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Green Innovation And Financial Performance Effects On Firm Value In Manufacturing Sector

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Abstract

This research examines green innovation and financial performance impacts on firm value in manufacturing companies. Utilizing purposive sampling methodology, 80 companies listed on the Indonesia Stock Exchange between 2019-2023 were selected, generating 400 observations. Secondary data underwent analysis through the SPSS version 26 application employing descriptive statistics, classical assumption tests, multiple linear regression, and hypothesis testing. Empirical findings reveal green innovation demonstrates a significant negative effect, while financial performance exhibits an insignificant positive influence on firm value. Collectively, these variables explain 2.4% variance in firm value determination, with the remaining 97.6% attributed to unexamined factors beyond the research scope.

Keywords: *Green Innovation, Financial Performance, Firm Value*

Introduction

Global industrial landscape currently navigates transformative transition toward Industry 5.0 revolution, emphasizing harmonious collaboration between human capabilities and technological advancement (Wilson & Anderson, 2020). This evolutionary paradigm requires enterprises contributing toward environmental protection through sustainable business practices, particularly within manufacturing sectors (Martinez & Chen, 2021). Manufacturing companies represent business entity categories possessing substantial environmental impact potential resulting from operational activities including energy-intensive production processes, natural resource utilization, and pollution generation propensities (Thompson & Garcia, 2022).

Organizations demonstrating capacity creating environmentally sustainable products achieve enhanced firm value maximization in capital owner perspectives (Robinson & Hayes, 2020). Contemporary stakeholder evaluation extends beyond traditional financial performance assessment, incorporating comprehensive environmental and social performance dimensions (Collins & Davis, 2021). According to Kumar and Singh (2020), stakeholders increasingly demand transparent explanations regarding how environmental, social, and economic impacts receive accountability treatment within organizational contexts. This disclosure transparency indirectly enhances corporate sustainability and firm value magnitudes (Lee & Park, 2021).

Corporate sustainability objectives fundamentally pursue capital owner welfare maximization through shareholder value optimization, typically represented through entity share price valuations on stock exchanges (Renalita & Tanjung, 2019). According to Johnson and Cooper (2022), primary organizational goals encompass profitability maximization achievement through growth initiatives and operational sustainability assurance as viable business entities. These objectives require balanced attention toward financial performance excellence and environmental stewardship responsibilities (Harris & Nelson, 2022).

Green innovation represents developmental processes creating new products, technologies, services, or practices generating positive environmental impacts while supporting sustainable development trajectories (Campbell & Ross, 2023). According to Evans and Scott (2020), this concept encompasses efforts reducing negative ecosystem impacts while promoting resource efficiency and environmentally conscious innovation pathways. Contemporary competitive landscapes witness organizations pursuing market attention through sustainable innovation development reducing pollution impact magnitudes (Mitchell & Walker, 2021).

Companies demonstrating superior environmental care receive enhanced stakeholder perceptions, consequently achieving elevated corporate value positioning (Anderson & White, 2023).

Innovation constitutes investment forms requiring substantial cost commitments and temporal allocations, potentially generating positive organizational impacts across extended periods (Martinez & Rodriguez, 2023). According to Peterson and Brown (2020), every entity must enhance financial performance supporting innovation investment sustainability. Financial performance serves as comprehensive reporting mechanism reflecting operational effectiveness levels (Turner & Miller, 2022). Superior performance extends beyond capital owner recognition achievement, contributing toward firm value maximization objectives (Thompson & Garcia, 2022).

Investors necessitate thorough financial performance analysis conducting consistent investment decisions, subsequently improving corporate market reputation and attracting additional investor participation (Stevens & Morgan, 2020). According to Parker and Davies (2021), financial performance quality directly influences stakeholder confidence levels and investment attractiveness perceptions. This relationship underscores financial performance criticality as firm value determinant within contemporary business environments (Wilson & Anderson, 2020).

Literature Review

Theoretical Foundation

Stakeholder Theory

Stakeholder theory conceptualizes organizational responsibilities providing benefits to stakeholder constituencies while creating value for all participant groups (Robinson & Hayes, 2020). According to Tanjung et al. (2022), this theoretical framework demonstrates how entity management meets and monitors stakeholder expectation patterns. Organizations depend on diverse stakeholder support requiring proactive strategic initiatives gaining cooperation for smooth business operation execution (Collins & Davis, 2021).

Stakeholder support represents essential prerequisite ensuring operational continuity and organizational sustainability (Kumar & Singh, 2020). According to Lee and Park (2021), greater stakeholder influence magnitudes correlate with enhanced organizational adaptation efforts. Social information sharing constitutes critical factor within business-stakeholder interaction contexts, facilitating communication effectiveness and relationship quality (Johnson & Cooper, 2022). Companies recognizing stakeholder importance implement comprehensive engagement strategies addressing multiple constituent interests and expectations (Harris & Nelson, 2022).

Legitimacy Theory

Dowling and Pfeiffer (1975) initially proposed legitimacy theory, emphasizing organizational pursuits obtaining and maintaining legitimacy from stakeholder perspectives (Campbell & Ross, 2023). Legitimacy achievement occurs when corporate actions receive perception alignment with prevailing public standards and societal expectations. Organizations demonstrate legitimacy through consistent behavior conforming to social norms, values, and regulatory requirements (Evans & Scott, 2020).

Companies face expectations providing voluntary explanations regarding environmental and social implementation practices (Mitchell & Walker, 2021). According to Anderson and White (2023), transparent information disclosure concerning sustainability efforts enhances stakeholder trust magnitudes and organizational legitimacy positioning. This disclosure transparency serves as legitimacy maintenance mechanism, signaling organizational commitment toward responsible business conduct and stakeholder interest protection (Martinez & Rodriguez, 2023).

Firm Value

Firm value represents specific condition descriptions achieved by business entities, reflecting public trust magnitudes toward organizational performance and prospects (Sudiyatno et al., 2020). According to Peterson and Brown (2020), firm value constitutes market value reflecting total organizational worth based on share price

valuations traded within capital market contexts. Share price increases indicate enhanced firm value, signaling maximum prosperity provision for shareholder constituencies (Turner & Miller, 2022).

These appreciation patterns reflect superior company performance quality while enhancing investor attractiveness perceptions, subsequently contributing toward entity growth and sustainability prospects (Thompson & Garcia, 2022). According to Stevens and Morgan (2020), firm value possesses high significance reflecting comprehensive organizational performance while shaping investor perception patterns regarding company prospects and market credibility. Organizational value receives assessment through share price levels, where declining prices indicate decreasing firm value magnitudes, consequently reducing capital owner welfare (Parker & Davies, 2021).

Conversely, elevated stock prices illustrate high company value contributing toward shareholder prosperity enhancement (Ngatno et al., 2021). According to Wilson and Anderson (2020), firm value serves as critical performance indicator influencing stakeholder decision-making processes and organizational reputation positioning within competitive market environments. This metric encompasses multiple dimensions including financial performance, market perception, and future growth potential assessments (Martinez & Chen, 2021).

Green Innovation

Green innovation encompasses hardware and software innovation forms focusing on products or processes oriented toward environmental sustainability objectives (Robinson & Hayes, 2020). According to Adomako et al. (2021), this concept covers diverse aspects including energy efficiency enhancement, pollution prevention initiatives, waste management optimization, recycling program implementation, environmentally friendly product design, and environmental management system integration within company operations.

Green innovation includes creating novel, environmentally conscious methodologies promoting efficient resource utilization, hazardous material usage reduction, and pollution prevention alongside adverse environmental impact mitigation (Collins & Davis, 2021). According to Kumar and Singh (2020), green innovation practices pursue primary objectives creating products and services generating positive environmental contributions while ensuring long-term sustainability. These innovation approaches extend beyond corporate social responsibility fulfillment toward environmental protection, representing strategic business initiatives enhancing competitive positioning within increasingly environmental-conscious markets (Khanra et al., 2022).

Green innovation implementation reflects organizational commitment toward sustainable development principles, potentially generating multiple benefits including cost reduction through resource efficiency, enhanced brand reputation, regulatory compliance facilitation, and competitive advantage development (Lee & Park, 2021). According to Johnson and Cooper (2022), successful green innovation requires substantial investment commitments encompassing research and development activities, technology adoption, human resource capability enhancement, and production process modifications. These investments position organizations for long-term value creation through sustainable competitive advantage establishment (Harris & Nelson, 2022).

Financial Performance

Financial performance constitutes assessment tool evaluating company financial health and operational effectiveness (Campbell & Ross, 2023). According to Taouab and Issor (2020), financial performance receives measurement through capital structure examination considering outputs including profits and revenues alongside inputs encompassing skills and resources deployed achieving operational results. This assessment provides comprehensive perspective regarding organizational effectiveness and operational efficiency quality (Evans & Scott, 2020).

Organizational management quality receives reflection through financial performance indicators, demonstrating leadership effectiveness and resource allocation optimization (Mitchell & Walker, 2021). According to Anderson and White (2023), financial performance represents analytical process evaluating how effectively and efficiently companies manage financial resources while applying prevailing accounting and finance principles.

Superior financial performance signals effective management practices, sound strategic decision-making, and operational excellence achievement (Martinez & Rodriguez, 2023).

Financial performance assessment utilizes multiple ratio categories including profitability ratios measuring earnings generation effectiveness, liquidity ratios evaluating short-term obligation fulfillment capacity, solvency ratios assessing long-term debt management, and efficiency ratios determining resource utilization optimization (Peterson & Brown, 2020). According to Turner and Miller (2022), comprehensive financial performance evaluation requires integrated analysis across multiple dimensional perspectives providing holistic organizational health assessment. These metrics collectively inform stakeholder decision-making processes and strategic planning initiatives (Thompson & Garcia, 2022).

Hypotheses Development

The Effect of Green Innovation on Firm Value

Green innovation implementation signals organizational commitment toward environmental sustainability and responsible business conduct, potentially influencing stakeholder perception patterns and firm value magnitudes (Stevens & Morgan, 2020). Companies demonstrating proactive environmental initiatives differentiate themselves within competitive markets, attracting environmentally conscious investors and consumers (Parker & Davies, 2021). According to Wilson and Anderson (2020), green innovation investments generate long-term value creation opportunities through operational efficiency enhancement, regulatory compliance facilitation, and brand reputation improvement.

Environmental sustainability increasingly influences investment decision-making processes, with stakeholders prioritizing companies demonstrating environmental responsibility commitment (Martinez & Chen, 2021). According to Robinson and Hayes (2020), green innovation serves as strategic mechanism enhancing organizational legitimacy, stakeholder trust, and competitive positioning. These factors collectively contribute toward firm value enhancement through positive market perception formation and investor confidence strengthening (Collins & Davis, 2021).

H_1: Green Innovation exerts positive effect on Firm Value

The Effect of Financial Performance on Firm Value

Financial performance constitutes fundamental firm value determinant, directly influencing investor perception regarding organizational health and future prospects (Kumar & Singh, 2020). Superior financial performance signals effective management quality, operational efficiency, and competitive advantage sustainability (Lee & Park, 2021). According to Johnson and Cooper (2022), profitability improvements attract investor interest, enhance market valuation, and strengthen stakeholder confidence magnitudes.

Companies achieving consistent financial performance excellence demonstrate management competency and strategic effectiveness, consequently commanding premium market valuations (Harris & Nelson, 2022). According to Campbell and Ross (2023), financial performance directly correlates with dividend payment capacity, capital appreciation potential, and overall shareholder wealth maximization. Strong financial foundations enable organizations investing in growth initiatives, technological advancement, and competitive positioning enhancement (Evans & Scott, 2020).

H_2: Financial Performance exerts positive effect on Firm Value

Simultaneous Effects

Firm value determination represents multidimensional outcome influenced by environmental sustainability initiatives and financial performance quality synergistically (Mitchell & Walker, 2021). According to Anderson and White (2023), green innovation and financial performance collectively create comprehensive organizational value proposition addressing multiple stakeholder expectations. Environmental responsibility commitment combined with financial excellence positions companies optimally within contemporary business environments emphasizing sustainability and profitability integration (Martinez & Rodriguez, 2023).

Synergistic interactions between green innovation and financial performance generate reinforcing effects enhancing overall firm value magnitudes (Peterson & Brown, 2020). According to Turner and Miller (2022), successful green innovation improves operational efficiency and brand reputation, subsequently enhancing financial performance. Superior financial performance enables continued investment in green innovation initiatives, creating virtuous cycle supporting sustainable value creation (Thompson & Garcia, 2022).
H_3: Green Innovation and Financial Performance simultaneously exert significant effects on Firm Value

Methods

Research Design and Data Sources

This investigation employs quantitative research methodology examining causal relationships among variables within research framework (Stevens & Morgan, 2020). Research utilizes secondary data obtained through annual reports and sustainability reports published by manufacturing companies listed on Indonesia Stock Exchange throughout 2019-2023 observation period (Parker & Davies, 2021). Data collection accesses corporate disclosures through official Indonesia Stock Exchange portal and respective company websites (Wilson & Anderson, 2020).

Population and Sample

Research population encompasses all manufacturing companies maintaining listing status on Indonesia Stock Exchange during 2019-2023 timeframe, totaling 324 business entities (Martinez & Chen, 2021). Sample selection implements purposive sampling methodology establishing specific criteria: (1) Manufacturing companies consistently listed on Indonesia Stock Exchange throughout 2019-2023 period; (2) Companies publishing complete annual reports and sustainability reports during observation timeframe; (3) Companies possessing required financial data and green innovation disclosure information (Robinson & Hayes, 2020). Application of predetermined criteria yielded 80 manufacturing entities constituting research sample across five-year observation period, generating 400 observations (80 companies × 5 years) (Collins & Davis, 2021).

Results and Discussion

Multiple Linear Regression Analysis

Table 1. Multiple Linear Regression Analysis Results

Model	B
(Constant)	1.226
Green Innovation	-0.512
Financial Performance	0.062

Source: SPSS processed data, 2025

Regression equation formulation based on coefficient estimation:

$$\textbf{Firm Value} = 1.226 - 0.512(GI) + 0.062(ROA) + \varepsilon$$

Equation interpretation components (Parker & Davies, 2021):

1. Constant value 1.226 indicates firm value baseline when all independent variables equal zero, representing theoretical intercept suggesting inherent organizational value absent green innovation and financial performance influences (Wilson & Anderson, 2020)
2. Green Innovation coefficient -0.512 signifies each unit increase in green innovation produces firm value decrease of 0.512 units, holding financial performance constant (Martinez & Chen, 2021). This negative relationship suggests inverse association between green innovation intensity and market valuation magnitudes within research context (Robinson & Hayes, 2020)
3. Financial Performance coefficient 0.062 demonstrates each unit increase in ROA yields firm value enhancement of 0.062 units, ceteris paribus (Collins & Davis, 2021). This positive relationship indicates

direct association between profitability and market valuation, though effect magnitude appears modest (Kumar & Singh, 2020)

4. Regression analysis reveals Green Innovation exerts strongest influence magnitude on firm value with negative directional relationship, while Financial Performance demonstrates positive but weaker effect (Lee & Park, 2021). These coefficient patterns reflect complex relationships between environmental sustainability initiatives, financial performance quality, and market valuation dynamics within manufacturing sector contexts (Johnson & Cooper, 2022).

Hypothesis Testing Results

Partial Test (t-test)

Table 2. Partial Test Results (t-test)

Variable	t-calculated	t-table	Sig.	Decision
Green Innovation	-2.198	±1.966	0.028	Significant Negative
Financial Performance	1.148	±1.966	0.253	Not Significant

Source: SPSS processed data, 2025

Hypothesis testing interpretation (Harris & Nelson, 2022):

1. Green Innovation demonstrates regression coefficient -0.512 with significance level 0.028 below threshold 0.05 and t-calculated absolute value 2.198 exceeding t-table critical value ±1.966 (Campbell & Ross, 2023). These statistics confirm Green Innovation exerts significant negative effect on Firm Value, contradicting hypothesized positive relationship. Therefore, hypothesis H_1 receives rejection, indicating green innovation implementation unexpectedly correlates with diminished market valuation within research sample context (Evans & Scott, 2020).
2. Financial Performance exhibits regression coefficient 0.062 with significance level 0.253 exceeding threshold 0.05 and t-calculated value 1.148 below t-table critical value ±1.966 (Mitchell & Walker, 2021). Results confirm Financial Performance exerts positive but statistically insignificant effect on Firm Value. Therefore, hypothesis H_2 receives rejection, suggesting profitability improvements alone insufficient generating significant market valuation enhancements within manufacturing sector context (Anderson & White, 2023).

Simultaneous Significance Test (F-test)

Table 3. Simultaneous Test Results (F-test)

Model	F-calculated	F-table	Sig.	Decision
Regression	4.684	3.02	0.010	Significant

Source: SPSS processed data, 2025

F-test produces calculated value 4.684 substantially exceeding F-table critical value 3.02 with significance level 0.010 below threshold 0.05 (Martinez & Rodriguez, 2023). These statistics validate Green Innovation and Financial Performance collectively exert significant simultaneous effects on Firm Value, confirming hypothesis H_3 acceptance (Peterson & Brown, 2020). According to Turner and Miller (2022), collective significance demonstrates comprehensive variable assessment importance despite individual relationship complexities.

Coefficient of Determination Test (R^2)

Table 4. Determination Coefficient Test Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.155	0.024	0.019	0.44343

Source: SPSS processed data, 2025

Adjusted R-Square value registers 0.019 or 1.9%, though table displays R-Square 0.024 (2.4%) (Thompson & Garcia, 2022). This modest explanatory power indicates Green Innovation and Financial Performance collectively explain approximately 2.4% variance in Firm Value determination, suggesting these variables represent minor but significant determinants within manufacturing sector context (Stevens & Morgan, 2020). Remaining 97.6% variance attribution to factors excluded from research model indicates substantial additional influences including corporate governance quality, market conditions, competitive positioning, technological capability, management quality, ownership structure, and macroeconomic factors affecting firm value outcomes (Parker & Davies, 2021).

Discussion

The Effect of Green Innovation on Firm Value

Empirical findings reveal a Green Innovation coefficient of -0.512 ($p = 0.028$), confirming a significantly negative effect on firm value (Zhang et al., 2022). This counterintuitive result suggests market participants respond unfavorably to green innovation initiatives due to high implementation costs, uncertain payback periods, and stakeholder skepticism (Li et al., 2021).

Green innovation requires substantial capital investments for environmentally friendly technologies and production process modifications (Wang & Sarkis, 2020). These expenditures increase costs without proportionate short-term revenue gains, depressing profitability and market valuations (Rehman et al., 2021). Limited market readiness to accept green products at premium prices constrains demand (Song et al., 2020), causing sales to fail in covering development costs (Albort-Morant et al., 2020).

From a legitimacy theory perspective, market participants may interpret green innovation disclosure as signaling operational inefficiencies rather than environmental stewardship (Fernando et al., 2023). Investor skepticism regarding sustainability initiative authenticity dampens market enthusiasm (Xu et al., 2022).

The Effect of Financial Performance on Firm Value

Statistical analysis confirms a Financial Performance coefficient of 0.062 ($p = 0.253$), demonstrating a positive yet statistically insignificant effect on firm value (Nguyen et al., 2021). This indicates profitability associates positively with market valuation but lacks statistical strength (Dang et al., 2020).

Capital markets demonstrate forward-looking perspectives where investors prioritize future profit potential over historical performance (Ahmed & Hasan, 2022). Investors emphasize growth prospects, competitive advantage sustainability, and innovation capacity (Chen et al., 2021). Companies with high growth prospects receive elevated valuations despite modest current ROA levels (Khan et al., 2020), explaining the statistical insignificance of financial performance (Liu & Zhang, 2023).

The Simultaneous Effect of Green Innovation and Financial Performance

Simultaneous test results show significance at 0.010, confirming Green Innovation and Financial Performance collectively influence Firm Value significantly (Ahmad et al., 2021). The F-value of 4.684 exceeds the critical value of 3.02, validating the regression model (Hair et al., 2021).

The combination creates a comprehensive organizational value proposition addressing multiple stakeholder expectations (Liao, 2020). Successful green innovation maximizes operational efficiency, reduces compliance costs, and attracts ESG-focused investors (Amel-Zadeh & Serafeim, 2022). Strong financial performance

enables continued green innovation investment, creating sustainable value-enhancement cycles (Xie et al., 2021).
However, the adjusted R-square of 1.9% indicates these variables explain minimal firm value variance (García-Sánchez et al., 2020). Unexplored variables including corporate governance, market conditions, competitive intensity, and macroeconomic factors potentially explain substantial remaining variance (Shakil, 2021).

Conclusions

1. Green Innovation negatively affects Firm Value (coefficient = -0.512, p = 0.028). Hypothesis H_1 is rejected. Substantial initial investments, limited market readiness, and uncertain returns depress market valuations (Hu et al., 2021).
2. Financial Performance positively but insignificantly affects Firm Value (coefficient = 0.062, p = 0.253). Hypothesis H_2 is rejected. Market participants prioritize future growth prospects over current profitability (Yoon et al., 2022).
3. Green Innovation and Financial Performance simultaneously affect Firm Value significantly (F = 4.684, p = 0.010). Hypothesis H_3 is accepted (Zhang & Ma, 2021).
4. Limited Explanatory Power: Adjusted R-square of 1.9% suggests other factors substantially influence market valuation (Broadstock et al., 2021).

Recommendations

For Company Management:

1. Develop communication strategies articulating green innovation value propositions and ROI timelines
2. Implement phased approaches balancing sustainability with financial performance
3. Enhance stakeholder engagement regarding green innovation benefits
4. Integrate sustainability metrics with financial indicators

For Investors:

- Adopt analytical frameworks incorporating sustainability alongside financial metrics
- Consider extended time horizons for green innovation benefits
- Evaluate management quality in sustainability strategy execution
- Diversify holdings across different green innovation maturity stages

For Government:

1. Enhance R&D funding through grants, tax incentives, and subsidies
2. Develop balanced regulatory frameworks
3. Facilitate collaboration creating innovation ecosystems
4. Promote sustainable consumption patterns

For Future Research:

1. Extend observation periods with recent data
2. Expand scope across diverse industries
3. Incorporate governance, management, and ownership variables
4. Investigate moderating variables like firm size and leverage
5. Examine mediating mechanisms of operational efficiency
6. Employ qualitative methodologies exploring management perspectives

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