

# Green Innovation, Sustainability Growth Rate, and Firm Performance Evidence from Indonesia

Green Innovation,  
Growth Rate, and  
Firm Performance

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## ABSTRACT

The growing emphasis on environmental sustainability has prompted firms to adopt green innovation and sustainable growth strategies to enhance performance while addressing ecological concerns. This study investigates the impact of green innovation and sustainability growth rate on firm performance among Indonesian companies. Utilizing regression analysis with panel data from 2013 to 2022, sourced from the Bloomberg database, the research examines key performance metrics: return on assets, return on equity, and net profit margin. The findings indicate that green innovation negatively affects short-term financial performance, particularly return on assets and net profit margin, likely due to high initial costs of technology adoption and compliance. Conversely, the sustainability growth rate exhibits a strong positive correlation with all performance metrics, highlighting its role in enhancing profitability and operational efficiency. These results suggest that while green innovation may pose short-term financial challenges, prioritizing sustainable growth can yield significant long-term benefits. The study underscores the need for strategic implementation of green practices and supportive policies to balance environmental goals with financial viability, offering insights for policymakers and business leaders aiming to foster sustainable development in Indonesia's industrial sector.

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**Keywords:** Firm Performance, Green Innovation, Green Practice, Sustainability Growth Rate.

## ABSTRAK

Meningkatnya penekanan pada keberlanjutan lingkungan telah mendorong perusahaan untuk mengadopsi inovasi hijau dan strategi pertumbuhan berkelanjutan guna meningkatkan kinerja sekaligus mengatasi masalah ekologi. Studi ini menyelidiki dampak inovasi hijau dan tingkat pertumbuhan berkelanjutan terhadap kinerja perusahaan di Indonesia. Dengan menggunakan analisis regresi dengan data panel dari tahun 2013 hingga 2022, yang bersumber dari basis data Bloomberg, penelitian ini mengkaji metrik kinerja utama: laba atas aset, laba atas ekuitas, dan margin laba bersih. Temuan menunjukkan bahwa inovasi hijau berdampak negatif terhadap kinerja keuangan jangka pendek, terutama laba atas aset dan margin laba bersih, kemungkinan karena tingginya biaya awal adopsi dan kepatuhan teknologi. Sebaliknya, tingkat pertumbuhan berkelanjutan menunjukkan korelasi positif yang kuat dengan semua metrik kinerja, yang menyoroti perannya dalam meningkatkan profitabilitas dan efisiensi operasional. Hasil ini menunjukkan bahwa meskipun inovasi hijau dapat menimbulkan tantangan keuangan jangka pendek, memprioritaskan pertumbuhan berkelanjutan dapat menghasilkan manfaat jangka panjang yang signifikan. Studi ini menggarisbawahi perlunya implementasi strategis praktik-praktik hijau dan kebijakan-kebijakan pendukung untuk menyeimbangkan tujuan lingkungan dengan kelayakan finansial, menawarkan wawasan bagi para pembuat kebijakan dan pemimpin bisnis yang bertujuan untuk mendorong pembangunan berkelanjutan di sektor industri Indonesia.

**Kata kunci:** Kinerja Perusahaan, Inovasi Hijau, Praktik Hijau, Tingkat Pertumbuhan Keberlanjutan.

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## INTRODUCTION

The transition towards environmentally sustainable economic development has underscored the importance of green innovation, particularly in its ability to drive firm performance. Green innovation refers to the development and application of technologies and processes that mitigate environmental impacts, enhance energy efficiency, and foster sustainable resource use. As firms strive to improve their performance, green innovation has emerged as a key differentiator, potentially improving firms' market positioning, operational efficiency, and compliance with global environmental standards. In Indonesia, where industrial growth often intersects with ecological challenges, green innovation is increasingly vital for aligning economic progress with sustainability goals (Kurniawati et al., 2023). This study posits that green innovation practices can enhance firm performance by signaling a commitment to sustainability and leveraging a competitive advantage in an eco-conscious market.

Global sustainability initiatives, such as the Paris Agreement and the Sustainable Development Goals (SDGs), have highlighted the urgency of integrating environmental sustainability into core business practices. In this context, countries and corporations are prioritizing investments in green technologies. Green innovation has been found to mobilize significant financial resources and technological know-how, becoming an essential lever in advancing firm-level performance. However, the short-term financial implications of green innovation, particularly in emerging economies like Indonesia, remain underexplored (Luo et al., 2020; Qiu et al., 2021). For instance, while green innovations may enhance long-term competitiveness, the initial costs of adoption can strain financial performance, creating a tension between environmental and economic objectives. This study focuses on Indonesia's industrial sector to examine how green innovation influences firm performance amid diverse economic and environmental policy landscapes.

The research gap lies in the limited empirical evidence on the short-term financial impacts of green innovation in emerging markets, particularly in Indonesia, where regulatory frameworks and market dynamics differ significantly from those in developed economies. According to Xiao et al. (2023), green practices have a significant impact on enhancing firm performance in regions with strong environmental regulations, such as China. However, their short-term financial effects in less mature regulatory environments remain unclear. Similarly, Ayamba et al. (2020) noted that while green innovation yields long-term benefits, immediate operational gains are often modest, particularly in developing countries. This study addresses this gap by investigating the immediate financial implications of green innovation, alongside the role of the sustainability growth rate (SGR) in driving firm performance in Indonesia, where environmental policies are evolving but not yet as stringent as those in developed nations.

The primary objective of this research is to elucidate the mechanisms through which green innovation and sustainability growth rate affect firm performance, measured through key financial metrics such as Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM). By focusing on Indonesian firms, the study aims to provide insights into how green innovation interacts with regulatory frameworks and business practices to align with sustainability goals. Additionally, it seeks to identify barriers to adopting sustainable practices and recommend strategies to balance short-term financial challenges with long-term sustainability benefits. For firms, integrating green innovation into operations represents a pathway to achieving environmental objectives while enhancing profitability. For investors and stakeholders, it offers opportunities to align portfolios with sustainability criteria, mitigating risks and capitalizing on the growing demand for eco-friendly products and services (Sarkodie & Strezov, 2019).

This study contributes to the literature by examining the relationship between green innovation, sustainable growth, and firm performance in the context of an emerging market. By examining both the immediate and strategic impacts of these factors, it aims to guide policymakers and business leaders in fostering sustainable practices that enhance long-term profitability while addressing environmental priorities. The findings are

expected to inform strategies that balance short-term financial constraints with the long-term benefits of sustainability, supporting Indonesia's alignment with global sustainability goals.

## **LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT**

### **Institutional Theory**

Institutional Theory is a framework that explores how organizations conform to external pressures, norms, and rules within their environment, which often shape organizational behaviors and strategies (DiMaggio & Powell, 1983). In the context of Green Innovation, Sustainability Growth Rate, and Firm Performance in Indonesia, Institutional Theory provides an understanding of how external factors such as government regulations, environmental standards, and societal expectations influence firms' adoption of sustainable practices and green innovation. By complying with these institutional pressures, firms may not only enhance their sustainability growth rates but also improve overall firm performance.

Coercive pressures refer to influences exerted by authorities, such as government regulations and policies, which compel organizations to adopt certain practices (Scott, 2005). In Indonesia, the government has implemented several environmental regulations and policies aimed at promoting sustainability and reducing industrial pollution (Hidjaz, 2019). These regulatory frameworks require firms to adopt environmentally friendly practices and technologies, encouraging green innovation. Firms that comply with these regulations are more likely to improve their sustainability growth rates by investing in eco-friendly technologies and sustainable processes (Hafner et al., 2020). This regulatory push aligns with the international agenda, including the Sustainable Development Goals (SDGs) and the Paris Agreement, compelling firms to adopt greener practices that meet both national and global standards. Research suggests that firms in emerging markets, such as Indonesia, are increasingly subjected to regulatory pressures that require compliance with environmental policies, which, in turn, lead to innovations that can enhance firm performance (Zhu et al., 2021).

Normative pressures arise from the collective norms and standards within an industry or profession, which influence organizations to adopt specific practices to gain legitimacy (Meyer & Rowan, 1977). Within the context of green innovation, industries are moving towards adopting sustainability as a normative standard, with firms competing to establish eco-friendly reputations. As firms in Indonesia's industrial sector observe their peers adopting green technologies and sustainable practices, they are motivated to align with these norms to maintain industry standards and maintain their competitive positioning (Zeng et al., 2024). Normative pressures also include certifications and sustainability ratings that influence firms to adopt green practices to meet industry benchmarks. In Indonesia, firms increasingly pursue environmental certifications such as ISO 14001, which reflects a commitment to sustainability and attracts environmentally conscious investors. Firms that achieve these standards often see enhanced performance due to improved operational efficiency and market differentiation (Su et al., 2022).

Mimetic pressures refer to the tendency of firms to imitate successful peers, particularly in conditions of uncertainty (DiMaggio & Powell, 1983). For Indonesian firms, uncertainty regarding market responses to green practices can lead to mimicking the strategies of successful competitors who have adopted green innovations. This imitation helps reduce perceived risks and enhances competitiveness. By adopting green practices similar to those of industry leaders, firms may achieve higher sustainability growth rates and, consequently, better firm performance (Qiu et al., 2021). Studies show that green innovation can lead to performance gains by differentiating firms in the marketplace, which encourages others to follow similar sustainable practices. For instance, firms that invest in renewable energy sources or eco-friendly materials may attract customers and investors who prefer sustainable products (Luo et al., 2020). Mimicking these strategies can be a means for Indonesian firms to boost both their sustainability and financial outcomes. Indonesia, as a developing nation, is increasingly recognizing the importance

of sustainable development. Its regulatory landscape, coupled with growing societal awareness of environmental issues, creates a strong institutional environment for green innovation. Research indicates that regulatory and societal pressures in Indonesia are driving firms to adopt sustainable practices, which are linked to improved firm performance (Kurniawati et al., 2023).

### **Green Innovation**

Green innovation refers to the development and application of products and processes that conserve energy and resources, reduce pollution, and prevent environmental degradation. Green innovation leads to sustainable economic growth by fostering new markets and industries that focus on sustainability, creating jobs, and enhancing productivity through efficient practices. Wang et al. (2021) found that technological innovation promotes green growth, positively impacted by R&D expenditures and economic globalization in China. This indicates a robust link between green innovation and economic dynamics (Wang et al., 2021). Cheng et al. (2021) demonstrated that national economic and technological development zones significantly promote green innovation in China, influencing both patent quantity and quality, which in turn boosts economic performance

Li et al. (2021) found that environmental regulation positively correlates with green innovation, which directly contributes to environmental sustainability by mitigating pollution and enhancing resource efficiency. There are significant impacts of green innovation on the environmental sustainability of SMEs in China, highlighting the critical role of marketing and product innovation as intermediaries (Xin et al., 2022). Initial investments in green innovation may not immediately yield financial gains due to high upfront costs and the slow pace of market adoption. The existing literature robustly covers the positive impacts of green innovation on economic growth, productivity, and environmental sustainability. However, there appears to be a lack of empirical studies directly linking green innovation with short-term financial performance, especially in emerging economies where market structures may delay the financial benefits of such innovations. This gap suggests a need for further research to explore the short-term economic implications of green innovation in different industrial and geographical contexts.

H1: Green innovation has a significant effect on firm performance.

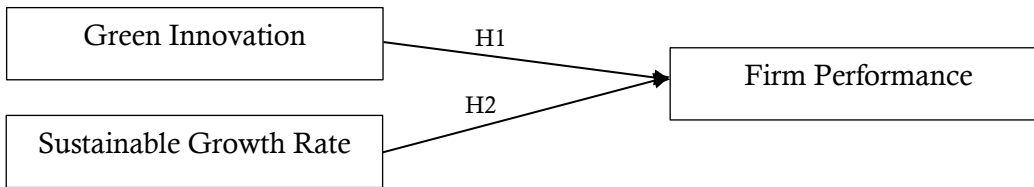
### **Sustainability Growth Rate**

Sustainability Growth Rate (SGR) reflects the rate at which an entity or region can grow sustainably without depleting its natural resources, harming the environment, or creating societal imbalances. This framework will outline the variables influenced by SGR and identify potential gaps in the current research that can be explored in the future. Companies in regions with high SGR typically demonstrate better long-term financial performance and resource efficiency, driven by sustainable practices and innovation in green technologies. These companies often have higher Total Factor Productivity (TFP) and Return on Assets (ROA).

Recent studies by Zhang and Du (2020) explored how China's environmental policies, part of its broader sustainability strategy, impacted corporate performance negatively in the short term but led to significant improvements in resource allocation efficiency and long-term work efficiency. Sustainable growth encourages economies to adopt cleaner and more efficient technologies, often leading to enhanced economic growth metrics while preserving environmental integrity. Abedi and Moeenian (2021) found that environmental patents and climate change mitigation technologies have a significant impact on sustainable economic growth in the Middle East. While the impact of SGR on long-term corporate performance and macroeconomic growth is well-documented, its effects on short-term financial returns remain underexplored. Additionally, the specific impact of SGR on social equality within regions practicing high levels of sustainability

warrants further empirical investigation, as current studies do not extensively cover the socio-economic disparities that may arise from rapid sustainability-focused growth.

H2: Sustainability growth rate has a significant effect on firm performance.



**Figure 1.** Research Framework

Figure 1 shows the research framework. This research framework is designed to examine the influence of green innovation and sustainability growth rate (SGR) on firm performance in Indonesia. Firm performance is measured by three main indicators, namely Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM), as a representation of the company's profitability and operational efficiency. The green innovation variable is measured through the ownership of ISO 14001 certification, which represents the company's commitment to environmentally friendly innovation and an internationally recognized environmental management system. Meanwhile, the sustainability growth rate reflects the extent to which a company can grow sustainably based on internal capabilities, such as retained earnings and asset utilization efficiency. These two independent variables are assumed to have a positive influence on firm performance, as green innovation and sustainable growth not only demonstrate corporate social responsibility, but also create cost efficiency, improve the company's reputation, and open access to a wider market and ESG (Environmental, Social, and Governance) oriented investors.

**RESEARCH METHOD**

This study uses a quantitative approach with a panel regression method to analyze the influence of Green Innovation and Sustainability Growth Rate (SGR) on Company Performance. The company's performance is measured through three main indicators, namely Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM). The analysis was carried out partially for each independent variable, namely Green Innovation and SGR. The analysis was carried out partially for each independent variable, namely Green Innovation and SGR. Following previous literature, we study the changes in the Firm Performance by using these estimations partially:

$$ROA_{i,t+1} = \beta_0 + \beta_1 \text{GreenInnov}_{i,t} + \beta_2 \text{BSize}_{i,t} + \beta_3 \text{FSize}_{i,t} + \text{Lev}_{i,t} + \phi t + \varepsilon$$

$$ROE_{i,t+1} = \beta_0 + \beta_1 \text{GreenInnov}_{i,t} + \beta_2 \text{BSize}_{i,t} + \beta_3 \text{FSize}_{i,t} + \text{Lev}_{i,t} + \phi t + \varepsilon$$

$$NPM_{i,t+1} = \beta_0 + \beta_1 \text{GreenInnov}_{i,t} + \beta_2 \text{BSize}_{i,t} + \beta_3 \text{FSize}_{i,t} + \text{Lev}_{i,t} + \phi t + \varepsilon$$

Firm Performance is measured by Return on Assets, Return on Equity, and Net Profit Margin. GreenInnov was measured by the ISO 14001 of the firms. We use BoardSize from the total number of the board, FirmSize from the natural logarithm of total assets, and Leverage as control variables. For controlling unobserved factors of a firm, we use a fixed effect model to control for the time fixed effect by using year dummies ( $\phi t$ ) to capture factors that affect all firms at the same time. All variables that need to be minorized are winsorized at 1% and 99%.

In this paper, we study the firms listed on the Indonesian Stock Market. We use panel data taken from the annual report of the firm for the period of 2013-2022. The data was taken from the Bloomberg database covering firms with the Firm Performance indicator:

ROA, ROE, NPM, Sustainability Growth Rate, Green Innovation, and all accounting data needed. The sampling technique is carried out by purposive sampling based on certain criteria. The following table shows the number of companies that meet the criteria: There are 103 unique firms with ESG scores, resulting in a 1,030 firm-year population. There are firms with missing data and incomplete data, resulting in 239 firm-year observations as a sample from 42 unique firms.

## RESULTS

Table 1 presents the descriptive statistics for the key financial and sustainability variables in the study, derived from a sample of 239 observations. The Green Innovation (GreenInnov) variable has a mean of 0.39 with a minimum of 0 and a maximum of 2, indicating varying levels of engagement in green initiatives. Sustainable Growth Rate (SGR) ranges from -49.21 to 45.77, with an average of 6.95, reflecting considerable variability across firms. Financial performance indicators, including Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM), show means of 7.85, 14.35, and 10.02, respectively, with notable standard deviations, highlighting substantial differences in profitability levels. Board Size (BSize) averages at 5.82 members, while Firm Size (FSize) has a mean value of 9.63. Leverage (Lev) demonstrates significant variation, with values spanning from -96.46 to 291.91, and a high standard deviation of 57.16, indicating differences in financial structure among the firms in the sample.

Table 1. Descriptive Statistics

Variable	N	Min	Max	Mean	Std. Deviation
GreenInnov	239	0	2	0.39	0.56
SGR	239	-49.21	45.77	6.95	8.98
ROA	239	0.06	55.73	7.85	7.24
ROE	239	0.23	75.85	14.35	11.36
NPM	239	-89.51	64.96	10.02	11.35
B-Size	239	2	12	5.82	2.03
FSize	239	6.04	12.93	9.63	1.38
Lev	239	-96.46	291.91	27.80	57.16

Table 2 presents the results of a regression analysis examining the relationship between Green Innovation (GreenInnov) and firm performance, as measured by Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM). The analysis includes two specifications for each performance metric, with the first specification focusing solely on GreenInnov and the constant, and the second incorporating additional firm-level controls such as Board Size (Bsize), Firm Size (Fsize), and Leverage. The regression includes year-fixed effects to control for temporal variations, providing robustness to the model.

The results indicate that green innovation has a significant negative impact on firm performance, specifically on ROA and NPM, with coefficients significant at the 5% level for ROA and NPM in the first specification. However, the impact on ROE is not statistically significant, suggesting that green innovation might not contribute to equity returns in the same manner as it affects profitability margins and asset returns. These findings align with previous literature (e.g., Hart & Ahuja, 1996; Porter & van der Linde, 1995), which found mixed impacts of environmental investments on financial performance. Some studies suggest that while green initiatives may initially reduce profitability due to high implementation costs, long-term financial gains could arise from efficiency improvements and market differentiation. However, this analysis reveals that, at least in the short term, green innovation could impose a financial burden on firms. Further studies with longitudinal data may help capture the long-term effects and determine whether green innovations ultimately lead to competitive advantages that positively impact financial metrics.

**Table 2.** Green Innovation and Firm Performance

Categories	ROA		ROE		NPM	
	(1)	(2)	(1)	(2)	(1)	(2)
Constanta	13.44*** (7.63)	18.04*** (5.30)	21.92*** (7.87)	21.71*** (3.76)	16.01*** (5.74)	12.37** (2.13)
GreenInnov	-1.632** (-2.00)	-1.486* (-1.94)	-2.032 (-1.58)	-1.782 (-1.37)	-2.938** (-2.27)	-2.799** (-2.14)
Bsize		0.288 (1.29)		0.428 (1.12)		0.190 (0.50)
Fsize		-0.686** (-2.08)		-0.285 (-0.51)		0.261 (0.46)
Leverage		-0.0417*** (-5.39)		-0.0232* (-1.76)		-0.0220* (-1.66)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R. Square	0.06	0.20	0.05	0.06	0.04	0.04
N	239	239	239	239	239	239

Table 3 presents the regression results analyzing the relationship between the Sustainability Growth Rate (SGR) and firm performance, as measured by Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM). The analysis includes two specifications for each performance metric, with the first focusing solely on the impact of SGR and the second adding control variables, such as Board Size (Bsize), Firm Size (Fsize), and Leverage. All models incorporate year-fixed effects to account for time-based variations, thus enhancing the robustness of the findings. Across all performance metrics (ROA, ROE, and NPM), SGR demonstrates a highly significant positive relationship, with coefficients statistically significant at the 1% level. This suggests that firms with higher sustainability growth rates are generally associated with better financial performance, aligning with the notion that sustainable growth can lead to improved profitability and operational efficiency.

**Table 3.** Sustainability Growth Rate and Firm Performance

Categories	ROA		ROE		NPM	
	(1)	(2)	(1)	(2)	(1)	(2)
Constanta	10.33*** (5.91)	15.62*** (4.97)	15.48*** (5.96)	17.42*** (3.41)	10.59*** (3.86)	8.328 (1.53)
SGR	0.260*** (5.21)	0.292*** (6.44)	0.569*** (7.68)	0.587*** (7.99)	0.451*** (5.75)	0.462*** (5.88)
B-size		0.294 (1.43)		0.379 (1.14)		0.221 (0.62)
F-size		-0.795** (-2.59)		-0.489 (-0.98)		0.0835 (0.16)
Leverage		-0.0452*** (-6.29)		-0.0304*** (-2.60)		-0.0276** (-2.21)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R. Square	0.15	0.31	0.23	0.26	0.14	0.15
N	239	239	239	239	239	239

These results are consistent with the literature emphasizing the strategic importance of sustainable growth. Prior studies, such as those by Epstein and Roy (2001) and Eccles et al. (2014), argue that sustainability efforts enable firms to maintain a balanced growth trajectory that supports long-term profitability. The significant positive coefficients for SGR across all performance measures in Table 3 suggest that firms effectively managing their sustainable growth not only enhance their asset utilization (ROA) but also improve returns to shareholders (ROE) and achieve higher profit margins (NPM). This contrasts with earlier findings in green innovation studies, where initial costs may outweigh immediate benefits, as noted in Table 2. Here, SGR's impact is uniformly positive across the board, highlighting the potential for firms with sustainability-focused growth to achieve enhanced financial performance more consistently and predictably.

## **DISCUSSION**

The initial findings indicate that green innovation has a statistically significant negative impact on Return on Assets (ROA) and Net Profit Margin (NPM) at a 5% significance level. This suggests that the adoption of green innovations, as measured by ISO 14001 certification, has not yielded direct benefits to the company's profitability or asset efficiency. The decline in ROA and NPM can be attributed to several factors. First, the implementation of green innovation often requires significant initial investments, such as upgrading production technology, training human resources, and implementing environmentally friendly operational processes. These costs in the short term can burden the company's financial structure without being accompanied by a comparable increase in revenue. Second, companies may face a learning curve in optimizing green initiatives, so that their full impact on operational efficiency has not been realized.

These findings align with several previous studies that have noted the long-term effects of green innovation, with its impact on profitability becoming evident only after improvements in efficiency and market reputation have been achieved. Tse et al. (2021) mentioned that green innovation can increase operational costs and initial investment costs in the short term. Therefore, although important in the context of social responsibility and environmental sustainability, green innovation requires a mature implementation strategy in order to create direct financial value.

In contrast, the Sustainability Growth Rate (SGR) shows a consistently positive and significant influence on all financial performance indicators: ROA, ROE, and NPM. A positive and significant coefficient at the 1% level indicates that companies with high sustained growth rates tend to be better able to manage resources efficiently, generate higher returns on investment, and maintain stable profit margins. The SGR as an indicator reflects a company's capacity to grow without relying on excessive external financing, thus describing a sound financial structure and a restrained growth strategy. In the context of sustainability, this suggests that companies that can maintain a balance between expansion and operational efficiency will have better financial performance.

These findings support the view that sustainable growth is not only relevant in environmental aspects but also has a positive impact on the economic dimension of the company. Akhtar et al. (2022) noted that SGR is positively correlated with firm performance indicators, including ROA, ROE, and Tobin's Q, suggesting that sustainability growth can reflect internal financial health and profitability capacity. Companies that integrate sustainability principles into their business models tend to be more resilient and adaptive to market and regulatory pressures (Tang et al., 2012; Wishanti, 2015; Syafri et al., 2021; Yang et al., 2024; Troshani & Rowbottom, 2024).

The difference in outcomes between green innovation and SGR highlights that sustainability is not a single concept, but rather encompasses a variety of strategies with different cost and benefit dynamics. Green innovation may carry an initial cost burden, while sustainable growth is more closely tied to the efficiency of capital structures and more disciplined internal management. As such, companies need to balance environmental commitments and growth efficiency so that sustainability can be realized holistically.

## **CONCLUSION**

This study concludes that while green innovation and sustainability growth rate (SGR) are both central to contemporary corporate strategies, they yield differing impacts on firm performance among Indonesian companies. Specifically, green innovation, though essential for long-term environmental goals, shows a statistically significant negative effect on short-term financial indicators like ROA and NPM, reflecting the high initial costs and implementation challenges that may burden profitability. In contrast, SGR exhibits a consistently positive and significant relationship with all key financial metrics, including ROA, ROE, and NPM, indicating that firms pursuing sustainable, measured growth enjoy better financial outcomes. These findings suggest that although green innovation may strain short-term profits, it should not be disregarded; rather, it should be

integrated gradually and strategically alongside sustainability-focused growth plans. Moreover, this study highlights the need for supportive policy frameworks such as green financing, tax incentives, and regulatory alignment to help firms adopt environmentally responsible practices without jeopardizing financial stability. Ultimately, the research reinforces that a well-balanced strategy, combining cautious green innovation with strong sustainability growth efforts, offers the most effective path toward long-term financial resilience and environmental stewardship for Indonesian firms.

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