

Exploring the Relationship between Social, Environmental, and Financial Performance of Indonesian State-Owned Enterprises: Evidence from Binary Log Regression Analysis

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Citation: Nagu, N., Fauzi, H. and Yusoff, H. (2025). Exploring the Relationship between Social, Environmental, and Financial Performance of Indonesian State-Owned Enterprises: Evidence from Binary Log Regression Analysis, *Journal of Cultural Analysis and Social Change*, 10(2), 1538-1564. <https://doi.org/10.64753/jcasc.v10i2.1853>

Published: November 14, 2025

ABSTRACT

This research investigates the interplay between social, environmental, and financial outcomes of Indonesian State-Owned Enterprises (SOEs) utilising binary logistic regression analysis. SOEs grapple with the challenge of reconciling profitability with their social and environmental responsibilities. The study scrutinises adherence to GRI standards, assessing financial performance through Return on Assets (ROA) and Return on Equity (ROE), while integrating slack resource and good management theories. Findings indicate a positive correlation between financial performance and social compliance as well as environmental responsiveness; conversely, a negative relationship is observed with environmental compliance and social initiatives, indicating a lack of synergy. The study elucidates the positive linkage of social and environmental factors to financial performance, aligning with good management theory, and offers valuable insights for SOE managers in emerging markets.

Keywords: Social Performance, Environmental Performance, Financial Performance, State-Owned Enterprises, Corporate Social Responsibility, Indonesia, GRI Standards, Content Analysis, Sustainability

INTRODUCTION

State-Owned Enterprises (SOEs) in Indonesia serve as economic drivers and instruments for social welfare and environmental stewardship. With the rising global sustainability discourse, there is scrutiny on how these entities balance financial objectives with social and environmental responsibilities. According to the World Bank (2021), SOEs contribute significantly to Indonesia's GDP, accounting for approximately 30% of the national economy. The challenge remains as to how these entities can enhance their financial performance while adhering to social and environmental regulations.

The Global Reporting Initiative (GRI) has established standards such as GRI 419 for social responsibility and GRI 307 for environmental practices, providing a framework for evaluating corporate performance. Research shows growing stakeholder expectations for SOEs to demonstrate transparency and accountability (KPMG, 2020). A study by the Indonesian Institute of Corporate Governance (ICG, 2022) highlighted that companies adhering to GRI standards tend to perform better financially, suggesting a correlation between compliance and profit.

The Indonesian government has promoted corporate social responsibility (CSR) among SOEs through its regulations and guidelines. The 2007 Law on Limited Liability Companies mandates company engagement in CSR activities, linking the financial and social aspects of these companies. This regulatory framework sets the stage for exploring how social and environmental compliance affects the financial performance of Indonesian SOEs.

This study investigates the relationship between the social, environmental, and financial performance of Indonesian SOEs. Using binary logistic regression analysis, this study aims to provide empirical evidence that elucidates these relationships, contributing to the knowledge of corporate performance and sustainability.

Despite the significance of SOEs in Indonesia's economy, understanding the dynamics between their social, environmental, and financial performances remains limited. Previous studies have focused on financial performance or CSR practices separately, leading to a fragmented understanding. Some argue that CSR initiatives enhance brand loyalty and customer satisfaction, boosting financial performance (Porter & Kramer, 2011), while others claim that the costs may harm profitability (Friedman, 1970).

Moreover, comprehensive data linking GRI compliance to the financial performance of Indonesian SOEs are lacking. Understanding this relationship is crucial for determining whether adherence to social and environmental regulations offers financial benefits. The absence of empirical evidence may hinder policymakers and stakeholders from making informed decisions regarding social and environmental investments.

Additionally, the literature often overlooks the unique context of Indonesian SOEs, which operate under a distinct regulatory and cultural framework. Thus, how do social and environmental metrics influence the financial success of Indonesian SOEs? This study addressed this by systematically analysing these variables using a rigorous methodological approach.

This study investigates the relationships between social, environmental, and financial performance of Indonesian State-Owned Enterprises (ISOEs). The objectives are:

1. Examining the link between state-owned companies' compliance with social laws and financial performance: Through the GRI Standard 419, this study connects social responsibility and financial success.
2. Exploring the link between ISOEs' compliance with environmental laws and financial performance: Using GRI standard 307, this study shows the economic implications of environmental practices.
3. Investigating the link between ISOEs' social impact awareness and financial performance: Through GRI standard 102-29, this study determines how social responsibility relates to financial outcomes.
4. Assessing the link between ISOEs' commitment to social programs and financial performance: By excluding GRI standard 419, this study explores the effects of social initiatives on financial health.
5. Evaluating the link between ISOEs' responsiveness to environmental assessments and financial performance: Using the GRI 300 series, excluding standard 307, this study shows how environmental strategies affect finances.

The significance of this study extends to policy formulation, stakeholder engagement, and sustainable development. For policymakers, this research provides insights into SOE regulatory frameworks. By linking social and environmental performance to financial outcomes, policymakers can design incentives for sustainable practices. The findings are of interest to investors, consumers, and community groups, helping stakeholders make informed choices. This study explores the relationships between social, environmental, and financial performance, encouraging SOEs to integrate sustainability into their business strategies while addressing economic and environmental challenges.

This study bridges the theory and practice of corporate sustainability by examining the relationships between social, environmental, and financial performance in Indonesian SOEs. Indonesia's unique landscape presents distinct challenges (Harrison and Wicks, 2013). Binary logistic regression analysis was used to identify correlations and assess outcomes. This approach contributes to understanding the dynamics of Indonesian SOEs, offering a model for emerging economies (Field, 2018). The findings identify the factors driving social and environmental performance. Positive correlations between CSR initiatives and financial performance could encourage SOE investments (Porter & Kramer, 2011). This study examines how social and environmental performance influences financial outcomes (Aguinis & Glavas, 2012). The focus on Indonesian SOEs shows the importance of context for state-owned enterprises in sustainable development.

This study examines Indonesian state-owned enterprises (SOEs) within the corporate sustainability discourse. While research on CSR exists globally, few studies have examined Indonesian SOEs balancing social responsibility and financial performance (Suhartini et al., 2020). Binary log regression analyzes the relationships between social, environmental, and financial performance, offering a framework adaptable to contexts (Wang et al., 2021). An analysis of Indonesian SOE sectors reveals industry trends, helping policymakers develop strategies (Hidayat et al., 2020). This study examines the influence of government policies on social and environmental initiatives, highlighting the role of governance in sustainable outcomes (Rizal et al., 2021). This study explores SOEs' role in achieving the UN Sustainable Development Goals through social, environmental, and financial performance intersections, showing how Indonesian SOEs drive sustainable development.

This study explores the relationship between the social, environmental, and financial performance of Indonesian state-owned enterprises (SOEs). The second section reviews the literature on sustainability, social responsibility, and financial performance using stakeholder theory and triple bottom line frameworks. The methodology section details the data collection and binary log regression analysis of Indonesian SOEs' role in balancing objectives. The results section presents the findings and statistical interpretations. The discussion interprets the findings in light of the existing literature and suggests directions for future research. The conclusion summarises the key contributions to the understanding of performance dynamics within Indonesian SOEs.

THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

Stakeholder Theory

Freeman et al. (2010) stated that the relationship between social and environmental performance and the company's financial performance can be viewed from the stakeholders' perspective. This means companies must align their strategic capabilities by involving stakeholders to achieve successful financial, social, and environmental performance. The company's social and environmental performance must be disclosed to stakeholders for assessment.

Stakeholder theory asserts stakeholders' right to information on SOEs' social and environmental performance, requiring disclosure to those with power over SOEs' market. Employees, consumers, and suppliers have direct power, while communities and indigenous peoples influence indirectly. SOEs must respond to stakeholder demands affecting performance. Programs aligned with demands impact SOEs' social and environmental performance. Sustainable economic performance affects SOEs' program implementation and influences SOEs' performance. Disclosure evaluates stakeholder performance or serves as a control tool for demands, representing corporate responsibility in SOEs programs.

Good Management Theory dan Slack Resource Theory

Good management theory and slack resource theory propose a causal link between social & environmental performance and financial performance, as developed by Waddock & Graves (1997). Good management theory assumes a correlation between management practices and social & environmental performance. Management must address social issues, respond to environmental concerns, and comply with social & environmental laws and regulations. These issues relate to stakeholders' interests (employees, consumers, suppliers, local communities, and indigenous peoples). Improved stakeholder relationships enhance the company's reputation, providing a sustainable competitive advantage and improving financial and overall performance.

Slack resource theory connects financial with social & environmental performance. Better financial performance enables investments in programs involving stakeholders (employees, consumers, suppliers, communities, indigenous peoples). With adequate resources, companies can adapt to pressures. Internal pressure involves management-employee interactions, including gender and minority issues. External pressures include consumer demands, supplier competition, community conflicts, regulations, and climate change. Allocating funds to social and environmental activities helps companies adapt, enhancing competitive advantage through improved reputation.

GRI Standard-Based Disclosure Approach

The GRI standard is globally recognized as a fundamental principle of social responsibility, like AccountAbility, Bloomberg L.P. (ESG data), the UN Global Compact's Communication on Progress, and the ISO. As noted by Cammilleri (2017); Cohen (2013); Herriott (2016); Tschoop & Natanski (2013); and Tschoop & Huefner (2015), GRI developed guidelines: G1 in 2000, G2 in 2002, G3 in 2006, G3.1 in 2011, G4 in 2013, and the GRI standard in 2016. According to Herriot (2016), the GRI standard supersedes G4, maintaining similar content. The main change is that the GRI standard requires compliance and auditing, unlike G4. The GRI Standard includes disclosure themes relevant to the research question, emphasizing social and environmental performance.

The GRI Standard's disclosure dimensions include social performance (GRI standard 400), environmental performance (GRI Series 300), and economic/financial performance (GRI Series 200). Other guidelines focus on specific issues. The AA 1000 series address sustainability assurance. ESG covers the economic, social, and governance aspects. UN Global emphasizes human rights, labor, the environment, and anti-corruption. ISO targets specific environmental management issues, like ISO 14001.

Relationship between Social & Environmental Performance and Financial Performance

Fauzi (2010) identified two critical aspects in the relationship between social & environmental performance and financial performance: (1) direction and (2) causality. First, social & environmental, and financial performance has a positive, negative, or neutral relationship. A positive relationship occurs when increased social & environmental performance leads to increased financial performance. A negative relationship exists when increased social & environmental performance results in decreased financial performance. If changes in social & environmental performance do not affect financial performance, the relationship is neutral.

Causality links social & environmental performance with financial performance, determining their roles as variables. If social & environmental performance is independent, it influences financial performance. Conversely, if financial performance is independent, it affects social & environmental performance. This relationship is supported by two theories: (1) slack resource theory and (2) good management theory. Slack resource theory suggests financial position impacts social & environmental performance, as financially strong companies can implement such programs. Thus, prioritizing financial performance is crucial for funding these initiatives, making it independent.

Management theory suggests prioritizing social and environmental performance for company reputation. This enhances stakeholder satisfaction and provides competitive advantage that improves financial performance. Social & environmental performance independently affects financial performance. Freeman et al. (2010) examine the relationship between social & environmental and financial performance from a stakeholder perspective. Companies must align capabilities by involving stakeholders (employees, consumers, suppliers, local communities, and indigenous peoples) to achieve successful company, financial, and social and environmental performance.

The relationship between social & environmental performance and financial performance in SOEs involves social & environmental and economic objectives. The outputs are social & environmental and financial performance. This relationship can be predicted by (1) direction and (2) causality, based on slack resource theory, good management theory, and stakeholder theory. SOEs have a positive relationship if improving social & environmental performance enhances financial performance. If increased social & environmental performance reduces financial performance, the direction is negative. If changes do not affect financial performance, the direction is neutral.

When Indonesia SOEs have excellent financial condition, they have funds to implement programs that improve social & environmental performance. This study positions financial performance as an independent variable affecting social & environmental performance (slack resource theory). When SOE management is conducted correctly, it increases stakeholder satisfaction and company reputation. This improved satisfaction and reputation create competitive advantage, affecting financial performance. Therefore, this study positions social & environmental performance as an independent variable affecting financial performance (good management theory).

Previous studies show that the relationship between social and environmental performance and financial performance can be positive, negative, or complex. The results of the analysis of the causal relationship between social and environmental performance in these studies indicated a controversial relationship. Some studies have supported these positive findings. The negative findings are supported by some studies. The findings are varied or complex and supported by some studies. Finally, Fauzi et al. (2010) show no relationship between social and environmental performance and financial performance. Relationship testing in this study is based on two theories: Slack Resource Theory and Good Management Theory. Therefore, the following research hypothesis is formulated:

Model 1 Based on Slack Resources Theory:

H1.1.: There is a positive relationship between financial performance-ROA and social & Environmental performance based on slack resource theory.

H1.1.a: There is a positive relationship between financial performance-ROA and Social performance-compliance with laws and social regulations based on slack resources theory.

H1.1.b: There is a positive relationship between financial performance-ROA and Environmental performance compliance with environmental laws and regulations based on slack resources theory.

H1.1.c: There is a positive relationship between financial performance-ROA and social impact performance based on slack resources theory.

H1.1.d: There is a positive relationship between financial performance-ROA and social performance policies and social programs based on slack resources theory.

H1.1.e: There is a positive relationship between financial performance-ROA and

- Environmental performance-environmental assessment/scanning based on slack resource theory.
- H1.2.: There is a positive relationship between financial performance-ROE and social & Environmental performance based on slack resource theory.
- H1.2.a: There is a positive relationship between financial performance-ROE and Social performance-compliance with laws and social regulations based on slack resources theory.
- H1.2.b: There is a positive relationship between financial performance-ROE and Environmental performance compliance with environmental laws and regulations based on slack resources theory.
- H1.2.c: There is a positive relationship between financial performance-ROE and social impact performance based on slack resources theory.
- H1.2.d: There is a positive relationship between financial performance-ROE and social performance policies and social programs based on slack resources theory.
- H1.2.e: There is a positive relationship between financial performance-ROE and Environmental performance-environmental assessment/scanning based on slack resource theory.

Model 2 Based on Good Management Theory

- H2.1.: There is a positive relationship between social & environmental performance and financial performance-ROA based on the good management theory.
- H2.1.a: There is a positive relationship between social performance-compliance with social laws & regulations and financial performance-ROA based on good management theory.
- H2.1.b: There is a positive relationship between environmental performance-compliance with environmental laws and regulations, and financial performance ROA based on the good management theory.
- H2.1.c: There is a positive relationship between social performance-social impact and financial performance ROA based on good management theory.
- H2.1.d: There is a positive relationship between the performance of social policies & social programs and financial performance-ROA based on good management theory.
- H2.1.e: There is a positive relationship between environmental performance-environmental assessment/scanning, and financial performance-ROA, based on good management theory.
- H2.2.: There is a positive relationship between social & environmental performance and financial performance-ROE based on Good Management Theory.
- H2.2.a: There is a positive relationship between social performance-compliance with social laws and regulations, and financial performance based on Good Management theory.
- H2.2.b: There is a positive relationship between environmental performance-compliance with environmental laws and regulations, and financial performance (REOE) based on good management theory.
- H2.2.c: There is a positive relationship between social performance-social impact and financial performance-ROE based on the good management theory.
- H2.2.d: There is a positive relationship between the performance of social policies & social programs and financial performance-ROE based on good management theory.
- H2.2.e: There is a positive relationship between environmental performance-environmental assessment/scanning, and financial performance-ROE based on the good management theory.

METHOD

Sample and Data Collection

This study employed a purposive sampling technique that included the following criteria: (1) SOEs registered with the Ministry of State-Owned Enterprises (SOEs) (118 companies) from 2008 to 2018, (2) SOEs listed on the Indonesia Stock Exchange (IDX) (516) from 2008 to 2018, and (3) SOEs whose annual reports were published on the IDX and SOE Ministry websites.

Measurement of Social and Environmental Performance Variables

Following Orlitzky (2003) and Fauzi (2010), this study analysed annual reports to assess social and environmental performance in two stages: data collection and interpretation. Secondary data from SOE annual reports were obtained from the SOE Ministry and Indonesian capital market websites. Content analysis was used to evaluate companies' performance using the GRI standard, comprising five dimensions and 645 indicators, converting text into quantitative data. Techniques to measure performance follow Kohibacher (2006), Schreier (2012), and Weber (1997) and are based on the 'frequency' of performance dimensions/indicators/sub-indicators. ATLAS.ti version 8 software obtained frequency scores that represented the most frequent scores in the coding.

In this study, the researchers utilised the dimensions and indicators contained within the GRI Standard to form a multidimensional basis for their analysis. These dimensions and indicators were selected on the basis of the definition of the problem in this study. The five dimensions utilised in this study are as follows.

1. Compliance with social laws and regulations (GRI Disc.419-1)
2. Compliance with environmental laws and regulations (GRI Disc.307-1)
3. Concerns about social impacts (GRI Disc. 413-1 & 414-2)
4. Concern for social programs and policies (GRI Series 400)
5. Responsive to environmental assessment or scanning (GRI Series 300)

The first dimension included 124 sub-indicators; the second dimension comprised 76 sub-indicators; the third dimension comprised 13 sub-indicators; the fourth dimension comprised 116 sub-indicators; and the fifth dimension comprised 315 sub-indicators. Therefore, 644 GRI standard disclosure indicators are used in this study.

This study utilised content analysis to address the research questions and gauge the social and environmental performance of SOEs by examining their compliance with Global Reporting Initiative (GRI) standards. The study centred on five critical dimensions and 645 indicators of ISOEs' performance by implementing a multidimensional framework aligned with GRI standards. This study employs the GRI Standard's conceptual framework to scrutinize the disclosure of social and environmental performance as shown in Fig. 1

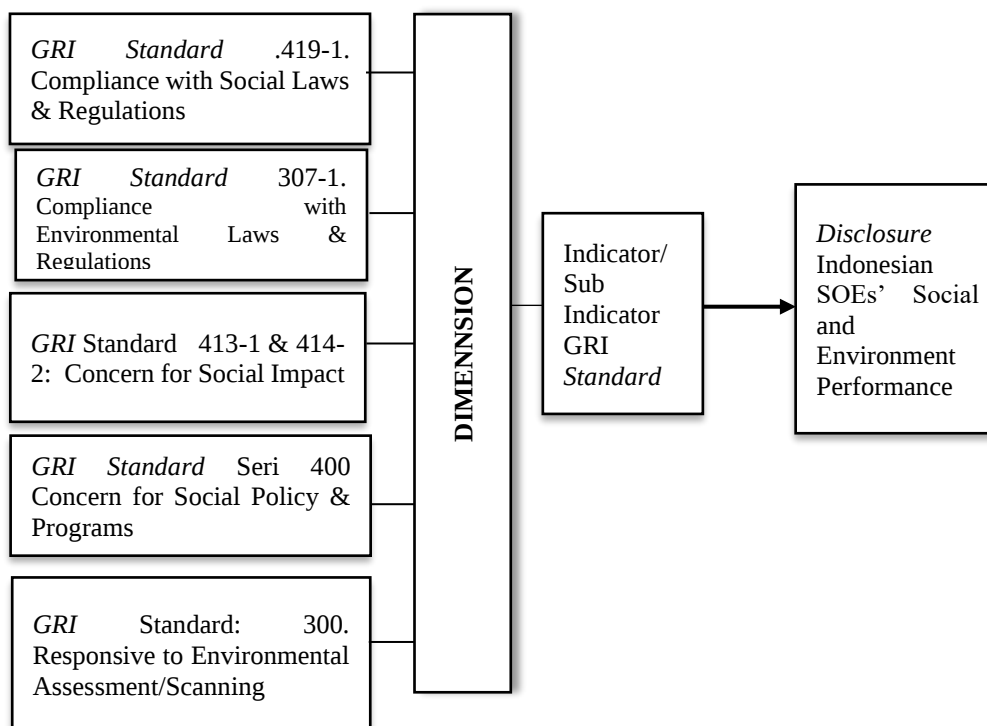


Fig.1: The Conceptual Framework of the GRI Standard

Measurement of Financial Performance

This study employs accounting-based measurements, specifically Return on Assets (ROA) and Return on Equity (ROE), as proxies to establish a causal relationship between financial, social, and environmental performance. ROA and ROE are the most commonly utilised indicators in the literature, reflecting the company's long-term performance, highlighting the company's ability to generate profits from its social and environmental

investments, and acting as current financial performance indicators (Blasi et al., 2019; Soytaş et al., 2019; Yang & Bassandorj, 2017).

Control Variables

This study used control variables to prevent bias and account for dependent variable fluctuations. The control variables include company size, age, and industrial type. Company size accounted for larger firms' better performance, differentiated between labour- and capital-intensive industries, and correlated with social-environmental performance disclosures. Company age was used as management practice. Soytaş et al. (2019) show that age impacts financial returns, and that a company's competitive ability and innovation are sustained over time. Fan et al. (2017) argue that industries have varying profit levels; thus, differentiating between them using dummy variables is necessary.

Several studies have used dummy variables to classify industries based on environmental sensitivity (Kuo et al., 2011), Islamic banking (Nizam et al., 2019), Industry Classification Benchmark (ICB) (Maso et al., 2018), FTSE Group's environmental impact categorisation (Marti-Ballester, 2017), two-digit SIC codes (Soytaş et al., 2019; Shahzad, 2016), energy consumption efficiency (Fan et al., 2017), and company ownership (Nisitani, 2017). This study follows Kuo et al. (2011) in using non-environmentally and environmentally sensitive sectors relevant to the problem definition. Environmentally sensitive industries include the energy, chemical, pharmaceutical, mining, resource (e.g. paper), and utility sectors.

Research Model

The theoretical determinant model of the relationship between social, environmental, and financial performance in this study is shown in Fig.2.

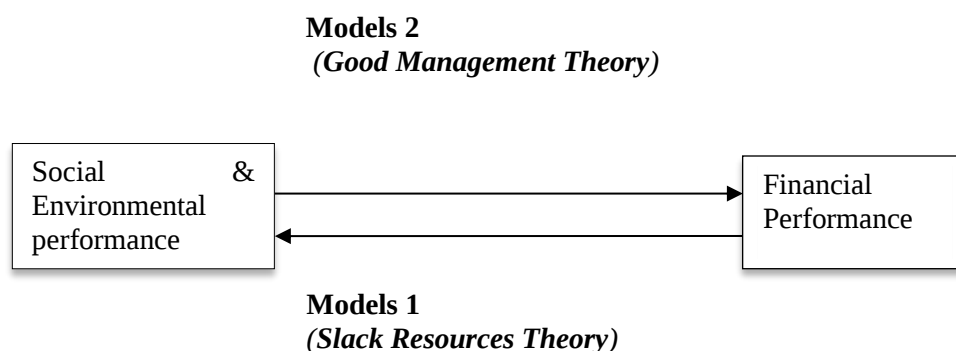


Fig.2. The Theoretical Determinant model of the Relationship Between Social & Environmental Performance and Financial Performance

Two models were used in this study: models 1 and 2. Model 1 explores the correlation between financial performance and social and environmental performance based on Slack's theory, whereas Model 2 investigates the relationship between social and environmental factors and financial performance based on the good management theory. Models 1 and 2 were divided into sub-models. Specifically, Model 1 is composed of Model 1.1 and Model 1.2, and Model 2 is composed of Models 2.1 and 2.2. This study employed a generic binary logistic regression equation, as follows:

$$P(Y) = \frac{1}{1 + e^{-(b_0 + b_1X_1 + b_2X_2 + \dots + b_nX_n)}}$$

Where: $P(Y)^1$ is the probability of Y occurring; e is the base of the natural logarithm; b_0 is a constant; X_1 is the predictor variable; and b_1 is the predictor's coefficient (or weight).

The equations of Models 1 and 2 in this study in the binary logistic regression equation are as follows:

¹ This binary logistic regression equation is the same as the multiple regression equation: $Y_i = b_0 + b_1X_{1i} + \dots + b_nX_{ni} + \epsilon_i$ (Field, 2009)

$$P(TD1-ESPI) = \frac{1}{1 + e^{-(b_0 + b_1 ROA + b_2 SIZE + b_3 AGE + b_4 TYPE)}}$$

Model equation 1.1 (ROA) based on slack resources theory:

$$P(TD1-ESPI) = \frac{1}{1 + e^{-(b_0 + b_1 ROE + b_2 SIZE + b_3 AGE + b_4 TYPE)}}$$

Model equation 1.2 (ROE) based on slack resources theory:

$$P(ROA1) = \frac{1}{1 + e^{-(b_0 + b_1 TD_ESPI + b_2 SIZE + b_3 AGE + b_4 TYPE)}}$$

Model Equation 2.1. based on the good management theory:

$$P(ROE1) = \frac{1}{1 + e^{-(b_0 + b_1 TD_ESPI + b_2 SIZE + b_3 AGE + b_4 TYPE)}}$$

Model Equation 2.2. based on the good management theory:

Where: P (Y) in the model 1.1 and 1,2 could be: TD1_ESPI; DA1-ESPI; DB1-ESPI; DC1-ESPI; DD1-ESPI; DE1-ESPI and b1 in the model 2.1. and 2.2 could be TD1_ESPI; DA1-ESPI; DB1-ESPI; DC1-ESPI; DD1-ESPI; DE1-ESPI

The Estimation and interpretation of the binary logistic regression results were performed using the odds ratio (Exp (B) in SPSS output (Field, 2009). This interpretation is related to the extent of the causal relationship between changes in the indicators that produce odds and unit changes in the predictor. Finally, this study designed a report on SPSS output in the form of an overview (Field, 2009).

Validity and Reliability Issues

Content analysis challenges include ensuring the validity and reliability of the data credibility (Chen et al., 2015). Researchers must ensure that documents are unbiased. Key concerns include (1) subjective evaluation objectives, (2) experience needed for standardised systems, (3) resource limitations affecting sample size, and (4) subjective coding (Chen et al., 2015; Liang & Liu, 2017). This study addresses validity using the GRI standard social and environmental indicators, validated for comprehensive measurements. These indicators are auditable and provide an international standard for companies' social responsibility (Chen et al., 2015; Herriot, 2016; Liang & Liu, 2017). Multiple investigators have verified the results for validity (Chen et al., 2015).

Content analysis has reliability (accuracy) issues. The reliability of the study was ensured through Chen et al.'s (2015) research protocol to minimise bias. This study follows Weber (1997) and Deegan et al.'s (2001) methods to define and test the SOE social and environmental performance disclosure coding scheme, based on the GRI standard.

Statistical Testing Analysis Techniques

The reliability test used Cronbach's alpha (α) with an alpha coefficient value greater than 0.6 (Hair et al., 2010). Meanwhile, for the validity test, bivariate correlation was used between each indicator score and the total indicator score (non-parametric statistical test, Bivariate Correlation - Spearman's rho).

RESULTS AND DISCUSSION

This study uses archival data from annual reports of Indonesian state-owned enterprises (SOEs) from 62 companies meeting the sample criteria over 11 years (2008–2018). According to the Ministry of State-Owned Enterprises website (www.bumn.go.id), 62 out of 118 SOEs (53%) published annual reports for at least five years from 2008 to 2018, thus meeting the sample criteria. The remaining 56 (47%) did not meet the criteria because they did not publish annual reports or for less than five years.

The SOEs meeting the sample criteria were 62 companies: 39 (63%) were environmentally sensitive industrial types, and 23 (37%) were non-environmentally sensitive, based on Cho and Patten's (2007) classification. The 594 available annual reports include 375 (63%) from environmentally sensitive SOEs and 219 (37%) from non-environmentally sensitive SOEs. This indicates that environmentally sensitive ISOEs pay greater attention to disclosing annual reports than do non-environmentally sensitive ISOEs.

Reliability results with Bivariate Correlation-Spearman rho show that the level of reliability of the social and environmental performance dimensions of SOEs provides a Cronbach's alpha value of 78.3%, which means that, according to criteria > 0.60 , the dimensions or indicators of social and environmental performance are reliable. Furthermore, the results of the correlation tests were significant. Thus, it can be concluded that each dimension (indicator) was valid.

Testing the relationship between social and environmental performance and financial performance based on slack resources and good management theories and using binary logistic regression requires three stages: normality, multicollinearity, and model tests. The model equation consists of two main models: model 1 (slack resource theory) and model 2 (good management theory). Model 1 includes 1.1 (1.1a-e) and 1.2 (1.2a-e). Model 2 includes 2.1 (2.1a-e) and 2.2 (2.2a-e).

Normality Test

The slack resource- and management-based normality tests showed left-skewed distributions in histograms and P-plot graphs for all models, violating normality assumptions. Statistical tests revealed that skewness and kurtosis values exceeded the critical values for all model residuals, confirming a non-normal distribution. The non-parametric Kolmogorov–Smirnov (K-S) test yielded significant K-S values at 0.000 for all models: 0.436 (model 1.1), 0.407 (1.1a), 0.395 (1.1b), 0.387 (1.1c), 0.272 (1.1d), 0.394 (1.1e), 0.437 (2.1), 0.406 (2.1a), 0.400 (1.1b), 0.389 (1.1c), 0.287 (2.1d), 0.396 (1.1e), 0.441 (Model 2.1), 0.453 (2.1a), 0.452 (2.1b), 0.432 (2.1c), 0.411 (2.1d), 0.437 (model 2.1e), 0.317 (model 2.2), 0.294 (2.2a), 0.302 (2.2b), 0.311 (2.2c), 0.287 (2.2d), 0.396 (2.2e). This confirmed that the residual data were not normally distributed.

Multicollinearity Test Results

The results of calculating the Tolerance and VIF values show that there are no independent variables in Models 1.1, 1.2, 2.1, and 2.2, which have tolerance values < 0.10 . This means that there is no correlation between the independent variables, whose value is greater than 95%. In addition, the results of calculating the Variance Inflation Factor (VIF) value also show the same thing; there is no single independent variable with a VIF value > 10 . Thus, it can be concluded that there was no multicollinearity between the independent variables in the regression model.

Results of Model Fit Analysis and Interpretation of Binary Logistic Regression Based on Slack Resources Theory

Model Equation: 1.1 – 1.1a-e

Table 1 in model 1.1a presents the coefficient b and Wald statistics, highlighting the independent variables ROA, SIZE and AGE. ROA and TYPE were not statistically significant, while SIZE and AGE were significant, with p-values of less than 0.05. These findings suggest that ROA and TYPE do not significantly affect compliance with laws and regulations, whereas SIZE and AGE do so within the low category. Table 1 further illustrates that ROA and TYPE are not significant, whereas AGE and SIZE are significant ($p < 0.05$ or *). The binary logistic regression equation indicates a positive relationship between ROA and compliance with laws and regulations (DA1-ESPI).

The 1.1b model results in Table 1 show the coefficients for the independent variable [ROA] and control variables (SIZE, AGE, and TYPE). The analysis indicates that ROA, SIZE, and TYPE are not statistically significant, while AGE is statistically significant ($p < 0.01$). The binary logistic regression equation shows a negative link between financial performance (ROA) and environmental performance compliance (DB1-ESPI), suggesting that a unit decrease in environmental performance compliance increases financial performance (ROA) by an odds

factor of 0.881. The control variable, SIZE, measured by total assets, shows a positive relationship with environmental performance.

Tabel 1. Summary of Binner Logistic Regression Analysis Model Equation 1.1 to 1.1a-e Based on Slack Resources Theory

Variables	B	(SE)	Sig	95% CI for Odds Ratio		
				Lower	Odds	Upper
Included (1.1 Model)						
Constant	-5.763*	(2.692)	0.032	-	-	-
ROA	0.15	(0.49)	0.755	0.923	1.015	1.117
SIZE	0.170	(0.167)	0.308	0.855	1.185	1.644
AGE	-0.26	(0.25)	0.290	0.929	0.974	1.022
TYPE	-17.215	(2.43E+03)	0.994	0.000	0.000	-
Note: 0.121 (Hosmer & Lemeshow); 0.014 (Cox & Snell); 0.128 (Nagelkerke); Model χ^2 (4) = 9.478, $p = 0.05$. [* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$]						
Included (1.1a Model)						
Constant	-49.136*	(21.353)	0.021	-	-	-
ROA	0.021	(0.220)	0.412	0.778	1.198	1.845
SIZE	0.181	(0.907)	0.030	1.215	7.188	42.519
AGE	1.972*	(0.048)	0.020	1.018	1.119	1.231
TYPE	-1.143	(1.418)	0.420	0.020	0.319	5.139
Note: 0.465 (Hosmer & Lemeshow); 0.033 (Cox & Snell); 0.474 (Nagelkerke); Model χ^2 (4) = 22.815, $p = 0.000$. [* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$]						
Included (1.1b Model)						
Constant	-10.634	(6.116)	0.082	-	-	-
ROA	-0.127	(0.105)	0.228	0.717	0.881	1.083
SIZE	0.610	(0.371)	0.100	0.890	1.840	3.804
AGE	-0.89**	(0.034)	0.009	0.856	0.915	0.978
TYPE	-18.165	(1.97E+03)	0.993	0.000	0.000	-
Note: 0.297 (Hosmer & Lemeshow); 0.025 (Cox & Snell); 0.306 (Nagelkerke); Model χ^2 (4) = 17.572, $p = 0.001$. [* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$]						
Included (1.1c Model):						
Constant	-	(2.132)	0.000	-	-	-
ROA	11.856***	(0.024)	0.017	1.010	1.058	1.109
SIZE	0.057*	(0.124)	0.000	1.382	1.763	2.249
AGE	0.567***	(0.010)	0.559	0.974	0.994	1.014
TYPE	-0.006	(0.670)	0.000	0.022	0.082	0.305
	-					
	2.500***					
Note: 0.187 (Hosmer & Lemeshow); 0.073 (Cox & Snell); 0.218 (Nagelkerke); Model χ^2 (4) = 51.497, $p = 0.000$. [* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$]						
Included (1.1d Model):						
Constant	-	(1.399)	0.000	-	-	-
ROA	10.968***	(0.25)	0.188	0.922	0.968	1.016
SIZE	-0.32	(0.079)	0.000	1.466	1.713	2.001
AGE	0.538***	(0.006)	0.050	1.000	1.011	1.022
TYPE	0.011	(0.299)	0.021	0.280	0.502	0.902
	-0.688*					
Note: 0.195 (Hosmer & Lemeshow); 0.132 (Cox & Snell); 0.256 (Nagelkerke); Model χ^2 (4) = 96.828, $p = 0.000$. [* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$]						
Included (1.1e):						
Constant	-8.282	(3.032)	0.006	-	-	-
ROA	0.097**	(0.029)	0.001	1.040	1.102	1.168
SIZE	0.305	(0.183)	0.096	0.947	1.357	1.943
AGE	-0.022	(0.018)	0.219	0.945	0.978	1.013
TYPE	-2.009	(1.088)	0.065	0.016	0.134	1.133

Note: 0.179 (Hosmer & Lemeshow); 0.035 (Cox & Snell); 0.194 (Nagelkerke); Model χ^2 (4) = 24.392, $p = 0.000$. [* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$]

In Model 1.1c, the regression analysis identifies ROA, SIZE, and TYPE as significant predictors, whereas AGE is not. ROA and SIZE significantly influence low-category social performance, while TYPE is significant for both. AGE does not affect social performance. Odds ratios were used to interpret the results. The logistic regression equation shows a positive association between ROA and social performance (DC1-ESPI), with financial performance odds increasing by 1.058 per unit increase. Company size (SIZE) is positively related to social performance, increasing by 1.763 per unit. Conversely, company age (AGE) and type (TYPE) are negatively related to social performance, decreasing by 0.994 and 0.082 per unit, respectively.

The 1.1d model identified ROA, SIZE, and TYPE as significant variables, with ROA and TYPE significant at 0.05, and SIZE significant at 0.01. AGE levels were not significant. This finding suggests that ROA positively influences social performance in the low category. SIZE and TYPE significantly affected social performance in the low category, whereas AGE had no impact. TYPE was considered significant at $p < 0.05$. The binary logistic regression equation shows that ROA is negatively related to social performance-social policies and programs [DD1-ESPI], indicating that decreased social performance-social policies and programs increase financial performance. SIZE showed a positive relationship, whereas AGE and TYPE showed negative relationships.

Model 1.1e shows that financial performance (Return on Assets, ROA) significantly influences environmental performance (DE1-ESPI), especially in the low category. Company size (SIZE), age (AGE), and type (TYPE) do not significantly affect environmental performance. The binary logistic regression equation revealed positive correlations between financial performance and environmental assessment/scanning (DE1-ESPI) and between company size (SIZE) and environmental assessment/scanning (DE1-ESPI). Company age (AGE) and type (TYPE) were negatively correlated with environmental assessment and scanning (DE1-ESPI). These findings indicate that financial performance is crucial in shaping a company's environmental performance, whereas size, age, and type are not.

Model Equation: 1.2 – 1.2a-e

Model 1.2 in Table 2 shows the coefficient values b and Wald Statistics for the independent variable (ROE) and control variables (SIZE, AGE, and TYPE). ROE (0.803), SIZE (0.272), AGE (0.267), and TYPE (0.994) were not statistically significant. Thus, ROE did not influence social and environmental performance. The control variables, SIZE, AGE, and TYPE, did not affect these categories. The binary logistic regression indicated a negative relationship between ROE and social and environmental performance (TD1-ESPI) in the log of odds. SIZE showed a positive relationship with TD1-ESPI, with an odds ratio of 1.185 ($e^{0.170}$) per unit increase. AGE and TYPE demonstrated a negative relationship with TD1-ESPI.

Model 1.2a in Table 2 shows that ROE and TYPE are not significant, while SIZE and AGE are significant, with p-values of 0.027 and 0.024, respectively. This suggests that ROA does not influence compliance with laws and social regulations (DA1-ESPI). SIZE and AGE significantly affected DA1-ESPI, especially in the low category. AGE did not significantly impact DA1-ESPI in either category. The regression equation shows a positive link between ROE and DA1-ESPI, with each unit increase in DA1-ESPI increasing ROE by an odds factor of 1.073 ($e^{0.071}$).

Table 2. Summary of Binner Logistic Regression Analysis Model Equation 1.2 to 1.2a-e Based on Slack Resources Theory

Variables	B	(SE)	Sig	95% CI for Odds Ratio		
				Lower	Odds	Upper
Included (1.2 Model)						
Constant	5.502	(2.475).	0.026.	-	-	
ROE	-.009	(0.036)	0.803	0.924	0.991	1.063
SIZE	.170	(0.155)	0.272	0.875	1.185	1.605
AGE	-.027	(0.024)	0.267	0.938	0.973	1.021
TYPE	-17.264	(2.43E+03)	0.994	0.000	0.000	-

Note: 00.121 (Hosmer & Lemeshow); 0.014 (Cox & Snell); 0.127 (Nagelkerke); Model χ^2 (4) = 9.45, $p = 0.05$ [* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$]

Included Model)	(1.2a)	-48.416	(20.760)	0.020	-	-	-
Constant		0.071	(0.087)	0.415	0.91	1.07	1.27
ROE		1.918*	(0.865)	0.027	1.25	6.80	37.10
SIZE		0.122*	(0.054)	0.024	1.02	1.13	1.26
AGE		-2.256	(1.566)	0.150	0.01	0.11	2.26
TYPE							
Note: 0.465 (Hosmer & Lemeshow); 0.033 (Cox & Snell); 0.474 (Nagelkerke) Model χ^2 (4) = 22.815, $p = 0.000$. [* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$]							
Included Model)	(1.2b)	-11.896	(6.307)	0.059	-	-	-
Constant		-0.37	(0.51)	0.477	0.872	0.964	1.066
ROE		0.672	(0.383)	0.079	0.925	1.958	4.145
SIZE		-0.088*	(0.035)	0.012	0.855	0.916	0.981
AGE		-17.863	(1.95E+03)	0.993	0.000	0.000	-
TYPE							
Note: 0.279 (Hosmer & Lemeshow); 0.024 (Cox & Snell); 0.288 (Nagelkerke); Model χ^2 (4) = 16.508, $p = 0.002$ [* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$]							
Included Model):	(1.2c)	-	(1.991)	0.000			
Constant		10.476***	(0.016)	0.650	0.975	1.007	1.041
ROE		0.007	(0.118)	0.000	1.315	1.659	2.092
SIZE		0.506***	(0.010)	0.511	0.973	0.993	1.014
AGE		-0.07	(0.672)	0.000	0.020	0.074	0.275
TYPE		-					
2.607***							
Note: 0.187 (Hosmer & Lemeshow); 0.073 (Cox & Snell); 0.218 (Nagelkerke); Model χ^2 (4) = 51.497, $p = 0.000$. [* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$]							
Included Model):	(1.2d)	-	(1.347)	0.000			
Constant		11.320***	(0.012)	0.017	0.949	0.972	0.995
ROE		-0.029*	(0.078)	0.000	1.512	1.763	2.056
SIZE		0.567***	(0.006)	0.046	1.000	1.011	1.023
AGE		0.011*	(0.296)	0.063	0.323	0.577	1.031
TYPE		-0.550					
Note: 0.203 (Hosmer & Lemeshow); 0.137 (Cox & Snell); 0.265 (Nagelkerke); Model χ^2 (4) = 100.773, $p = 0.000$. (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$)							
Included (1.2e):							
Constant		-6.500 *	(2.558)	0.011			
ROE		0.052**	(0.18)	0.004	1.017	1.053	1.090
SIZE		0.214	(0.159)	0.179	0.906	1.239	1.694
AGE		-0.028	(0.018)	0.125	0.938	0.972	1.008
TYPE		-2.436*	(1.096)	0.026	0.010	0.088	0.750
Note: 0.150 (Hosmer & Lemeshow); 0.029 (Cox & Snell); 0.161 (Nagelkerke); Model χ^2 (4) = 20.236, $p = 0.000$. (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$)							

In Model 1.2b (Table 2), ROE, SIZE, and TYPE are statistically insignificant, whereas AGE is significant. The probability values were ROE (0.477), SIZE (0.079), and TYPE (0.993), all above 0.05. AGE was significant at 0.012 ($p < 0.05$ or *), affecting environmental performance compliance [DB1-ESPI] in the low and high categories. Financial performance [ROA] does not influence environmental performance compliance [DB1-ESPI] regardless of company size [SIZE] or type [TYPE]. Company age [AGE*] significantly affected environmental performance compliance [DB1-ESPI], especially in the low category. The model shows a negative relationship between financial performance (ROE) and environmental performance compliance (DB1-ESPI).

Model 1.2c in Table 2 shows that ROE and AGE are not significant, whereas SIZE and TYPE are. The ROE (0.650) and AGE (0.511) exceeded the threshold of 0.05. SIZE and TYPE had values of 0.000 ($p < 0.001$ or ***), indicating strong significance. Thus, ROA and AGE do not affect [DC1-ESPI]. However, SIZE-total assets [SIZE***] and TYPE [TYPE***] significantly influence [DC1-ESPI], especially in the low category. The model shows a positive relationship between ROE and [DC1-ESPI].

Model 1.2d shows that ROE, company size (SIZE), and age (AGE) significantly influence social performance-social policies and programs (DD1-ESPI), whereas company type (TYPE) does not. ROE was significant at $p =$

0.017 ($p = 0.05$ or *), SIZE at 0.000 ($p = 0.000$ or ***), and TYPE at 0.046 ($p = 0.05$ or *). ROE* negatively impacts DD1-ESPI in the low versus high categories, while total assets (SIZE***) and company age (AGE*) positively influence it. Company type had no significant effect. Binary logistic regression revealed negative relationships between ROE and DD1-ESPI, while company age and type showed inverse relationships with this measure.

Model 1.2.e shows that ROE and TYPE were significant with probabilities of 0.004 ($p < 0.01$) and 0.026 ($p < 0.05$), respectively, while SIZE (0.179) and AGE (0.125) were not significant. Financial performance (ROE**) significantly influences environmental performance-environmental assessment/scanning (DE1-ESPI) in the low versus high categories. Company type (TYPE*) as a control variable also influences environmental assessment/scanning in the low versus high categories. Company size (SIZE) and age (AGE) did not affect environmental assessment/scanning performance. The binary logistic regression shows a positive relationship between financial performance [ROE] and environmental assessment/scanning performance, with both ROE** and company type [TYPE**] as significant variables.

Results of Model Fit Analysis and Interpretation of Binary Logistic Regression Based on Good Management Theory

Model Equation: 2.1 – 2.1a-e

Model 2.1 in Table 3 shows that only ROE is significant, whereas SIZE, AGE, and TYPE are not. This is evident from TD_ESPI's probability significance of 0.017 ($p < 0.05$ or *), while SIZE was 0.954, AGE was 0.289, and TYPE was 0.130. Thus, social and environmental performance influences financial performance (ROA) in the low category compared to that in the high category. However, company size-total assets [SIZE], age [AGE], and type [TYPE], as control variables, do not affect financial performance in either category. From the binary logistic regression equation, the log of odds for each variable showed a positive relationship between social, environmental, and financial performance.

Model 2.1a shows that none of the variables (DA-ESPI, SIZE, AGE, TYPE) are significant, with probability values of DA-ESPI = 0.994, SIZE = 0.458, AGE = 0.314, and TYPE = 0.075. Therefore, social performance compliance (DA_ESPI) did not affect financial performance (ROA) in either category. Similarly, company size (SIZE), age (AGE), and type (TYPE) as control variables do not affect ROA. The binary logistic regression shows a negative relationship between social performance compliance (DA-ESPI) and ROA. Conversely, company size (SIZE) has a positive relationship with ROA, while company age (AGE) and type (TYPE) have negative relationships with ROA.

Table 3. Summary of Binner Logistic Regression Analysis Model Equation 2.1 to 2.1a-e Based on Good Management Theory

Independent Variables	B	(SE)	Sig	95% CI for Odds Ratio		
				Lower	Odds	Upper
Included (2.1 Model)	-3.385**	(1.026)	0.001	-	-	-
Constant	0.597*	(0.25)	0.017	1.111	1.817	2.972
TD-ESPI	-0.004	(0.064)	0.954	0.879	0.996	1.130
SIZE	-0.021	(0.020)	0.289	0.942	0.979	1.018
AGE	-1.622	(1.072)	0.130	0.024	0.198	1.616
TYPE						
Note: 0.090 (Hosmer & Lemeshow); 0.015 (Cox & Snell); 0.097 (Nagelkerke); Model χ^2 (4) = 10.185, $p = 0.037$. [$*p < 0.05$, $**p < 0.01$, $***p < 0.001$]						
Included (2.1a Model)	-48.416	(20.760)	0.020	-	-	-
Constant	0.071	(0.087)	0.415	0.91	1.07	1.27
DA-ESPI	1.918*	(0.865)	0.027	1.25	6.80	37.10
SIZE	0.122*	(0.054)	0.024	1.02	1.13	1.26
AGE	-2.256	(1.566)	0.150	0.01	0.11	2.26
TYPE						
Note: 0.080 (Hosmer & Lemeshow); 0.012 (Cox & Snell); 0.081 (Nagelkerke); Model χ^2 (4) = 8.409, $p = 0.078$. [$*p < 0.05$, $**p < 0.01$, $***p < 0.001$]						
Included (2.1b Model)	-3.475**	(1.030)	0.001	-	-	-

Constant	-3.518	(18.093)	0.846	0.000	0.030	7.47E+13
DB-ESPI	0.037	(0.063)	0.553	0.917	1.038	1.175
SIZE	-0.19	(0.019)	0.300	0.946	0.981	1.017
AGE	-1.905	(1.067)	0.074	0.018	0.149	1.205
TYPE						
Note: 0.053(Hosmer & Lemeshow); 0.009 (Cox & Snell); 0.057(Nagelkerke); Model χ^2 (4) = 5.936, $p = 0.204$. [$*p < 0.05$, $**p < 0.01$, $***p < 0.001$]						
Included	(2.1c)					
Model):	-3.39**	(0.51)	0.001	-	-	-
Constant	2.44E+01**	(8.797)	0.005	1.32E+03	4.07E+10	1.25E+18
DC-ESPI	-0.022	(0.065)	0.738	0.861	0.978	1.112
SIZE	-0.021	(0.021)	0.315	0.941	0.979	1.020
AGE	-1.397	(1.085)	0.198	0.029	0.247	2.077
TYPE						
Note: 0.107 (Hosmer & Lemeshow); 0.018 (Cox & Snell); 0.115(Nagelkerke); Model χ^2 (4) = 12.077 $p = 0.017$. [$*p < 0.05$, $**p < 0.01$, $***p < 0.001$]						
Included	(2.1d)					
Model):	-4.035**	(1.173)	0.001	-	-	-
Constant	-5.803*	(2.579)	0.024	0.000	0.0030	0.473
DD-ESPI	0.142	(0.081)	0.082	0.982	1.152	1.352
SIZE	-0.011	(0.017)	0.509	0.957	0.989	1.022
AGE	-1.987	(1.061)	0.061	0.017	0.137	1.096
TYPE						
Note: 0.110 (Hosmer & Lemeshow); 0.018 (Cox & Snell); 0.118(Nagelkerke); Model χ^2 (4) = 12.367, $p = 0.015$. [$*p < 0.05$, $**p < 0.01$, $***p < 0.001$]						
Included	(2.1e)					
Model):	-3.435**	(1.040)	0.001	-	-	-
Constant	0.807**	(0.268)	0.003	1.325	2.241	3.791
DE-ESPI	0.001	(0.064)	0.986	0.883	1.001	1.134
SIZE	-0.020	(0.020)	0.312	0.942	0.980	1.019
AGE	-1.532	(1.078)	0.155	0.026	0.216	1.789
TYPE						
Note: 0.114(Hosmer & Lemeshow); 0.019 (Cox & Snell); 0.123(Nagelkerke); Model χ^2 (4) = 12.844, $p = 0.012$. [$*p < 0.05$, $**p < 0.01$, $***p < 0.001$]						

Model 2.1b shows no significant independent variables (DB-ESPI, SIZE, AGE, and TYPE), with probabilities of 0.846, 0.553, 0.300, and 0.074, respectively, all exceeding 0.05. Environmental performance compliance (DB-ESPI) did not affect financial performance (ROA) in either category. Similarly, company size-total assets (SIZE), age (AGE), and type (TYPE), as control variables, do not affect ROA. Binary logistic regression shows a negative relationship between environmental compliance (DB-ESPI) and financial performance (ROA1), with an odds factor of 0.030 (e-3.518) for each unit decrease in ROA, assuming that other variables remain constant. Company size (SIZE) shows a positive relationship with ROA, whereas company age (AGE) and type (TYPE) show negative relationships.

Model 2.1c shows that only DC-ESPI is significant ($p=0.005$, $p < 0.01$), whereas SIZE (0.738), AGE (0.315), and TYPE (0.198) are insignificant. Therefore, social performance-social impact (DC-ESPI) significantly influences financial performance (ROA) in the low category compared with the high category, while company size-total assets (SIZE), age (AGE), and type (TYPE) do not affect financial performance. The binary logistic regression shows a positive relationship between DC-ESPI and ROA, with social performance-social impact increasing by an odds factor of 4.07E+10 (e0.2.44E+1) per unit increase in ROA1. The control variables SIZE, AGE, and TYPE have negative relationships with ROA.

Model 2.1d results showed that only DD-ESPI was significant ($p=0.024$, $p<0.05^*$), whereas SIZE (0.082), AGE (0.509), and TYPE (0.061) were not significant. Thus, social performance-social policies and programs (DD-ESPI) influence financial performance (ROA) in the low category compared with the high category. As control variables, company size-total assets (SIZE), company age (AGE), and company type (TYPE) do not affect financial performance. Binary logistic regression shows a negative relationship between social policies/programs and financial performance. Meanwhile, company size-total assets [SIZE] shows a positive relationship with financial performance (ROA), whereas company age [AGE] and type [TYPE] have negative relationships with finance.

Model 2.1e results showed that only DE-ESPI was significant ($p=0.003$, $p < 0.01$), whereas SIZE (0.986), AGE (0.312), and TYPE (0.155) were not significant at 0.05. Therefore, environmental performance-environmental assessment/scanning greatly influences financial performance (ROA) in the low category compared to the high category, while company size-total assets [SIZE], company age (AGE), and company type (TYPE) do not affect

financial performance. Binary logistic regression analysis shows positive relationships between social policy and program performance (DE-ESPI) and financial performance, as well as between company size/total assets (SIZE) and financial performance. Company age (AGE) and type (TYPE) have negative relationships with ROA.

Table 4. Summary of Binner Logistic Regression Analysis Model Equation 2.2 to 2.2a-e Based on Good Management Theory

Independent Variables	B	(SE)	Sig	95% CI for Odds Ratio		
				Lower	Odds	Upper
Included (2.2 Model)						
Constant	-	(0.531)	0.000	-	-	-
TD-ESPI	3.747***	(0.152)	0.460	0.831	1.118	1.505
SIZE	0.112	(0.033)	0.000	1.065	1.137	1.214
AGE	0.129***	(0.004)	0.393	0.995	1.004	1.013
TYPE	0.004	(0.213)	0.348	0.804	1.221	1.854
	0.200					
Note: 0.090 (Hosmer & Lemeshow); 0.015 (Cox & Snell); 0.097(Nagelkerke); Model χ^2 (4) = 10.19, $p = 0.037$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$						
Included (2.2a Model)						
Constant	-	(0.599)	0.000	-	-	-
DA-ESPI	3.716***	(3.30E+01)	0.015	0.000	0.000	0.000
SIZE	-	(0.036)	0.000	1.094	1.175	1.261
AGE	2.09E+01	(0.005)	0.166	0.997	1.006	1.015
TYPE	0.143***	(0.210)	0.426	0.783	1.182	1.783
	0.003					
	0.039					
Note: 0.070 (Hosmer & Lemeshow); 0.065 (Cox & Snell); 0.105(Nagelkerke); Model χ^2 (4) = 45.799, $p = 0.000$. [* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$]						
Included (2.2b Model)						
Constant	-3.475**	(0.537)	0.000	-	-	-
DB-ESPI	-3.518	(1.24E+01)	0.091	0.000	0.000	2.76E+01
SIZE	0.037	(0.032)	0.000	0.917	1.154	1.229
AGE	-0.19	(0.004)	0.547	0.946	1.003	1.012
TYPE	-1.905	(0.216)	0.855	0.018	1.040	1.588
Note: 0.053(Hosmer & Lemeshow); 0.009 (Cox & Snell); 0.057(Nagelkerke); Model χ^2 (4) = 5.936, $p = 0.204$. [* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$]						
Included (2.2c Model):						
Constant	-	(0.526)	0.000	-	-	-
DC-ESPI	3.751***	(4.860)	0.222	0.027	3.77E+02	5.16E+06
SIZE	5.931	(0.033)	0.000	1.061	1.132	1.208
AGE	0.124***	(0.004)	0.398	0.995	1.004	1.013
TYPE	0.004	(0.223)	0.242	0.839	1.298	2.009
	0.261					
Note: 0.055(Hosmer & Lemeshow); 0.051 (Cox & Snell); 0.083(Nagelkerke); Model χ^2 (4) = 35.582, $p = 0.000$. [* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$]						
Included (2.2d Model):						
Constant	-	(0.665)	0.000	-	-	-
DD-ESPI	4.455***	(0.627)	0.001	0.036	0.123	0.416
SIZE	-2.106**	(0.045)	0.000	1.134	1.239	1.353
AGE	0.214***	(0.004)	0.178	0.997	1.006	1.015
TYPE	0.006	(0.210)	0.543	0.753	1.136	1.714
	0.128					
Note: 0.071 (Hosmer & Lemeshow); 0.066 (Cox & Snell); 0.107(Nagelkerke); Model χ^2 (4) = 46.349, $p = 0.000$. [* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$]						
Included (2.2e Model):						
Constant	-	(1.040)	0.001	-	-	-
DE-ESPI	3.760***	(0.268)	0.003	1.325	2.241	3.791
SIZE	0.338*	(0.064)	0.986	0.883	1.001	1.134
AGE	0.125***	(0.020)	0.312	0.942	0.980	1.019
TYPE	0.004	(1.078)	0.155	0.026	0.216	1.789
	0.264					

Note: 0.114(Hosmer & Lemeshow); 0.019 (Cox & Snell); 0.123(Nagelkerke); Model χ^2 (4) = 12.844, $p = 0.012$. [* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$]

DISCUSSION

Investigations based on the slack resources theory show that financial performance (ROA and ROE) has a positive relationship with compliance with laws and social regulations, concern for social impacts, and responsiveness to environmental assessment/scanning. This aligns with Law No. 19/2003, showing synergy between financial performance and social and environmental performance. However, there is a negative relationship between financial performance (ROA and ROE) and compliance with environmental laws and regulations and social policies and programs, which is inconsistent with Law No. 19/2003. Thus, the synergy between the financial, social, and environmental functions of state-owned companies has not worked well.

The results of investigations based on the good management theory show a positive relationship between social and environmental performance and financial performance (ROA and ROE). Social and environmental performance include concerns about social impacts and responsiveness to environmental assessments. This aligns with Law No. 19/2003, showing synergy between social, environmental, and financial performance. However, there is a negative relationship between compliance with social laws and regulations, environmental laws and regulations, and social policies and programs and financial performance (ROA and ROE). This contradicts Law No. 19/2003, indicating that social, environmental, and financial functions lack synergy.

The findings prove that SOEs management conducts social and environmental activities (including social law compliance, concern for local communities, and environmental assessments) despite the lack of financial slack. This aligns with the slack resource theory. SOEs achieve strong financial performance because their management optimally utilises resources for social and environmental activities. Optimising resources for these activities improves company reputation and increases profits while boosting shareholder confidence and attracting new capital. This supports the good management theory. However, these social and environmental activities only address local community issues, while stakeholders extend beyond local communities to include employees, consumers, suppliers, and indigenous communities, which are crucial to achieving Indonesian SOEs' goals.

The findings show that several models are consistent and inconsistent with those of previous studies (Fauzi and Idris, 2009; Fauzi et al., 2010). Although both the studies were conducted in Indonesia, they used different methods. Fauzi and Idris (2009) and Fauzi et al. (2010) employed different approaches to analyse company performance. Fauzi and Idris (2009) conducted a survey of managers of state-owned and private companies. The variables examined included (1) social performance, (2) financial performance, (3) business environment, (4) strategy, (5) organizational structure, and (6) control system. Social performance was measured using the modified Michael Jantzi Research Associate (MJRA) dimensions for Indonesia, while financial performance was measured using perceptual methods.

The study of Fauzi et al. (2010) used content analysis based on the Kinder, Lydenberg Domini (KLD) and Michael Jantzi Research Associate (MJRA) approaches to measure social performance dimensions. The KLD and MJRA dimensions include community issues; workplace diversity; employee relations; environmental performance; international issues; products and business practices; and variables related to compensation, trust, and ownership. Beyond Fauzi and Idris (2009) and Fauzi et al. (2010), several studies have examined the relationship between social, environmental, and financial performance. The results show that some research models are consistent and inconsistent with previous studies.

There are several reasons for the differing results of these studies. First, previous studies analysed social and environmental performance primarily in (1) international global companies; (2) companies in developed countries (USA, Germany, North America, Australia, Greece); and (3) developing country companies (Malaysia, India, China, Taiwan, Nigeria, Kenya, North Africa, Morocco) and Indonesian companies (Deswanto & Siregar, 2018; Latan et al., 2018; Nishitani et al., 2017).

Second, regarding measurement approaches, no previous study has used GRI Standard-based disclosure. Studies have used measurements based on: (1) GRI G3.1 or G4 Index (Deswanto & Siregar, 2018; Liang & Liu, 2017; Chen et al., 2015), and (2) categories from previous literature (Xie et al., 2019; Maqbool & Zameer, 2018; Oyewumi et al., 2018; Chen et al., 2016; Khelif et al., 2015). Przychodzen et al. (2018) developed coding for social and environmental indicators based on ISO Certification.

Slack resources and management theory have theoretical implications for providing conflicting predictions, representing competing explanations for the relationship between company performance. The first prediction, slack resources theory, shows that when financial performance increases, social and environmental performance also increase. The second prediction, based on the good management theory, is that when social and environmental performance increases, financial performance increases. This study provides results that support the predictions of both theories; however, other results do not support or contradict these predictions.

Based on the slack resources theory, this study shows that when SOEs' financial performance increases, non-compliance through fines and sanctions for legal violations increases. This contradicts slack resources theory's prediction that improved financial performance should increase compliance. A company's financial performance does not increase due to legal compliance, as violation-related fines have a minimal impact on reputation or financial status. State-owned companies often disregard the rights of employees, consumers, and suppliers, stakeholders who directly influence financial performance. When financial performance improves, the fines against SOEs decrease. However, companies tend to ignore legal obligations and stakeholder rights despite improved financial conditions.

Based on slack resources theory, this study shows that as financial performance increases, concerns about social impacts and environmental assessment responsiveness also increase, aligning with the theoretical predictions. When financial potential is used to fulfil stakeholder rights through social and environmental responsiveness, it increases stakeholder trust, enabling company survival in areas with local communities. The application of slack resources theory can be generalised across organisations, including state-owned companies in the globalisation era, privately owned companies, and established companies.

The third prediction, based on the slack resources theory, shows that increased financial performance leads to decreased social and environmental violations and fines. This aligns with slack resources theory's predictions, as companies use their financial potential to comply with regulations rather than paying penalties. Financial resources are utilised for social and environmental activities according to legal requirements instead of paying fines for violations. The application of slack resource theory can be generalised across different organisations, from state-owned to private companies, in the globalisation era.

The fourth prediction, based on slack resources theory, shows that when financial performance increases, concern for social policies and programs decreases, contradicting the theory's prediction of a positive relationship. The present study reconciles these contradictory findings. Companies do not increase their financial performance through social policies and programs, nor do they optimally use financial resources to improve the social performance of stakeholders. Companies tend to ignore the rights of employees, consumers, and suppliers even though these stakeholders directly impact financial performance.

The fifth prediction, based on slack resources theory, shows that increased financial performance leads to greater concern for social impact and environmental responsiveness. This aligns with slack resource theory predictions. When a company optimally uses its financial potential to address stakeholder rights through social and environmental responsiveness, it enhances its reputation. This increased reputation builds trust with the local communities where the company operates, enabling survival and optimal profits, thus improving financial performance. Slack resources theory's reasoning extends beyond private companies to various organisations, including state-owned enterprises, in the globalisation era.

The results show that financial performance decreases when fines and sanctions for violations increase. When compliance with laws and regulations decreases, financial performance also decreases, aligning with the predictions of good management theory. First, high fines affect a company's reputation and financial performance. Second, high fines directly impact a company's financial condition. This reasoning from good management theory can be applied across organisations.

The results of this study conflict with the second prediction of good management theory that increased concern for social policies should improve financial performance. This study develops logic to reconcile these opposing findings. First, enhancing social performance through company policies did not boost financial performance. Second, the company's focus on employee rights through social policies fails to increase financial potential despite workers being key stakeholders. Third, there are hidden ethical costs, suggesting that state-owned companies misalign their social policies. Fourth, social policies in state-owned companies primarily maintain images and demonstrate good management practices for government owners.

Based on good management theory, the results show that increased awareness of social impacts and environmental responsiveness correlate with improved financial performance, aligning with good management theory predictions. When stakeholder rights (especially those of local communities) are fulfilled through social and environmental responsiveness, stakeholder trust increases. This enables company survival in areas with indigenous communities, helping to achieve maximum profits and improved financial performance. Slack resources theory can be applied to various organisations.

The slack resources and good management theories explain the relationship between financial and social-environmental performance. The slack resources theory shows that financial performance is positively related to social-environmental compliance, social impact concern, and environmental assessment. For minorities, financial performance is negatively related to environmental compliance and social programmes. This theory predicts both positive and negative financial and social-environmental performance relationships.

Good management theory indicates that social-environmental compliance and programs are negatively related to financial performance. For minorities, social-environmental performance related to social impacts and environmental assessment positively relate to financial performance. Thus, the good management theory explains both positive and negative relationships between social, environmental, and financial performance.

The slack resources theory and good management theory provide solutions for how companies must synergise their financial, social, and environmental functions for stakeholders (UU No. 19/2003). This study shows that only social impact and responsiveness to environmental assessment/scanning are consistent with both the theories. The issue of compliance with laws and social regulations aligns with the slack resources theory, while compliance with environmental laws and social policy programs is not consistent with either theory.

Financial performance and social/environmental performance are the two outputs of the SOEs function (Law no. 19/2003). This study shows that the relationship between financial performance and social performance (compliance with social laws, social impacts, and environmental assessment) is positive, consistent with slack resources theory (Fauzi et al., 2010; Fauzi & Idris, 2009; Waddock & Graves, 1997). Additionally, social and environmental performance regarding social impacts and environmental assessment/scanning show a positive relationship, aligning with the good management theory (Fauzi et al., 2010; Fauzi & Idris, 2009; Waddock & Graves, 1997).

The practical implication of the causality model is the synergy between the financial and socio-environmental functions, which is essential for the Ministry of BUMN implementation and compliance with Law no. 19/2003. This study reveals benchmarks for SOEs' optimal performance in these functions, measured through financial, social, and environmental outputs. Optimal synergy is demonstrated by positive relationships between financial and socio-environmental performance (slack resources theory), or vice versa (good management theory). Negative relationships indicated suboptimal synergy. The causality model based on the ESP index provides theoretical and practical solutions for Indonesian SOEs.

CONCLUSION

This study examines the relationship between the social-environmental and financial performance of Indonesian SOEs. Based on slack resource theory, financial performance (ROA and ROE) is positively correlated with compliance with social regulations, social impact concerns, and environmental responsiveness, aligning with Law No.19/2003's synergy between financial and social-environmental functions. However, financial performance negatively correlates with environmental regulation compliance and social programs, indicating poor synergy between financial and social-environmental functions, contradicting Law No. 19/2003.

The results of investigations based on management theory show a positive relationship between social and environmental performance, and financial performance (ROA and ROE). Social and environmental performance include concerns about social impacts and responsiveness to environmental assessments. This aligns with Law No. 19/2003, showing synergy between social and environmental performance and financial performance. However, there is a negative relationship between compliance with social laws and regulations, environmental laws and regulations, and social policies and programs and financial performance (ROA and ROE). This contradicts Law no. 19/2003: synergy between social & environmental functions and financial functions is not running well.

This study develops a causality model of the relationship between social and environmental performance and financial performance based on SOEs and the Indonesian Social and Environmental Performance index (ESP Index). This causality model has theoretical and practical implications.

This study investigates the relationship between social, environmental, and financial performance by using slack resources and good management theories. These theories offer conflicting predictions and represent competing explanations for the relationship between firm performance and innovation. The first prediction, slack resources theory, shows that when financial performance increases, social and environmental performance also increase. The second prediction, based on the good management theory, is that when social and environmental performance increases, financial performance increases. This study provides results that support the predictions of both theories; however, other results contradict these predictions.

Based on the slack resources theory, this study shows that non-compliance through fines increases when state-owned companies' financial performance improves, contradicting the theory's prediction that better performance should increase compliance. A company's financial performance is not driven by regulatory compliance, as violations minimally impact reputation or finances. Financial fines through the courts do not significantly affect companies. State-owned companies often neglect stakeholder rights—employees, consumers, and suppliers—that directly influence performance. Thus, when financial performance improves, companies become less likely to fulfil stakeholder rights and ignore legal provisions.

Based on the slack resources theory, this study shows that increased financial performance leads to greater concerns about social impacts and environmental assessment responsiveness. This aligns with slack resource theory

predictions. When financial potential optimally fulfils stakeholder rights through social impact considerations and environmental responsiveness, it increases stakeholder trust, enabling company survival in areas with local communities. The reasoning behind the slack resources theory can be generalised across various organisations. For example, state-owned companies in the globalisation era can only be applied to privately owned and established companies.

The third prediction, based on slack resources theory, shows that when financial performance increases, social and environmental performance improve through reduced violations and fines. This aligns with slack resource theory predictions. The company's financial potential is used for social and environmental compliance rather than paying fines and sanctions. Financial resources are optimally used for activities that follow legal provisions and regulations as companies aim to avoid violations and sanctions. Slack resource theory principles can be generalised to different organisations.

Based on the slack resources theory, this study shows that increased financial performance leads to decreased concern for social policies and programs, contradicting the theory's predictions. This study develops logic to reconcile these findings. A company's financial performance does not increase because of concerns regarding social policies and programs. Companies do not optimally use their financial conditions to improve social performance through policies and programs for stakeholders. Companies tend to ignore the rights of employees, consumers, and suppliers even though these stakeholders are direct drivers of financial performance.

Based on slack resources theory, this study shows that increased financial performance leads to greater concern for social impact and environmental responsiveness. This aligns with slack resources theory's predictions. When a company optimally uses its financial potential for stakeholder rights through social and environmental responsibility, it enhances its reputation. A better reputation increases local communities' trust in company operations, enabling survival and optimal profits. Slack resource theory's reasoning can be applied to various organisations.

The results show that financial performance decreases when fines and sanctions for violations increase. When compliance with social and environmental laws decreases, financial performance also decreases, aligning with the predictions of good management theory. High fines and sanctions affect a company's reputation and financial performance. Additionally, high fines directly impact a company's financial conditions. This reasoning, based on the good management theory, can be applied to different organisations.

The second prediction of the good management theory shows that when social policy concerns increase, financial performance decreases, conflicting with predictions that both should increase. This study develops logic to reconcile these contradictions. First, increasing social performance through policy does not boost financial performance. Second, concern for employee rights through social policies does not enhance financial potential despite employees being key stakeholders. Third, hidden ethical costs indicate that state-owned companies have deviated from their intended social policies. Fourth, these social policies are implemented by state-owned companies to maintain their image and demonstrate good management by the government.

The results show that when awareness of social impacts and responsiveness to environmental assessment increase, financial performance also increases, aligning with good management theory predictions. When stakeholders' rights (especially those of local communities) are fulfilled through social impact awareness and environmental responsiveness, stakeholder trust in the company increases. This enables company survival in areas with local communities, helping to achieve maximum profits and improved financial performance. Slack resource theory can be generalised to various organisations and companies.

The slack resources theory and good management theory help explain the relationship between financial and social-environmental performance. This study found both positive and negative relationships between these factors. Based on the slack resources theory, financial performance shows a positive relationship with social-environmental performance regarding compliance with social laws, social impacts, and environmental assessment. However, it showed a negative relationship with compliance with environmental laws and social policies. These results demonstrate that the slack resources theory can predict both positive and negative relationships between financial and social-environmental performance.

Second, according to the good management theory, when social and environmental performance involves compliance with laws, regulations, and programs, it negatively relates to financial performance. However, when performance focused on social impact concerns and environmental responsiveness, it showed a positive relationship. These results demonstrate that the good management theory can explain both positive and negative relationships between social, environmental, and financial performance.

The slack resources theory and good management theory provide solutions for how companies must synergise their financial, social, and environmental functions for stakeholders (UU No. 19/2003). This study shows that only social impact and responsiveness to environmental assessment/scanning are consistent with both the theories. The issue of compliance with laws and social regulations aligns with the slack resources theory, while compliance with environmental laws and concerns for social policies is not consistent with either theory.

Financial performance and social/environmental performance are the two output functions of state-owned companies under Law No. 19/2003. This study demonstrates that financial performance is positively related to social performance in terms of regulatory compliance, social impacts, and environmental assessment responsiveness, consistent with the slack resources theory (Fauzi et al., 2010; Fauzi & Idris, 2009; Waddock & Graves, 1997). Additionally, social and environmental performance regarding social impacts and environmental assessment responsiveness show a positive relationship, aligning with good management theory (Fauzi et al., 2010; Fauzi & Idris, 2009; Waddock & Graves, 1997).

The practical implication is that the synergy of the financial, social, and environmental functions is important for the Ministry of SOEs to comply with Law No. 19/2003. This study reveals the key benchmarks for whether SOEs have optimally carried out these functions. The outputs were financial, social, and environmental. Optimal synergy can be shown by a positive relationship between financial and social/environmental performance (slack resources theory), or vice versa (good management theory). A negative relationship indicates that the company does not achieve optimal performance synergy.

The limitation of this study is that it does not use lag between financial, social, and environmental performance. CSR can be understood as a leading lagging indicator of financial performance, requiring a minimum 1-year lag. The lack of a lag between social, environmental, and financial performance is because CSR activities occur throughout the year alongside sales activities, impacting financial performance through customer responses influenced by company perceptions.

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