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The Role of Green Accounting, Audit Quality, and Budget Efficiency in Driving Corporate Sustainability Performance: Evidence from State-Owned Banks

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Abstract

For state-owned banks, corporate sustainability performance has become a strategic requirement. This is because of their dual role; they must support national economic policies and set standards for private institutions. The study examines the combined impact of green accounting, audit quality, and budget efficiency on sustainability results. This study employs a mixed-methods design, combining quantitative regression analysis with qualitative insights from interviews and case studies of Indonesian state-owned banks. Information was gathered from financial reports, sustainability disclosures that were in line with GRI and SASB standards, and industry surveys with 120 responses. According to the regression results, the three independent variables together account for 68% of the variation in sustainability performance. Audit quality was found to be the most important factor ($\beta = 0.364$, $p = 0.000$), followed by green accounting ($\beta = 0.290$, $p = 0.000$) and budget efficiency ($\beta = 0.269$, $p = 0.001$). These results highlight the significance of open governance, systematic environmental reporting, and efficient resource distribution in achieving reliable and robust sustainability. By demonstrating how accountability mechanisms reinforce sustainability practices, the study contributes to stakeholder and legitimacy theory. It also provides policymakers and managers with practical advice on how to improve audit quality, broaden green accounting, and improve budgeting strategies.

Keywords: Green Accounting, Audit Quality, Budget Efficiency, Corporate Sustainability Performance and State-Owned Banks.

1 INTRODUCTION

Corporate sustainability performance has evolved into a fundamental pillar for modern organizations. It is essential not only for achieving long-term success but also for generating positive impacts on society at large. In the era of rapid global transformation, declining environmental quality, social inequities, and economic instability compel organizations to position sustainability as a core strategic objective. For state-owned banks, which serve as the backbone of national financial systems, the urgency of sustainability performance is even more pronounced given their strategic role in supporting economic policies, financing infrastructure projects, and setting exemplary practices for the private sector.

Corporate sustainability performance refers to an organization's ability to integrate environmental, social, and governance (ESG) dimensions into its business operations. For state-owned banks, this practice encompasses reducing carbon footprints, promoting environmentally friendly investments, ensuring transparency in governance, and advancing financial inclusion. Embedding sustainability into core strategies enables banks to address critical issues such as climate change, resource scarcity, and social inequality, while simultaneously safeguarding financial stability and profitability [1].

In recent years, the urgency of sustainability has been reinforced by regulatory pressures, stakeholder expectations, and international commitments such as the Paris Agreement and the Sustainable Development Goals (SDGs). State-owned banks are required to meet higher accountability standards, disclose their ESG performance, and align their operations with both national and global sustainability targets. This situates them strategically as pioneers in implementing sustainable practices [2].

Nevertheless, achieving robust sustainability performance often encounters challenges, including

bureaucratic inefficiencies, political interventions, and resource constraints. Integrating sustainability into traditional banking operations also demands significant investments in technology, capacity building, and stakeholder engagement. Despite these challenges, the benefits are substantial—ranging from enhanced reputation and stakeholder trust to long-term financial resilience [3].

To advance meaningful progress, state-owned banks must focus on three critical factors. First, green accounting, which integrates environmental costs and benefits into financial reporting, thereby orienting financing decisions toward sustainability. Second, audit quality, which ensures accuracy and transparency in sustainability disclosures, strengthens accountability, and builds stakeholder confidence. Third, budget efficiency, which optimizes financial resource allocation to support green investments, corporate social responsibility (CSR), and sustainable projects without compromising financial stability ([1]; [3]).

Although these three factors have been recognized as key determinants, research that comprehensively examines the combined influence of green accounting, audit quality, and budget efficiency on the sustainability performance of state-owned banks remains limited. Most studies emphasize individual aspects, leaving the collective interaction among these factors underexplored. This gap is particularly significant given the complex ecosystem in which state-owned banks operate, shaped by public mandates, regulatory frameworks, and stakeholder expectations [2].

Based on this research gap, the present study aims to analyze the role of green accounting, assess the impact of audit quality, and examine the relationship between budget efficiency and sustainability performance in state-owned banks. Furthermore, it seeks to explore the interaction among these three factors in shaping sustainability outcomes and to provide practical recommendations for state-owned banks and policymakers to enhance sustainability performance comprehensively.

2 LITERATURE REVIEW

2.1 Green Accounting and Corporate Sustainability Performance

Green accounting, also referred to as environmental accounting, is a rapidly evolving field that emphasizes the integration of environmental costs and benefits into decision-making and financial reporting. Unlike conventional accounting, which focuses primarily on financial transactions, green accounting expands its scope to include ecological and social dimensions in line with sustainable development principles [1].

In the context of state-owned banks, green accounting plays a pivotal role due to their significant influence on national economies and their responsibility to promote sustainable practices. Implementing green accounting enables banks to evaluate the environmental impacts of their investment and financing activities, while simultaneously enhancing transparency and accountability. Empirical evidence suggests that organizations adopting green accounting tend to achieve greater resource efficiency, stronger reputations, and more positive stakeholder relationships [2].

2.2 Audit Quality and Sustainability Implementation

Audit quality serves as the foundation for the accuracy, transparency, and reliability of both financial and non-financial disclosures. High-quality audits ensure that sustainability commitments are not merely symbolic but are genuinely embedded within organizational operations. Key elements of audit quality include independence, transparency, and adherence to international professional standards [3].

For state-owned banks, audit quality validates sustainability claims such as carbon emission reductions, energy efficiency, and social programs. Independent and transparent audits enhance stakeholder trust and help identify gaps between sustainability targets and actual performance. Case studies reveal that high-quality audits strengthen banks' reputations, whereas poor audit practices invite criticism and undermine credibility [3].

2.3 Budget Efficiency and Financial Sustainability

Budget efficiency refers to an organization's ability to allocate and utilize financial resources optimally to achieve objectives while minimizing waste. For state-owned banks, budget efficiency is critical not only for maintaining financial stability but also for fulfilling social mandates and advancing sustainable development [1].

Efficient budgeting enables banks to channel funds into green investments, renewable energy projects, and CSR initiatives. By adopting performance-based budgeting strategies, banks can ensure that resources are directed toward programs with significant impacts. However, challenges such as bureaucratic complexity, political intervention, and limited expertise in sustainability-oriented financial planning often hinder budget efficiency [2].

3 RESEARCH METHODS

The research design serves as a fundamental foundation for any academic inquiry, providing a structured framework that guides researchers in systematically addressing the objectives of the study [4].

In examining the influence of green accounting, audit quality, and budget efficiency on corporate sustainability performance in state-owned banks, the selection and justification of an appropriate research design is critical to ensure robust findings and meaningful conclusions [5].

This study adopts a mixed-methods design, combining both quantitative and qualitative approaches. The rationale for this choice lies in the multidimensional nature of corporate sustainability performance, which encompasses measurable indicators such as financial metrics and environmental scores, as well as qualitative aspects including stakeholder perceptions and policy implications [6]. Quantitative data provide measurable insights into the impact of green accounting practices, audit quality standards, and budget efficiency on sustainability outcomes, with statistical analyses employed to identify correlations and significant effects among variables. Complementing this, qualitative data capture contextual nuances through interviews with financial managers, auditors, and sustainability officers, as well as case studies of state-owned banks that have successfully integrated these factors. The integration of both approaches ensures a holistic understanding of the research problem.

The study focuses on four interrelated variables. Green accounting involves the identification, measurement, and reporting of environmental costs and benefits within banking operations, enabling institutions to evaluate ecological impacts and enhance transparency [7]. Audit quality emphasizes reliability, transparency, and accuracy in both financial and non-financial audits, including sustainability disclosures, thereby ensuring that sustainability commitments are genuinely embedded in operations [8]. Budget efficiency refers to the optimal allocation of financial resources to support sustainability initiatives without compromising financial stability, ensuring that green investments, CSR programs, and sustainable projects are implemented effectively [9]. Finally, corporate sustainability performance reflects tangible outcomes across environmental, social, and economic dimensions, serving as a benchmark for organizational success in fulfilling public mandates and maintaining global competitiveness [10].

The conceptual framework positions green accounting, audit quality, and budget efficiency as independent variables that directly or indirectly influence corporate sustainability performance as the dependent variable. This framework highlights not only the individual roles of each factor but also the collective interactions among them in shaping comprehensive sustainability outcomes.

Data for the study were collected from three primary sources: financial reports, sustainability disclosures, and industry surveys. Financial reports provided insights into the fiscal health of state-owned banks, while sustainability disclosures were prepared in accordance with international standards such as the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB). Industry surveys were conducted to gather both quantitative and qualitative data from employees, customers, and regulators, focusing on perceptions of sustainability practices, audit quality, and budget efficiency [11].

The sampling strategy combined stratified random sampling, ensuring representation across geographic regions and bank sizes, with purposive sampling, targeting banks recognized for exemplary sustainability practices. The target sample consists of 120 employees from state-owned banks, with inclusion criteria requiring a minimum of five years of operational history and majority ownership by the state.

Ethical principles were strictly observed throughout the research process. Confidentiality was maintained by safeguarding respondent identities and data, while informed consent was obtained after participants were provided with detailed explanations of the study's objectives, procedures, and implications. Data security was ensured through storage in secure electronic systems accessible only to authorized researchers. Additionally, the research proposal was reviewed and approved by an institutional ethics committee, thereby ensuring compliance with academic ethical standards [12].

For data analysis, both quantitative and qualitative techniques were employed. Regression analysis was used to measure the effects of independent variables on sustainability performance, while correlation analysis assessed the strength and direction of relationships among variables. Content analysis was conducted on sustainability and audit reports to identify recurring patterns, themes, and consistency between reported practices and actual performance. Reliability was ensured through triangulation, test–retest procedures, and internal consistency checks using Cronbach's Alpha. Validity was reinforced through multiple approaches: construct validity by aligning instruments with theoretical frameworks, content validity through expert involvement, and criterion validity by benchmarking findings against established sustainability standards [13].

Through this methodological rigor, the study ensures that its findings are both credible and precise, thereby offering significant contributions to the advancement of sustainability performance research in state-owned banks.

4 RESULTS AND DISCUSSION

This section presents the research results. Research results can be supplemented with tables,

graphs (images), or charts. The discussion section presents the results of data processing, interprets the findings logically, and relates them to relevant references.

4.1 Image and Table

Corporate sustainability has increasingly become a strategic issue in international literature, particularly in relation to the practices of green accounting, audit quality, and budget efficiency.

Table 1. Kolmogorov-Smirnov Normality Test

			Unstandardized Residual
N			120
Normal Parameters[a,b]	Mean		.0000000
	Std. Deviation		6.03925879
Most Extreme Differences	Absolute		.064
	Positive		.064
	Negative		-.062
Test Statistic			.064
Asymp. Sig. (2-tailed)[c]			.200[d]
Monte Carlo Sig. (2-tailed)[e]	Sig.		.262
	99% Confidence Interval	Lower Bound	.250
		Upper Bound	.273

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. This is a lower bound of the true significance.
e. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 299883525.

Table 1 presents the results of the Kolmogorov-Smirnov normality test, which shows a significance value of p = 0.200 (> 0.05). This indicates that the residuals are normally distributed, thereby confirming that the regression model meets the classical assumptions and that the analysis results are reliable.

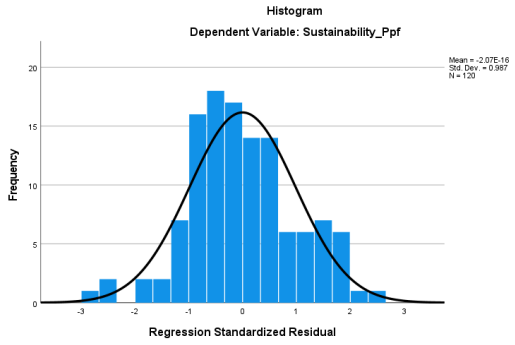

Figure 1. Histogram of Regression Residuals

Figure 1 further illustrates the histogram of regression residuals, supporting the conclusion that the model is statistically sound.

Table 2. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.825[a]	.680	.672	6.11685	.680	82.303	3	116	.000

a. Predictors: (Constant), Budget_Efc, Green_Acc, Audit_Qual
b. Dependent Variable: Sustainability_Ppf

Table 2 provides the model summary, with R = 0.825 and R^2 = 0.680, suggesting that approximately 68% of the variation in corporate sustainability (Sustainability_Ppf) can be explained by the three independent variables: Green Accounting, Audit Quality, and Budget Efficiency. The ANOVA test yields an F-value of 82.303 with p = 0.001, confirming that the regression model is highly significant and appropriate for further analysis. These findings are consistent with [14], who argue that "green accounting not only influences financial performance and company value but also has the potential to impact sustainability and sustainable development." This supports the empirical evidence that the adoption of green accounting practices contributes significantly to enhancing corporate sustainability.

Table 3. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.693	3.495		1.343	.182
	Green_Acc	.401	.109	.290	3.683	.000
	Audit_Qual	.388	.091	.364	4.276	.000
	Budget_Efc	.279	.081	.269	3.438	.001

a. Dependent Variable: Sustainability_Ppf

Table 3 highlights the regression coefficients, showing that all three independent variables exert a positive and significant influence on sustainability. Green Accounting has a standardized coefficient of β = 0.290 (p = 0.000), indicating its substantial role in embedding environmental considerations into financial reporting. Audit Quality emerges as the most dominant factor, with β = 0.364 (p = 0.000), underscoring its importance in strengthening transparency, accountability, and legitimacy in the eyes of stakeholders. This finding aligns with [14], who emphasize that "high-quality audits enhance transparency and accountability, which are critical for sustaining stakeholder trust and long-term sustainability." Meanwhile, Budget Efficiency also demonstrates a significant effect (β = 0.269, p = 0.001), suggesting that efficient resource allocation supports sustainability through financial optimization. [15] reinforce this perspective, stating that "companies that incorporate environmental sustainability into the core of their business benefit both in terms of environmental sustainability and business value."

From a theoretical standpoint, these findings support stakeholder theory and legitimacy theory, both of which highlight the importance of accountability and legitimacy in sustainability practices. Practically, the results suggest that companies should prioritize enhancing audit quality as a key driver of sustainability, expand the implementation of green accounting to systematically measure environmental impacts, and ensure budget efficiency to achieve sustainability in a holistic manner. Thus, this study contributes to the growing body of literature on sustainability and corporate governance, while offering tangible implications for managerial practices in the modern era.

5 CONCLUSION

The regression model demonstrates that Audit Quality, Green Accounting, and Budget Efficiency significantly influence corporate sustainability Performance, with audit quality emerging as the most dominant factor. This finding underscores that corporate sustainability is not solely dependent on environmentally friendly practices, but also on transparent governance and efficient resource utilization. By integrating these dimensions, companies can achieve long-term sustainability that is both credible to stakeholders and resilient in terms of financial performance. From a practical standpoint, the findings of this study highlight several important managerial implications. Companies should prioritize improving audit quality as a central strategy to strengthen sustainability, since high-quality audits enhance transparency, accountability, and stakeholder trust. Furthermore, the implementation of green accounting needs to be expanded so that environmental impacts can be systematically measured and integrated into financial reporting. In addition, budget efficiency should be adopted as a supporting strategy to ensure that sustainability initiatives are not merely idealistic but also financially realistic and achievable. Together, these three elements form a comprehensive framework for organizations to pursue sustainability in a balanced and holistic manner.

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