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THE IMPACT OF GREEN INNOVATION ON FIRM FINANCIAL PERFORMANCE WITH ENVIRONMENTAL PERFORMANCE AS A MEDIATING VARIABLE (AN EMPIRICAL STUDY OF MANUFACTURING COMPANIES LISTED ON THE INDONESIA STOCK EXCHANGE, 2022-2024)

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ABSTRACT

This research tests the influence that green innovation exerts upon financial performance by investigating the intermediary function of environmental performance in manufacturing firms whose shares trade on the Indonesia Stock Exchange (IDX), covering 2022–2024. A quantitative approach with an associative-causal study framework was employed, drawing on secondary data gathered from annual and sustainability reports, and other supporting sources. Through purposive sampling, 75 firms were chosen, which produced 225 data points. Analysis of the data relied on Partial Least Squares-Structural Equation Modeling (PLS-SEM) aided by SmartPLS software, acting as a mediating variable. Green innovation is quantified through indicators covering green product innovation and green process innovation, environmental performance was assessed via the PROPER rating and financial performance is proxied using Tobin's Q. Empirical results show that environmental performance lacks a statistically significant influence on financial performance and does not mediate the link between green innovation and financial performance. These results imply that green innovation is able to affect financial performance independently from PROPER-based environmental performance, suggesting that a company's PROPER rating has not necessarily become a determining factor in shaping market interest.

Keywords: *Green Innovation, Environmental Performance, Financial Performance, Tobin's Q, PROPER*

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INTRODUCTION

The manufacturing sector faces considerable environmental pressure because its production activities generate emissions and waste, both of which can cause environmental pollution if not properly managed (Kong, Feng, & Ye, 2016). According to the 2023–2024 Corporate Environmental Performance Rating Program (PROPER), out of 4,495 companies evaluated, 1,313 were assigned a Red rating and 16 received a Black rating, received a Red rating and 16 received a Black rating, indicating that the overall compliance level is only 69% (MinistryofEnvironment, 2025). Weak environmental management also affects financial performance. An operational disruption at PT Chandra Asri Pacific Tbk in January 2024 triggered flaring, health complaints from residents, and a request to temporarily halt plant operations (BeritaCilegon, 2024; Joharsoyo, 2024). In the same year, the company's net revenue fell 17.4% to

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US$1.79 billion and its net loss widened 81.9% to US$57.3 million (InvestasiKontan, 2025), accompanied by a share price correction of about 20% (IPOTNews, 2025). This phenomenon aligns to Stakeholder Theory, a perspective that emphasizes how a firm's responsibility is not solely towards shareholders, but equally encompasses the interests of the broader society and environmental protection (Freeman, 2010).

These conditions require manufacturing firms to adopt more proactive strategies through green innovation rather than merely complying with regulations. The concept of eco-innovation means developing goods, using production methods, and business routines that are environmentally friendly, minimize negative ecological effects, support optimal utilization of resources, generate economic benefits (Chen, Lai, & Wen, 2006; Zhao, Li, Xie, & He, 2026). It is also a strategic response to regulatory pressure, stakeholder demands, and market expectations (Guinot, Barghouti, & Chiva, 2022), and it can reduce operating costs, strengthen product differentiation, and send a positive signal to investors (Casciello, Santonastaso, & Martino, 2024; Dangelico & Pujari, 2010).

The empirical findings concerning the direct connection of green innovation with financial performance remain inconclusive. A number of studies, including those conducted by Cheng, Lin, dan Yang (2025), Zhang, Ma, dan Zhang (2025), Mukhopadhyay and Nayak (2024), and Xie et al. (2019) reported an overall positive linkage connecting the two variables. Conversely, Casciello et al. (2024) identified a negative effect on accounting-based financial performance, while Intari and Khusnah (2023) found a direct negative effect, and Ai, Luo, dan Bu (2024), found a U-shaped relationship. Meanwhile, research findings from Ahmed et al. (2023), Cheng et al. (2025), and Ha, Nguyen, Luan, and Tam (2024) demonstrate consistent evidence that the implementation of green innovation yields a favorable impact upon environmental performance. Strong environmental performance tends to improve financial performance through legitimacy, reputation, and cost efficiency (Ha, Nguyen, Luan, & Tam, 2024; Islam, Arunachalum, Wellalage, & Benjamin, 2025). Such results indicate that the financial gains from green innovation may arise not directly (Intari & Khusnah, 2023; Xie et al., 2019).

Despite the findings of previous studies, several research gaps remain. First, previous empirical studies have produced inconsistent findings regarding the direct relationship between

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green innovation and financial performance, as demonstrated by studies reporting positive (Cheng et al., 2025; Zhang et al., 2025; Mukhopadhyay & Nayak, 2024; Xie et al., 2019), negative (Casciello et al., 2024; Intari & Khusnah, 2023), and U-shaped relationships (Ai et al., 2024). These differences indicate that the financial implications of green innovation are not yet fully established. Second, although previous studies have demonstrated that green innovation positively affects environmental performance (Ahmed et al., 2023; Cheng et al., 2025; Ha et al., 2024), the extent to which environmental performance translates these improvements into financial benefits remains uncertain. This is reflected in the findings of Aini and Faisal (2021), who reported no significant effect of environmental performance on financial performance, as well as Azizah and Wijayanti (2025), who found that environmental performance did not mediate the relationship between green innovation and financial performance. These findings suggest that improvements in environmental performance do not necessarily generate financial benefits or serve as an effective mechanism linking green innovation to financial performance. Therefore, further investigation is necessary to examine the mediating role of environmental performance in the relationship between green innovation and financial performance, particularly in manufacturing companies listed on the Indonesia Stock Exchange.

Furthermore, this study extends previous research, particularly Intari and Khusnah (2023), by examining the relationship between green innovation and financial performance through the perspective of Stakeholder Theory, with environmental performance serving as a mediating mechanism. The contribution of this study lies in distinguishing between the implementation of environmental innovation and the achievement of measurable environmental performance, as well as examining whether such environmental achievements are reflected in market-based financial performance. Specifically, this study employs PROPER ratings to assess environmental performance and Tobin's Q to measure financial performance. By integrating these indicators within a single research framework, this study seeks to provide further empirical evidence on whether environmental performance functions as a mechanism through which green innovation influences financial performance in Indonesian manufacturing companies. These results are anticipated to strengthen the current body of knowledge on financial accounting as

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well as corporate sustainability, while also providing valuable insights for corporate strategic planning and investment decision-making.

LITERATURE REVIEW

Stakeholder Theory

The stakeholder theory was put forward by Freeman in 1984 in "Strategic Management: A Stakeholder Approach". Stakeholder Theory underscores the importance given to stakeholders, defined to be persons or parties who either affect or are affected by the activities of a company, whose support is crucial for maintaining business continuity. Its application is particularly relevant in environmental research, as stakeholder interests and pressures can shape how companies formulate their environmental policies and respond to ecological challenges (Bansal & Roth, 2000). Through the adoption of sustainable innovations, companies can strengthen their corporate image and enhance financial outcomes by aligning their business strategies with public expectations and applicable environmental regulations.

Green Innovation

Green innovation encompasses the creation and application of environmentally focused solutions aimed at reducing ecological damage while generating economic benefits for companies (Schiederig, Tietze, & Cornelius, 2012). Originally introduced by Rennings (2000), this concept has evolved into a significant strategic method to attaining sustainable growth (Guinot et al., 2022). Chen et al. (2006), classify green innovation as two main dimensions: green product innovation as well as green process innovation.

Green product innovation involves the creation of novel products as well as modifications of existing goods through their use of ecologically friendly substances, such as non-toxic, biodegradable, and recyclable materials, in order to lessen ecological impact across the product life cycle (Horbach, 2008; Tariq, Badir, Tariq, & Bhutta, 2017; Xie et al., 2019), including decisions about the selection of raw materials through use and disposal, while maintaining the product's usefulness for consumers (Yan & Zhang, 2021). In addition to its environmental benefits, environmentally friendly product innovation can also strengthen a company's competitive position by enhancing corporate image, attracting environmentally conscious consumers, and generating cost savings (Chen et al., 2006).

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Green process innovation, in contrast, concentrates on modifying production methods as well as operational systems to improve environmental performance. These improvements include reducing energy consumption, preventing pollution, facilitating the reuse of resources, and limiting waste and emissions (Horbach, 2008; Xie et al., 2019). Examples include adopting clean technology, substituting hazardous materials, and integrating environmental management systems (Abbas & Sağsan, 2019; Rennings, 2000). It can reduce operating costs and environmental risks and improve regulatory compliance (Dangelico & Pujari, 2010; Ekins, 2010), thereby contributing to both environmental and economic performance.

Financial Performance

A firm's financial performance reflects its capacity to generate profits, utilize its assets effectively, and maintain long-term economic value creation. These aspects provide a significant basis to assess how well corporate strategies work as well as the efficiency of operational operational activities (Brigham & Houston, 2019). It also signals prospects, stability, and financial health to investors (Hasidi, Baheri, & Khaerunnisa, 2024).

Environmental Performance

Environmental performance is one firm’s capacity to handle and minimize the environmental negative impact arising from its operations by preventing pollution, handling waste, and using energy and natural resource efficiently, while also showing compliance with applicable environmental regulstion (Clarkson, Li, Richardson, & Vasvari, 2008).

Hypothesis Development

The Influence of Green Innovation on Environmental Performance

These results show that green innovation exerts a positive as well as statistically considerable effect upon environmental performance, as assessed through PROPER, thereby supporting the first hypothesis. This suggests that a greater adoption of green innovation, the stronger the environmental performance, which means green innovation helps companies manage the environmental impact of their activities. Process innovation focuses on using energy and resources more efficiently, reducing waste, and controlling emissions. Product innovation is characterized by the use of environmentally friendly materials and product designs to minimize negative impacts on the environment.

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From a stakeholder theory perspective, green innovation represents a corporate strategy for addressing environmental regulations and fulfilling the demands of diverse stakeholders, such as government authorities, local communities, customers, as well as shareholders. This result is in line with the conclusions reported by Ahmed et al. (2023) showing which routinely using green innovation helps reduce emissions and waste, and with Ha et al. (2024) and Intari and Khusnah (2023), the latter conducted in Indonesia.

H1: Green innovation exerts a positive and significant impact upon environmental performance.

The Influence of Green Innovation on Financial Performance

The results demonstrate that green innovation exerts a positive and statistically significant influence on financial performance, as measured by Tobin's Q, so H2 is supported. This finding supports stakeholder theory. Green innovation responds to growing stakeholder attention to environmental and sustainability issues, and it can trigger positive responses from investors and consumers because the firm is seen as caring about sustainability and environmental risk management. This is reflected in a better market perception of the firm's prospects and ultimately a higher TQ.

From an economic perspective, green process innovation can enhance efficiency in energy production and waste reduction by utilizing raw materials more effectively, while green product innovation enhances competitiveness through products that match consumer preferences for sustainable goods. Thus, green innovation also forms part of a value creation strategy. Such outcomes are in agreement alongside the findings from Cheng et al. (2025), Zhang et al. (2025), and Mukhopadhyay and Nayak (2024), and with Xie et al. (2019), demonstrated how the implementation of both green product innovation and green process innovation can enhance financial performance by improving cost efficiency and strengthening corporate image.

H2: Green innovation exerts a positive and significant impact upon financial performance.

The influence of Environmental Performance on Financial Performance

These findings indicate how PROPER, as a measure of environmental performance, does not possess a statistically notable influence upon financial performance, as measured by Tobin's Q (TQ), so H3 is rejected. This suggests that better environmental performance does not necessarily lead to higher market valuation. From a Stakeholder Theory perspective, although

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fulfilling stakeholder expectations is expected to contribute to corporate value (Utomo et al., 2020), environmental achievements recognized through PROPER do not automatically generate positive financial responses from investors.

One possible explanation is that PROPER ratings primarily reflect companies' compliance with environmental management requirements rather than their ability to generate profitability, sales growth, or future cash flows. Although favorable ratings may strengthen relationships with government authorities and local communities, investors may prioritize the economic prospects of a company when assessing its valuation. Moreover, the financial benefits of environmental management, such as improved reputation and stakeholder trust, may take time to materialize. Thus, the three-year observation period may not fully capture these long-term effects (Utomo et al., 2020; Muqorobin & Simamora, 2025).

This finding is consistent with previous Indonesian studies reporting no significant effect of PROPER-based environmental performance on firm value measured by Tobin's Q (Budiharjo, 2019; Dewanti et al., 2026; Ramadhana & Januarti, 2022; Rusmanto & Lisal, 2019; Soedjatmiko et al., 2021). However, Utomo et al. (2020) and Muqorobin and Simamora (2025) reported positive effects, indicating that the relationship may vary across research contexts and measurement approaches.

These findings qualify Stakeholder Theory by demonstrating that fulfilling environmental stakeholders' expectations does not necessarily translate into immediate financial benefits. Government authorities and local communities may recognize environmental achievements, while investors may place greater emphasis on their economic implications. Thus, environmental performance and financial value creation represent related but distinct corporate outcomes.

H3: Environmental performance exerts a positive and significant impact upon financial performance.

The Mediating Role of Environmental Performance in the Relationship Between Green Innovation and Financial Performance

The inconsistency results of previous studies concerning the link of green innovation with financial performance suggest that environmental performance may act as an intervening factor when converting green innovation into financial benefits. Implementing green innovations

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allows companies in order to enhance their environmental performance through various initiatives aimed at minimizing waste, reducing emissions, and optimizing resource usage. These improvements can strengthen stakeholder trust and, in turn, contribute to better financial outcomes. This relationship is consistent with Stakeholder Theory ', a view which emphasizes the idea addressing stakeholders' ecological concerns can facilitate the conversion of environmentally responsible (Agustia, Sawarjuwono, & Dianawati, 2019; Freeman, 2010).

Based on research, Intari and Khusnah (2023) reported that environmental performance acts as a mediating mechanism in the connection linking green innovation with financial performance across manufacturing firms registered on the IDX. Similar patterns were found by by Xie et al. (2019), identified green product innovation as an intermediary connecting green process innovation with financial performance. Furthermore, Casciello et al. (2024) demonstrated how ESG disclosure and R&D investment help explain the way green innovation influences financial performance. In light of this, the following hypothesis is advanced:

H4: Environmental performance positively as well as significantly mediates the linkage between green innovation and financial performance.

RESEARCH METHOD

This research applies a quantitative research method featuring a causal-associative design in order to assess the impact exerted by green innovation upon financial performance, taking environmental performance into account as an intervening variable. Secondary data were gathered from diverse origins, among them financial statements, annual reports, and sustainability reports belonging to manufacturing firms registered on the Indonesia Stock Exchange (IDX), as well as PROPER assessment results released by the Ministry of Environment and Forestry. The population of this research comprises every manufacturing firm registered on the IDX over the observation timeframe. Samples were selected by means of purposive sampling techniques grounded in specific selection standards, one of which covers: (a) firms registered on the IDX across the 2022–2024 timeframe, (b) having released complete financial statements, sustainability reports, and annual reports for 2022 to 2024, and (c) participated in the PROPER program in 2022 to 2024. In total, 75 manufacturing companies met the criteria, yielding 225 firm-year observations.

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Variables and Measurement

Table 1. Variaband Measurement of Variables

Variable	Definition	Measurement
Financial Performance (Tobin's Q)	A description of the firm's condition that reflects its achievement in managing its resources over a certain period.	$\text{Tobin's Q} = \frac{MVS + DEBT}{TA}$ MVS = year-end closing share price × outstanding shares; DEBT = total liabilities; TA = total assets.
Green Innovation (Green Product Innovation, Green Process Innovation)	Development of products, procedures, and practices that are good for the environment, improving resource efficiency while reducing environmental impact.	Content analysis of 8 disclosure items (5 items of green process innovation, 3 items of green product innovation): PROC1 Efforts to reduce resource and energy consumption and improve resource and energy use efficiency PROC2 Use of recycled materials, recycling techniques and environmentally friendly technologies PROC3 Implementation of environmental campaigns or programs PROC4 Use of pollution control equipment PROC5 Implementation of pollution control projects and technologies PROD1 Product design changes to avoid the use of polluting or toxic compounds in the production process PROD2 Repair and design of eco-friendly packaging for old and new products PROD3 Product design modifications to improve energy efficiency over the life of the product Scored criteria 0-2 per item, based on the following criteria: 0= The company does not disclose any related indicators in the annual report or sustainability report. 1= The company discloses the related indicators, but incompletely (no detailed plans or quantitative data yet). 2= The company discloses the related indicators completely and thoroughly (including numerical indicators showing environmental practices). GI = (GPrI + GPI) / 2, where GPrI and GPI are the average scores of their respective items (Xie et al., 2019).
Environmental Performance	The capacity of the company to regulate and minimize the environmental impacts arising from its operational activities.	Measured using the Corporate Environmental Performance Rating Program (PROPER), with scores assigned as follows: Gold = 5, Green = 4, Blue = 3, Red = 2, Black = 1, and Suspended = 0. A score of 0 represents companies whose PROPER ratings are suspended while they remain registered in the PROPER assessment program.

Source: Processed data (2026)

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Data Analysis Technique

he data gathered were examined by means of descriptive statistics, covering the computation of mean, minimum, maximum, as well as standard deviation values (Sugiyono, 2022) and Partial Least Squares-Structural Equation Modeling (PLS-SEM) assisted by SmartPLS 4 (Yulimtinan & Atiningsih, 2021). The analytical approach was chosen because PLS-SEM does not rely on distribution, nor does it demand a normality requirement in data.

The PLS analysis involves two main stages of model evaluation, namely the assessment targeting the inner model (structural model) along with the outer model (measurement model). This study uses only the structural model evaluation because it relies on secondary data with a single indicator for each variable (Ghozali & Latan, 2015). The evaluation covers three tests. First, multicollinearity within the independent variables is evaluated through the Variance Inflation Factor (VIF). Hair et al. (2019, 2021), state that VIF scores under 3 represent an ideal condition, whereas values exceeding 5 indicate potential collinearity issue (Hair et al., 2019, 2021). Second, explanatory capacity of the model is determined through examining the coefficient of determination (R-square), Hair et al. (2019) categorize R^2 scores of 0.75, 0.50, and 0.25 as substantial, moderate, as well as weak, in that order. In addition, the adjusted R^2 is considered to provide a more conservative measure of the model's explanatory ability. Third, the effect size (f-square) is analyzed to identify the degree to which each predictor adds to the variance explained in the endogenous construct. Based on Hair et al. (2019, 2021), f^2 scores of 0.02, 0.15, and 0.35 signify small, medium, as well as large effects, in that order.

This hypothesis was tested through a bootstrapping procedure, which is used to assess both direct relationships based on path coefficients and indirect relationships through specific indirect effects. According to Ghozali & Latan (2015) statistical significance is determined when the p-value remains below 0.05 while the t-statistic exceeds 1.96. In addition, a mediation function belonging to a variable is determined by evaluating the significance of the indirect effect using the same statistical thresholds.

RESULTS AND DISCUSSION

Results

Descriptive Statistics

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Table 2. Descriptive Statistics Results

Variable	Mean	Median	Min	Max	Std. Dev
GI (X)	1.137	1.166	0.200	1.833	0.346
PROPER (M)	2.880	3.000	0.000	5.000	0.930
TQ (Y)	1.483	0.951	0.341	10.57	1.452

Source: Processed data (2026)

The descriptive statistics indicate that Green Innovation (GI) has an average value of 1.137 and a median of 1.166. Observed figures extend from a lowest value of 0.200 up to a highest value of 1.833, with a standard deviation of 0.346. The symmetrical distribution and low variation indicate that GI adoption is fairly uniform among companies. Environmental performance (PROPER) has an average of 2.880 along with a median at 3.000 on a 0 to 5 scale, accompanied by a standard deviation of 0.930, which shows that most companies hold a Blue rating, meaning they have met regulatory compliance. has a mean value of 1.483, while its values range from 0.341 to 10.57. An average Tobin's Q exceeding 1 suggests that, in general, the value assigned by the market to the companies is higher than their book value of their assets. However, since the median (0.951) is lower than the mean, the highest maximum is much greater, and the large standard deviation (1.452), it all points to a right-skewed distribution caused by a few companies with extremely high market values.

PLS Data Analysis

PLS analysis is carried out by assessing the inner model (structural model). The model used for testing the connections between the research variables is presented in Figure 1.

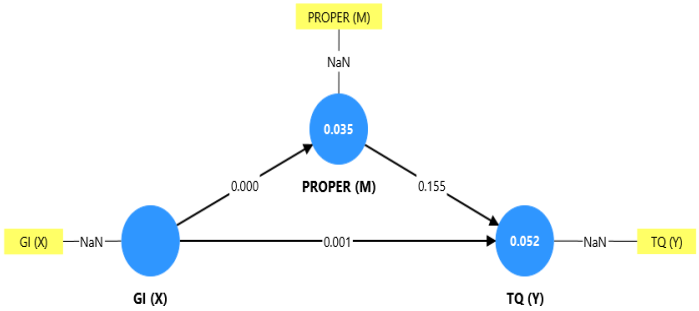


Figure 1. Research Model

Structural Model (Inner Model) Test

Evaluation of the structural model was conducted through three criteria: a Variance Inflation Factor (VIF) to assess collinearity, the coefficient of determination (R^2) for gauging

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explanatory power, and the effect size (f^2) for determining the contribution of every predictor. The test outcomes are reported in Table 3.

Table 3. Structural Model Test Results

Test	Path / Construct	Value	Remarks
VIF	GI -> PROPER	1.000	< 3 (no collinearity)
	GI -> TQ	1.036	< 3 (no collinearity)
	PROPER -> TQ	1.036	< 3 (no collinearity)
R-square	PROPER (R^2)	0.035	Weak
	PROPER (Adjusted R^2)	0.031	Weak
	TQ (R^2)	0.052	Weak
	TQ (Adjusted R^2)	0.044	Weak
f-square	GI -> PROPER	0.036	Small effect
	GI -> TQ	0.039	Small effect
	PROPER -> TQ	0.007	No effect

Source: Processed data (2026)

Multicollinearity Test (VIF)

Table 3 indicate that the VIF measurement range from 1.000 to 1.036, This range is below the recommended limit of 3, confirming that model does not exhibit multicollinearity issues (Hair et al., 2019). The value of 1.000 for GI to PROPER shows that PROPER is predicted by only one exogenous variable, and the value of 1.036 for TQ shows that the correlation between GI and PROPER is low. Therefore, there is no collinearity problem, the path coefficient estimates are not distorted, and the analysis can proceed (Hair et al., 2021).

Coefficient of Determination (R-square)

Based on Table 3, GI explains 3.5% of the variance in PROPER (adjusted R-square 3.1%), while GI and PROPER together explain 5.2% of the variance in TQ (adjusted R-square 4.4%). The remaining 96.5% and 94.8%, respectively, are explained by factors outside the model. Both values are weak because they are below 0.25 (Hair et al., 2019), and the R-square of TQ is even below the 0.10 considered adequate in some disciplines. Previous studies in Indonesia show that profitability indicators significantly affect TQ (Budiharjo, 2019; Rusmanto & Lisal, 2019), which is in line with the insignificant effect of PROPER on TQ in the hypothesis test (Table 4).

Effect Size (f-square) Test

Based on Table 3, GI has a small effect size on PROPER (0.036) and on TQ (0.039) because both values exceed 0.02 (Hair et al., 2019), meaning that GI makes a real but limited contribution

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to both endogenous variables. In contrast, PROPER has an f-square of only 0.007 on TQ, which is below 0.02 and indicates no effect (Hair et al., 2021). Removing PROPER from the model hardly changes the R-square of TQ, consistent with the insignificant result for H3 (Table 4). The relevance ranking of the TQ predictors based on f-square (GI greater than PROPER) also matches the ranking based on path coefficients (Hair et al., 2021).

Hypothesis Testing

Table 4. Hypothesis Testing Result

	Original Sample	*Sample Mean*	*Standard Deviation*	*T-Statistics*	*P-Values*
GI (X) -> PROPER (M)	0.187	0.187	0.053	3.549	0.000
GI (X) -> TQ (Y)	0.197	0.194	0.057	3.433	0.001
PROPER (M) -> TQ (Y)	0.085	0.087	0.060	1.423	0.155
GI (X) -> PROPER (M) -> TQ (Y)	0.016	0.015	0.011	1.410	0.159

Source: Data processed with SmartPLS (2026)

The hypothesis testing outcomes displayed in Table 4 demonstrate that Green Innovation (GI) favorably and significantly affects environmental performance (PROPER), as evidenced by an original sample coefficient of 0.187, a t-statistic reaching 3.549, surpassing the critical value of 1.96, along with a p-value of 0.000, which is under 0.05. Therefore, H1 is accepted. A comparable finding emerges for the link between GI as well as financial performance (TQ), showing a positive coefficient at 0.197, a t-statistic reaching 3.433, along with a p-value at 0.001. Since such values satisfy those established significance criteria, H2 is accepted. However, the analysis reveals that environmental performance (PROPER) does not exert a considerable influence on financial performance (TQ). This is shown by the original sample coefficient at 0.085, t-statistic at 1.423, along with p-value at 0.155, signifying that the relationship does not meet the required significance threshold. Therefore, H3 is rejected. Furthermore, the indirect relationship between GI and TQ through PROPER is also statistically insignificant, as shown by the original sample coefficient at 0.016, t-statistic at 1.410, along with p-value at 0.159. Such results indicate that PROPER does not function as a mediating variable within the link between GI as well as financial performance; consequently, H4 is rejected.

Discussion

The Influence of Green Innovation on Environmental Performance

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These results show that green innovation exerts a positive as well as statistically considerable effect upon environmental performance, as assessed through PROPER, thereby supporting the first hypothesis. This suggests that a greater adoption of green innovation, the stronger the environmental performance, which means green innovation helps companies manage the environmental impact of their activities. Process innovation focuses on using energy and resources more efficiently, reducing waste, and controlling emissions. Product innovation is characterized by the use of environmentally friendly materials and product designs to minimize negative impacts on the environment.

From a stakeholder theory perspective, green innovation represents a corporate strategy for addressing environmental regulations and fulfilling the demands of diverse stakeholders, such as government authorities, local communities, customers, as well as shareholders. The positive relationship between green innovation and environmental performance indicates that companies can respond to stakeholder demands through environmentally oriented innovations that produce measurable improvements in environmental management. This result is in line with the conclusions reported by Ahmed et al. (2023) showing which routinely using green innovation helps reduce emissions and waste, and with Ha et al. (2024) and Intari and Khusnah (2023), the latter conducted in Indonesia.

The Influence of Green Innovation on Financial Performance

The results demonstrate that green innovation exerts a positive and statistically significant influence on financial performance, as measured by Tobin's Q, so H2 is supported. This finding indicates that the implementation of environmentally oriented innovations can contribute to improving the company's market valuation. From a stakeholder theory perspective, green innovation represents a strategic response to stakeholder expectations concerning environmental responsibility and sustainability. However, its contribution to financial performance is not limited to fulfilling environmental expectations. Green innovation can also generate economic benefits that strengthen the company's attractiveness to investors and consumers.

This finding indicates that the implementation of environmentally oriented innovations can contribute to improving the company's market valuation. From a stakeholder theory perspective, green innovation represents a strategic response to stakeholder expectations

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concerning environmental responsibility and sustainability. However, its contribution to financial performance is not limited to fulfilling environmental expectations. Green innovation can also generate economic benefits that strengthen the company's attractiveness to investors and consumers. Such outcomes are in agreement alongside the findings from Cheng et al. (2025), Zhang et al. (2025), and Mukhopadhyay and Nayak (2024), and with Xie et al. (2019), demonstrated how the implementation of both green product innovation and green process innovation can enhance financial performance by improving cost efficiency and strengthening corporate image.

The Influence of Environmental Performance on Financial Performance

These findings indicate how PROPER, as a measure of environmental performance, does not possess a statistically notable influence upon financial performance, as measured by Tobin's Q (TQ), so H3 is rejected. This suggests that better environmental performance does not necessarily lead to higher market valuation. From a Stakeholder Theory perspective, although fulfilling stakeholder expectations is expected to contribute to corporate value (Utomo et al., 2020), environmental achievements recognized through PROPER do not automatically generate positive financial responses from investors.

One possible explanation is that PROPER ratings primarily reflect companies' compliance with environmental management requirements rather than their ability to generate profitability, sales growth, or future cash flows. Although favorable ratings may strengthen relationships with government authorities and local communities, investors may prioritize the economic prospects of a company when assessing its valuation. Moreover, the financial benefits of environmental management, such as improved reputation and stakeholder trust, may take time to materialize. Thus, the three-year observation period may not fully capture these long-term effects (Utomo et al., 2020; Muqorobin & Simamora, 2025).

This finding is consistent with previous Indonesian studies reporting no significant effect of PROPER-based environmental performance on firm value measured by Tobin's Q (Budiharjo, 2019; Dewanti et al., 2026; Ramadhana & Januarti, 2022; Rusmanto & Lisal, 2019; Soedjatmiko et al., 2021). However, Utomo et al. (2020) and Muqorobin and Simamora (2025) reported positive effects, indicating that the relationship may vary across research contexts and measurement

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approaches. Theoretically, these findings provide an important qualification to Stakeholder Theory. Although companies are expected to address the interests of various stakeholders, the fulfillment of environmental expectations does not necessarily produce an immediate financial response from investors. Environmental stakeholders, such as government authorities and local communities, may recognize corporate environmental achievements, whereas investors may place greater emphasis on the economic implications of those achievements. Therefore, the findings suggest that positive environmental performance and financial value creation are related but distinct corporate outcomes.

The Mediating Role of Environmental Performance in the Relationship Between Green Innovation and Financial Performance

These research results indicate how environmental performance does not mediate the relationship linking green innovation with financial performance, thus H4 is rejected. These results reflect a pattern of direct non-mediation-only, where green innovation has a significant direct effect on financial performance, but its indirect effects through environmental performance are not significant. As explained Hair et al. (2021), the significance of an indirect effect depends on the combined relationships between the independent variable, mediator, and dependent variable. Thus, although green innovation positively affects environmental performance, the insignificant effect of environmental performance on financial performance prevents the proposed mediation from being established.

From a Stakeholder Theory perspective, fulfilling environmental stakeholders' expectations does not automatically translate into financial benefits for investors. Although green innovation may improve environmental performance, investors may place greater emphasis on its economic implications. This finding is consistent with Azizah and Wijayanti (2025) and Aini and Faisal (2021), who reported that environmental performance did not significantly contribute to the expected financial outcomes. Therefore, future research may examine other mediating variables, such as operational efficiency, profitability, and corporate reputation, to further explain how green innovation influences financial performance.

CONCLUSION

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This research investigates the effect of green innovation upon financial performance, together with environmental performance acting as a mediating variable, among manufacturing firms registered on the Indonesia Stock Exchange (IDX) in 2022-2024. Empirical results show that green innovation has a positive and significant influence on environmental and financial performance. However, environmental performance does not significantly affect financial performance nor mediate the relationship between green innovation and financial performance. These findings suggest that the financial benefits of green innovation are more directly related to operational efficiency, cost reduction, and product competitiveness than an improvement in the PROPER (PREFE) rating.

In theory, this study contributes to Stakeholder Theory by showing that meeting environmental stakeholder expectations does not always result in direct financial benefits. Environmental achievement and financial value creation are interrelated but distinct corporate outcomes, as environmental recognition does not automatically result in a positive response from investors.

In practical terms, manufacturing companies are encouraged to strengthen green process and product innovation to improve resource efficiency, reduce production costs, and increase competitiveness. They should also disclose measurable environmental and economic outcomes in a transparent manner. Meanwhile, policymakers should strengthen incentives for green innovation and encourage transparent environmental reporting to support better market recognition of companies' environmental initiatives.

The study was limited by a three-year observation period and the use of PROPER as the sole measure of environmental performance. Future research should extend the observation period, use a broader measure of green innovation by adding other dimensions, such as service innovation and organizational or managerial innovation, and utilize data sources other than disclosure in company reports, such as green patents or R&D development and environmental performance, as well as examine alternative mediating variables such as operational efficiency, profitability, and corporate reputation.

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REFERENCES

Abbas, J., & Sağsan, M. (2019). *Impact of knowledge management practices on green innovation and corporate sustainable development: A structural analysis*. https://doi.org/10.1016/j.jclepro.2019.05.024

Agustia, D., Sawarjuwono, T., & Dianawati, W. (2019). *The Mediating Effect of Environmental Management Accounting on Green Innovation - Firm Value Relationship*. *9*(2), 299–306.

Ahmed, R. R., Akbar, W., Aijaz, M., Channar, Z. A., Ahmed, F., & Parmar, V. (2023). The role of green innovation on environmental and organizational performance: Moderation of human resource practices and management commitment. *Heliyon*, *9*(1). https://doi.org/10.1016/j.heliyon.2022.e12679

Ai, M., Luo, F., & Bu, Y. (2024). Green innovation and corporate financial performance: Insights from operating risks. *Journal of Cleaner Production*, *456*(April), 142353. https://doi.org/10.1016/j.jclepro.2024.142353

Aini, N., & Faisal, N. T. (2021). *The Effect Of Environmental Performance On Firm Value Using Financial Performance As Mediator Variable*. *4*(3). https://doi.org/https://doi.org/10.29138/ijebd.v4i3.1391

Azizah, Z. N., & Wijaynti, R. (2025). *Green Innovation , Environmental Management Accounting , And Environmental Performance : Their Impact*. *4*(1), 1–16.

Badren, Y., Husin, Suhariyanto, & Purnamasari, A. (2026). *Firm Value Amidst Sustainability Issues: The Role of Corporate Governance in the Relationship Between Environmental Performance and Financial Performance*. 111–127.

Bansal, P., & Roth, K. (2000). Why Companies Go Green: A Model of Ecological Responsiveness Why Companies Go Green: A Model Of Ecological Responsiveness Background And A Preliminary Model. *Source: The Academy of Management Journal Academy of Management Journal*, *43*(4), 717–736. https://doi.org/https://doi.org/10.5465/1556363

BeritaCilegon. (2024). Mayor of Cilegon asks PT Chandra Asri to temporarily halt operations. Retrieved from Berita Cilegon website: https://berita.cilegon.go.id/baca/Wali-Kota-Cilegon-Minta-PT-Chandra-Asri-Hentikan-Kegiatan-Sementara/20260518/ODI2

Brigham, E. F., & Houston, J. F. (2019). *Fundamentals of Financial Management Eleventh Edition*.

Budiharjo, R. (2019). *Effect of Environmental Performance and Financial Performance on Firm Value*. *9*(2), 65–73. https://doi.org/10.6007/IJARAFMS/v9-i2/6030

Casciello, R., Santonastaso, R., & Martino, I. (2024). Green innovation and financial performance. The role of R&D investments and ESG disclosure. *Corporate Social Responsibility and Environmental Management*, *31*(6), 5372–5390. https://doi.org/https://doi.org/10.1002/csr.2862

Chen, Y. S., Lai, S. B., & Wen, C. T. (2006). The influence of green innovation performance on

E-ISSN: 2807-7318, P-ISSN: 2808-3482

corporate advantage in Taiwan. *Journal of Business Ethics*, *67*(4), 331–339. https://doi.org/10.1007/s10551-006-9025-5

Cheng, Q., Lin, A. P., & Yang, M. (2025). Green innovation and firms' financial and environmental performance: The roles of pollution prevention versus control. *Journal of Accounting and Economics*, *79*(1), 101706. https://doi.org/10.1016/j.jacceco.2024.101706

Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2008). Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis. *Accounting, Organizations and Society*, *33*(4–5), 303–327. https://doi.org/10.1016/j.aos.2007.05.003

Dangelico, R. M., & Pujari, D. (2010). Mainstreaming green product innovation: Why and how companies integrate environmental sustainability. *Journal of Business Ethics*, *95*(3), 471–486. https://doi.org/10.1007/s10551-010-0434-0

Dewanti, P. W., Kharisma, I., & Susilo, A. Z. (2026). *Sustainability reporting disclosure , environmental performance , and firm value : evidence from Indonesia ' s intensive sector industry*. *15*(1), 121–132.

Ekins, P. (2010). Eco-innovation for environmental sustainability: Concepts, progress and policies. *International Economics and Economic Policy*, *7*(2), 267–290. https://doi.org/10.1007/s10368-010-0162-z

Freeman, R. E. (2010). *Strategic management: A stakeholder approach.* Cambridge university press.

Ghozali, I., & Latan, H. (2015). *Concepts, techniques, and applications using the SmartPLS 3.0 program.* Badan Penerbit Universitas Diponegoro.

Guinot, J., Barghouti, Z., & Chiva, R. (2022). Understanding Green Innovation: A Conceptual Framework. *Sustainability (Switzerland)*, *14*(10), 1–14. https://doi.org/10.3390/su14105787

Gurler, H. E., Kaya, A., Bilmiş, A. N. S., & Durmaz, Y. (2025). *Stakeholder Pressure and Green Innovation : A Meta-Analytic Exploration of Industry and Regional Variations*. https://doi.org/10.1002/brb3.70840

Ha, N. M., Nguyen, P. A., Luan, N. V., & Tam, N. M. (2024). Impact of green innovation on environmental performance and financial performance. *Environment, Development and Sustainability*, *26*, 17083–17104. https://doi.org/https://doi.org/10.1007/s10668-023-03328-4

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2019). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). Sage.

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R*. Springer.

Hasidi, M. H., Baheri, J., & Khaerunnisa, I. H. (2024). *Financial Performance Evaluation Using Profitability and Liquidity Ratio Analysis*. *12*(4), 1347–1358.

E-ISSN: 2807-7318, P-ISSN: 2808-3482

https://doi.org/https://doi.org/10.37641/jimkes.v12i4.2742

Horbach, J. (2008). *Determinants of environmental innovation — New evidence from German panel data sources*. *37*, 163–173. https://doi.org/10.1016/j.respol.2007.08.006

Intari, A. P. N., & Khusnah, H. (2023). The Influence of Green Innovation on Financial Performance with Environmental Performance as a Mediator. *Jurnal Ilmiah Akuntansi Dan Keuangan*, *12*(2), 149–160.

InvestasiKontan. (2025). Chandra Asri's (TPIA) net income fell by 17.4% in 2024. Retrieved from Investasi Kontan website: https://investasi.kontan.co.id/news/pendapatan-bersih-chandra-asri-tpia-turun-174-pada-2024

IPOTNews. (2025). Chandra Asri (TPIA) posts a loss of IDR 1.1 trillion in 2024, an 82 percent increase. Retrieved from IPOT News website: https://www.indopremier.com/ipotnews/newsDetail.php?jdl=Chandra_Asri_%28TPIA%29_Rugi_Rp1_1_Triliun_di_2024__Membengkak_82_Persen&news_id=460503&group_news=RESEARCHNEWS&taging_subtype=TPIA&name=&search=y_general&q=Chandra+Asri+Pacific&halaman=1

Islam, T., Arunachalum, M., Wellalage, N., & Benjamin, S. (2025). *Performance : Impacts of Social Media Sentiment and Corporate Reputation*. 4274–4290. https://doi.org/10.1002/bse.4201

Joharsoyo, Y. M. (2024). Following air pollution caused by gas flaring, the Mayor of Cilegon suspends Chandra Asri's operations. *Tempo.Co*. Retrieved from https://www.tempo.co/ekonomi/buntut-polusi-udara-pembakaran-gas-walikota-cilegon-berhentikan-operasional-chandra-asri-95724

Kong, T., Feng, T., & Ye, C. (2016). Advanced manufacturing technologies and green innovation: The role of internal environmental collaboration. *Sustainability (Switzerland)*, *8*(10), 9–11. https://doi.org/10.3390/su8101056

MinistryofEnvironment. (2025). Announcement of the 2023-2024 PROPER rankings. Retrieved from PROPER website: https://proper.kemenlh.go.id/proper/berita/detail/393

Mukhopadhyay, N., & Nayak, N. C. (2024). Examining the relationship between green innovation dynamics and firm performance: a comparative study of BRICS and G7 countries. *Cogent Business and Management*, *11*(1). https://doi.org/10.1080/23311975.2024.2364836

Muqorobin, M. M., & Simamora, A. J. (2025). *Effect of Environmental Performance on Firm Value in Indonesian Stock Exchange : Intervening Role of Profitability*. *5*(4), 507–515. https://doi.org/10.47065/jtear.v5i4.1925

Prakash, A. (2002). *Green marketing, public policy and managerial strategies. 11*(5), 285–297.

Pratiwi, C. W., Fauzi, M. I., & Indrayani, E. (2024). *Journal of Accounting, Auditing, and Taxation Studies – Corporate Value: Are Investors Evaluating Environmental Performance and Eco-Efficiency Alongside Profitability?*

E-ISSN: 2807-7318, P-ISSN: 2808-3482

Qing, L., Chun, D., Dagestani, A. A., & Li, P. (2022). Does Proactive Green Technology Innovation Improve Financial Performance? Evidence from Listed Companies with Semiconductor Concepts Stock in China. *Sustainability (Switzerland)*, *14*(8). https://doi.org/10.3390/su14084600

Ramadhana, M. L., & Januarti, I. (2022). The Impact Of Environmental Performance And Financial Performance On Firm Value. *Diponegoro Journal Of Accounting*, *11*(1), 1–14.

Rennings, K. (2000). *Redefining innovation – eco-innovation research and the contribution from ecological economics*. *32*(2), 319–332. https://doi.org/https://doi.org/10.1016/S0921-8009(99)00112-3

Rusmanto, T., & Lisal, M. (2019). *The Influence of Good Corporate Governance , Financial and Environmental Performance towards Firm Value : Case of Manufacturing Companies in Indonesia*. *3075*(1), 4610–4613. https://doi.org/10.35940/ijitee.L3837.119119

Schiederig, T., Tietze, F., & Cornelius, H. (2012). Green innovation in technology and innovation management – an exploratory literature review 1. *R&D Management*, *42*(2), 180–192. https://doi.org/https://doi.org/10.1111/j.1467-9310.2011.00672.x

Soedjatmiko, S., Tjahjadi, B., & Soewarno, N. (2021). *Do Environmental Performance and Environmental Management Have a Direct Effect on Firm Value ?* *8*(1), 687–696. https://doi.org/10.13106/jafeb.2021.vol8.no1.687

Sugiyono. (2022). *Quantitative, qualitative, and R&D research methods.* Alfabeta.

Tariq, A., Badir, Y. F., Tariq, W., & Bhutta, U. S. (2017). Drivers and consequences of green product and process innovation: A systematic review, conceptual framework, and future outlook. *Technology in Society*, *51*, 8–23. https://doi.org/10.1016/j.techsoc.2017.06.002

Tobin, J. (1969). Equilibrium Approach To Monetary Theory. *Journal of Money, Credit and Banking*, *1*(1), 15–29. https://doi.org/https://doi.org/10.2307/1991374

Tripopsakul, S. (2025). ESG Practices, Green Innovation, and Financial Performance: Panel Evidence from ASEAN Firms. *Journal of Risk and Financial Management*, *18*(8). https://doi.org/10.3390/jrfm18080467

Utomo, M. N., Rahayu, S., Kaujan, K., & Irwandi, S. A. (2020). *Environmental performance , environmental disclosure , and firm value : empirical study of non-financial companies at Indonesia Stock Exchange*. *2*(March), 100–113. https://doi.org/10.3934/GF.2020006

Widyantoro, T., Rusmanto, T., Warganegara, D. L., & Furinto, A. (2025). Enhancing green innovation and financial performance: the role of stakeholder pressures and green dynamic capabilities. *Frontiers in Climate*, *7*(August), 1–11. https://doi.org/10.3389/fclim.2025.1599894

Xie, X., Huo, J., & Zou, H. (2019). Green process innovation, green product innovation, and corporate financial performance: A content analysis method. *Journal of Business Research*,

E-ISSN: 2807-7318, P-ISSN: 2808-3482

101(January), 697–706. https://doi.org/10.1016/j.jbusres.2019.01.010

Yan, X., & Zhang, Y. (2021). The effects of green innovation and environmental management on the environmental performance and value of a firm: an empirical study of energy-intensive listed companies in China. *Environmental Science and Pollution Research*, *28*(27), 35870–35879. https://doi.org/10.1007/s11356-021-12761-9

Yulimtinan, Z., & Atiningsih, S. (2021). Examine the impact of firm size and sales growth on firm value, with profitability as a mediating variable. *Jurnal Akuntansi Dan Bisnis*, *6*(1), 69–82.

Zhang, C., Ma, Y., & Zhang, E. (2025). Does green innovation promote financial performance of Chinese listed companies? *Journal of Innovation and Knowledge*, *10*(4), 100740. https://doi.org/10.1016/j.jik.2025.100740

Zhao, F., Li, M., Xie, X., & He, L. (2026). Green Product and Process Innovation and Firm Performance: A Meta-Analytic Review. *Sustainability (Switzerland)*, *18*(3), 1–32. https://doi.org/10.3390/su18031640