both cross-sectional and time-series dimensions. The empirical model is specified as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 Size_{it} + \beta_3 Lev_{it} + \beta_4 Age_{it} + \varepsilon_{it}$$

**Model Selection:** Executing the **Chow Test** (Pooled vs. Fixed Effect) and **Hausman Test** (Fixed vs. Random Effect) to determine the most robust estimator.

The analysis follows the econometric procedure outlined by Wooldridge (2010):

1. **Model Selection:** Three estimation models—*Common Effect Model* (CEM), *Fixed Effect Model* (FEM), and *Random Effect Model* (REM)—are evaluated. The selection is determined through the Chow Test (CEM vs. FEM) and the Hausman Test (FEM vs. REM).
2. **Diagnostic Tests:** To ensure the model provides the *Best Linear Unbiased Estimator* (BLUE), tests for multicollinearity, heteroscedasticity, and autocorrelation are conducted. In the presence of heteroscedasticity,

**Hypothesis Testing:** Evaluating the t-statistic for partial significance and the F-statistic for simultaneous significance.

Hypothesis Testing: The significance of the independent variables is assessed using the t-statistic with a 5% significance level ( $\alpha = 0.05$ ), while the overall model fit is evaluated through the Coefficient of Determination (R2) and the F-statistic. Given the potential for heteroscedasticity and autocorrelation, the study will implement robust standard errors, clustered at the firm level, to ensure the validity of statistical inferences, even if underlying assumptions of OLS are violated (Almoqbali et al., 2025; Duppati et al., 2018).

## Results and Discussion

### Result

#### Descriptive Statistical Analysis

Table 1 presents an overview of the data for all research variables, including Profitability (ROA), Gender Diversity (X1, X2), and control variables (Size, Leverage, Age).

**Table 1. Overview of Research Variable Data**

Variabel	Mean	Median	Std. Deviasi	Minimum	Maximum
ROA (Y)	-0.7196	0.0175	5.8738	-50.7206	1
Gender Prop (X1)	0.0669	0	0.103	0	0.4286
Gender Dummy (X2)	0.336	0	0.4742	0	1
Firm Size (ln)	17.5953	17.5041	2.7073	11.2536	23.1019
Leverage (DER)	2.1452	1.2865	22.4317	-235.215	17.0721
Firm Age	15.6	16	8.2599	-1	33

Source: Processed by the Researcher (2026)

The mean ROA value is negative (-0.7196) with a very large standard deviation (5.8738). This is due to several state-owned enterprises (SOEs) experiencing extreme losses during the observation period (e.g., WSKT and INAF). However, the median value (0.0175) indicates that, in general, half of the SOE sample still recorded positive net income, approximately 1.75% of total assets. For gender diversity, the average proportion of women (X1) on the board of commissioners was 6.69%, still far below the government's target of 25%. The maximum value reached 42.86%. For the dummy variable (X2), the mean value of 0.3360 indicates that approximately 33.6% of the total observations had at least one female representative on the board of commissioners. Firm size has a relatively stable distribution with an average of 17.59, indicating that the sample consists of SOEs with large but fairly homogeneous assets. Leverage (DER) shows a very low minimum value (-235.21) reflecting capital deficiency in certain companies where debt far exceeds equity eroded by losses. Firm age averages 15-16 years after IPO, with the oldest company listed for 33 years.

#### Empirical Analysis and Estimation Results

Based on a series of model selection tests (Chow and Hausman tests), the Fixed Effects Model (FEM) was determined to be the best model for estimating the effect of gender diversity on profitability (ROA). The regression estimation results are presented in Table 2 below:

**Table 2. Panel Data Regression Estimation Results (Fixed Effect Model)**

Variable	Coefficient	Robust Std. Error	t-Statistic	p-value
C (Constant)	-5.0873	2.0872	-2.438	0.016
Gender Prop (X1)	1.7654	0.8778	2.011	0.046
Gender Dummy (X1)	0.5234	0.2793	1.874	0.063
Firm Size (Ln)	0.3187	0.1120	2.846	0.005
Leverage (DER)	-0.0138	0.0071	-1.945	0.054
Firm Age	0.0079	0.0076	1.046	0.297
R-squared	0.4251			
F-statistic	11.892			0

Source: Processed by the Researcher (2026)

The results show that Gender Proportion (X1) has a statistically significant positive association with ROA ( $\beta = 1.7654$ ,  $p = 0.046$ ), supporting H1. A one-unit increase in the proportion of female commissioners (e.g., from 0% to 100%) is associated with a 1.77 percentage point increase in ROA. Given the sample mean of 6.69% female representation, this suggests a meaningful economic impact.

Gender Dummy (X2) is positive but not statistically significant ( $p = 0.063$ ), indicating that the *extent* of female representation matters more than the mere *presence* of at least one woman. This finding helps explain the mixed results in prior literature: studies using dummy variables may underestimate the true association.

Among control variables, Firm Size shows a significant positive association with ROA ( $p = 0.005$ ), consistent with economies of scale. Leverage is negatively associated with ROA at marginal significance ( $p = 0.054$ ), suggesting that higher debt burdens reduce profitability. Firm Age is not significant ( $p = 0.297$ ), indicating that a company's listing maturity does not influence the observed relationship.

**Table 3. Regression Diagnostics Test**

Test	Statistic	p-value	Conclusion
Chow Test (Pooled vs. FEM)	$F(25, 94) = 3.452$	0.001	FEM preferred
Hausman Test (FEM vs. REM)	$\chi^2(5) = 18.234$	0.001	FEM preferred
Durbin-Wu-Hausman (endogeneity)	$\chi^2(1) = 1.423$	0.233	Exogeneity not rejected
Multicollinearity (VIF)	Mean VIF = 1.87	—	No concern
Wooldridge Test (autocorrelation)	$F(1, 25) = 2.134$	0.157	No autocorrelation

Source: Processed by the Researcher (2026)

The Chow test determines whether the Fixed Effects Model (FEM) is superior to the Pooled Ordinary Least Squares (OLS) model. The null hypothesis ( $H_0$ ) states that the Pooled OLS model is appropriate—meaning no significant individual (firm-specific) effects exist. The alternative hypothesis ( $H_1$ ) states that firm-specific intercepts differ, favoring FEM. With  $F = 3.452$  and  $p = 0.001$

(< 0.05), we reject the null hypothesis. This indicates that significant firm-specific heterogeneity exists across the 26 SOEs. Therefore, the Fixed Effects Model is preferred over Pooled OLS.

The Hausman test compares the Fixed Effects Model (FEM) and Random Effects Model (REM). The null hypothesis ( $H_0$ ) states that the Random Effects Model is consistent and efficient (i.e., no correlation between firm-specific random effects and independent variables). The alternative ( $H_1$ ) states that FEM is consistent while REM is inconsistent due to correlation between unobserved effects and regressors.

The Durbin-Wu-Hausman test examines whether the key independent variable (Gender Proportion) is endogenous i.e., whether it is correlated with the error term, potentially due to reverse causality or omitted variables. The null hypothesis ( $H_0$ ) states that the variable is exogenous (no endogeneity). The alternative ( $H_1$ ) states that the variable is endogenous.

The mean VIF is 1.87, well below the critical threshold of 5. Individual VIF values range from 1.12 to 2.45. This indicates no problematic multicollinearity among the independent variables (Gender Proportion, Firm Size, Leverage, Firm Age). Each variable provides unique explanatory power without excessive redundancy.

The Wooldridge test detects first-order serial correlation (autocorrelation) in the residuals of a panel data model. Autocorrelation occurs when error terms are correlated across time for the same firm, which can lead to biased standard errors and invalid inference. The null hypothesis ( $H_0$ ) states no first-order autocorrelation.

## **Discussion**

### **Gender Diversity and Financial Performance: A Lens of Resource Dependence**

The finding that gender diversity has a positive effect on profitability strengthens the argument of Resource Dependence Theory (Jeffrey & R., 1978). In the context of SOEs, the female board of commissioners functions as a unique provider of cognitive resources. The presence of women brings a more collaborative leadership style and a sharper detail orientation in the supervisory function. In line with a meta-analysis study by Post & Byron (2015), gender diversity increases the capacity of boards to process complex information, which in turn optimizes strategic decision-making. Furthermore, the varied perspectives introduced by female directors can lead to more innovative solutions and better risk management strategies, thereby enhancing overall firm performance (Linggih & Wiksuana, 2018; Saona et al., 2019). However, some studies propose that the presence of women on boards may not universally relationship financial performance, particularly when female representation is low, suggesting that their role might be perceived as merely complementary rather than strategically influential (Marashdeh et al., 2021; Murhadi et al., 2021). For instance, some research suggests a minimal relation of gender diversity on financial distress when female director representation is low (Widiatami et al., 2023), while other studies emphasize the positive influence of increased female presence on board size and company value (Awad et al., 2023). Nevertheless, a growing body of evidence, especially in the context of financial distress, indicates that female directors often exhibit greater caution and risk aversion in managerial decisions, contributing to reduced financial hardship (Khan et al., 2024). This prudent approach can mitigate financial distress and enhance long-term financial stability, especially in environments prone to economic volatility (Khan et al., 2024; Khurong et al., 2024).

In Indonesia, SOE transformation policies that encourage inclusivity are not just the fulfillment of social aspects, but economic strategies. The female commissioners in this sample were shown to

be able to mitigate the risk of groupthink—a condition in which homogeneous councils tend to ignore alternative options in favor of internal harmony. This is relevant to the findings of Terjesen et al. (Bougie & Sekaran, 2016) in 47 countries, which stated that gender-diverse councils have better oversight effectiveness due to a richer and more critical discourse process. Moreover, the presence of female commissioners has been linked to improved financial stability and a reduction in the likelihood of financial distress, attributed to their propensity for more cautious decision-making and enhanced oversight. This aligns with research indicating that a higher percentage of female commissioners can positively relation financial stability and reduce financial distress (Sari & Setiawan, 2024).

### **Tokenism vs. Critical Masses in SOE Governance**

These findings challenge the argument of Adams & Ferreira (2009) that gender diversity may be counterproductive in companies with strong governance; On the other hand, in state entities where supervision often overlaps with political interests, the presence of women actually strengthens the independence of the supervisory function. This enhanced independence is crucial for fostering robust oversight, particularly within state-owned enterprises that often navigate complex intersections of commercial and governmental objectives (Santosa et al., 2022).

The "Srikandi BUMN" program further exemplifies the Indonesian government's commitment to advancing gender equality in the workplace by actively promoting women's access to leadership opportunities in state-owned enterprises (Yuniar & Purbawangsa, 2023). This program, by preparing female talents for leadership roles, aims to harness the heterogeneity that women bring to management, thereby fostering diverse perspectives essential for effective problem-solving and enhanced management leadership (Yuniar & Purbawangsa, 2023). This initiative acknowledges the critical role of varied viewpoints in strategic decision-making and reinforces the notion that even beyond critical mass thresholds, the presence of highly competent female leaders can significantly improve corporate governance and profitability in complex organizational structures such as SOEs (Abbas & Frihatni, 2023). Furthermore, achieving a "critical mass" of female representation on boards, typically defined as at least three women, is often cited as the threshold for significant relationship on board dynamics and firm performance (Moreno-Enguix et al., 2025; Viola et al., 2023). Research indicates that the positive effects of gender diversity on financial performance become more pronounced when women constitute at least 30% of a corporate board, fostering an environment conducive to capitalizing on innovative ideas and enhancing corporate governance (Moreno-Enguix et al., 2025; Natalia & Isnalita, 2023).

The proposed mechanism is "enhanced monitoring." Female commissioners typically have better attendance records and higher risk aversion, which may reduce agency costs (referencing Agency Theory) and prevent the groupthink that often leads to inefficient state projects.

### **Dynamics of Control Variables and Capital Structure**

This finding warrants a closer examination of how gender-diverse boards within SOEs navigate capital allocation and risk management, particularly under varying macroeconomic conditions and regulatory environments. Such analysis could reveal whether female board members, through their inclination toward conservative financial strategies and long-term planning, contribute to a more optimized capital structure that enhances profitability and resilience of Indonesian SOEs (Chang et al., 2023; Rahmat, 2024). Moreover, the specific industry in which an SOE operates may also influence the relationship between board gender diversity and financing decisions, as certain sectors may have inherent differences in capital intensity and risk profiles (Chang et al., 2023).

Therefore, a comprehensive examination incorporating sectoral specificities and firm-level characteristics, such as size and industry, could yield a more nuanced understanding of how board

gender diversity influences financial outcomes in Indonesian SOEs (Iryanti et al., 2023). This deeper understanding is crucial for formulating effective corporate governance policies that leverage diversity to enhance both financial performance and long-term sustainability. Future research should extend beyond mere presence of women on boards to encompass their representation in specialized committees and senior leadership roles, such as Chief Financial Officers and Chief Executive Officers, to ascertain their influence on corporate financial strategy and sustainable competitive advantage (Ariadi et al., 2024). Additionally, investigating the critical mass of female executives on boards could provide insights into their relationship on capital structure and overall firm performance (Siregar et al., 2023).

## Conclusion

This research provides empirical evidence that gender diversity on the Board of Commissioners is positively associated with the financial performance of State-Owned Enterprises (SOEs) in Indonesia. Specifically, this study concludes that an increase in the proportion of women on the board shows a significant positive correlation with company profitability (*Return on Assets*). These findings support the main hypothesis and are consistent with Resource Dependence Theory, where gender diversity is seen not merely as fulfillment of social norms but as a strategic instrument that may improve supervision quality and decision-making effectiveness at the top level. While results suggest improved oversight, the study identifies an association rather than a causal relationship.

This conclusion also confirms that the effectiveness of board oversight in developing countries relies heavily on the background and cognitive heterogeneity of its members to address the agency complexity unique to state-owned enterprises (Terjesen et al., 2016; Kuzmina & Melentyeva, 2021). As a policy suggestion, regulators are advised to continue accelerating the target of female representation toward 25%–30% to avoid tokenism and achieve a more stable synergistic effect for long-term profitability. For practitioners, gender integration on boards must be accompanied by granting real functional authority so that the potential resources brought by female commissioners can be utilized to the maximum.

A key limitation of this study is its reliance on static panel data estimation (Fixed Effects Model), which restricts the ability to assert causal inferences. While control variables were employed to mitigate omitted variable bias, potential endogeneity issues—such as reverse causality where highly profitable SOEs might be more inclined to appoint female commissioners—cannot be entirely ruled out. A Durbin-Wu-Hausman test ( $\chi^2 = 1.423$ ,  $p = 0.233$ ) did not reject exogeneity, but this does not eliminate all endogeneity concerns. Future studies are strongly encouraged to employ dynamic panel models, such as the Generalized Method of Moments (GMM) or Instrumental Variable (IV) approaches, to more rigorously establish causality. Additionally, this study did not examine mediating mechanisms such as board meeting frequency or risk committee effectiveness; these remain important avenues for future research.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Acknowledgment

Acknowledgements are primarily addressed to research funders or donors. Acknowledgement can also be dedicated to people who contribute to the study.

## Use of Artificial Intelligence (AI)-Assisted Technology

The authors declare that no artificial intelligence (AI) tools were used in the preparation, analysis, or writing of this manuscript. All aspects of the research, including data collection, interpretation, and manuscript preparation, were carried out entirely by the authors without the assistance of AI-based technologies.

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