

The Effect of Green Investment, Eco-efficiency, and Carbon Emission Disclosure on Firm Value

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Abstract

Growing apprehensions regarding environmental stewardship have amplified compulsory demands on corporations to assimilate conscientious practices into their operative strategies, particularly within capital markets that incorporate ethical and environmental screening criteria. This research aims to identify the bearing of green investment, eco-efficiency, and carbon emission disclosure on firm valuation among enterprises enumerated on the Indonesian Sharia Stock Index (ISSI) spanning the 2022–2024 period. A quantitative investigative approach with purposive sampling was employed, yielding 45 observations from 15 companies across three years. Ancillary data were procured from annual reports and sustainability reports and scrutinised through panel data regression utilising EViews 12. The empirical outcomes divulge that green investment exerts a propitious and consequential bearing on firm value, whereas eco-efficiency manifests a deleterious and statistically significant effect, intimating that market participants construe environmental efficiency undertakings as transient fiscal encumbrances rather than enduring value catalysts. Carbon emission disclosure demonstrates an affirmative yet inconsequential bearing on firm value. Concurrently, the three variables conjointly and substantively impinge upon firm value. These findings augment the burgeoning compendium of literature on sustainability conduct and firm valuation within the purview of Islamic capital markets, proffering empirical elucidations germane to investors, practitioners, and policymakers operating within Sharia-compliant investment frameworks.

Keywords: Carbon Emission Disclosure, Eco-efficiency, Firm Value, Green Investment.

1. Introduction

Growing concerns regarding climate change, environmental degradation, and greenhouse gas emissions have encouraged companies to adopt sustainability-oriented business strategies. Corporations are no longer appraised exclusively on the grounds of their financial performance but are equally adjudged upon their environmental and societal obligations. Consequently, sustainability conducts such as green investment, eco-efficiency, and carbon emission disclosure have assumed mounting prominence in underpinning enduring commercial viability and augmenting corporate competitiveness. Companies are expected to balance economic objectives with environmental responsibility in order to maintain business continuity and respond to increasing public and regulatory pressure regarding sustainable development.

Firm value reflects market perceptions regarding a company's current performance and future prospects. Higher firm value indicates stronger investor confidence in the company's ability to generate sustainable returns and maintain long-term growth. One of the commonly used indicators to measure firm value is Tobin's Q, which reflects how the market values a



company's assets relative to their book value. In the context of Islamic capital markets, investors not only consider financial performance but also evaluate ethical responsibility, sustainability, and social accountability. As a result, companies that successfully implement sustainability practices may obtain stronger market appreciation and increased firm value.

Stakeholder theory explains that companies are encouraged to implement sustainability-oriented strategies, such as green investment, eco-efficiency, and carbon emission disclosure, in order to meet stakeholder expectations and maintain long-term relationships with investors, regulators, and society. Companies that are able to fulfill stakeholder expectations regarding environmental responsibility are more likely to gain investor trust and improve corporate reputation. Meanwhile, legitimacy theory emphasizes that environmental responsibility and transparency are important instruments for maintaining corporate legitimacy and enhancing public trust. Through sustainability disclosure and environmentally responsible activities, companies attempt to demonstrate conformity with societal norms and environmental expectations, which may ultimately influence firm value.

Empirical phenomena discerned among enterprises enumerated on the Indonesian Sharia Stock Index (ISSI) divulge that the nexus between sustainability conduct and firm valuation remains discordant. By way of illustration, PT Indofood Sukses Makmur Tbk (INDF) underwent an accretion in its green investment score spanning 2022 to 2024, whilst its Tobin's Q ratio experienced a deterioration over the commensurate period. An analogous circumstance transpired at PT Industri Jamu dan Farmasi Sido Muncul Tbk (SIDO), which persistently upheld a commendable green investment score yet concurrently endured a diminution in firm valuation. Similar inconsistencies were also found in eco-efficiency and carbon emission disclosure variables. Several companies maintained ISO 14001 certification and disclosed substantial environmental information; however, these practices were not consistently followed by improvements in firm value. These phenomena suggest that sustainability practices do not always generate positive market responses, indicating a potential gap between theoretical expectations and investor perceptions in practice.

Antecedent empirical investigations have yielded discordant findings pertaining to the relationship between sustainability conduct and firm valuation. A considerable number of inquiries ascertained that green investment exerts a propitious bearing on firm value, owing to investors construing environmental expenditure as a harbinger of enduring viability and corporate stewardship. Conversely, other scholarly endeavours established that eco-efficiency and carbon emission disclosure fortify investor conviction and reinforce market valuation. However, some previous studies reported insignificant or even negative relationships, suggesting that sustainability initiatives are often perceived as additional operational costs that do not immediately generate financial benefits. These inconsistencies indicate that investor responses toward sustainability practices remain inconclusive, particularly in emerging Islamic capital markets such as Indonesia. These inconsistencies may arise from differences in market maturity, investor awareness, and the time horizon required for sustainability initiatives to generate financial benefits.

This inquiry proffers a meaningful contribution to the extant literature by scrutinising the concurrent bearing of green investment, eco-efficiency, and carbon emission disclosure on firm valuation among manufacturing enterprises enumerated on the Indonesian Sharia Stock Index (ISSI), a contextual domain that remains conspicuously underexamined in antecedent scholarly investigations. Unlike prior research that investigated these variables separately, this study integrates them into a single empirical framework to provide a broader understanding of how sustainability practices influence firm value within the Islamic capital market context.

In addition, this study provides empirical evidence regarding investor perceptions toward sustainability initiatives in Sharia-based investment environments. Therefore, this study fills the empirical gap by examining the simultaneous effect of green investment, eco-efficiency, and carbon emission disclosure on firm value within the ISSI context.

2. Literature Review

2.1. Stakeholder Theory

Stakeholder theory explicates that corporations bear accountability not exclusively toward shareholders but likewise toward a constellation of stakeholders, encompassing investors, patrons, regulators, employees, and the broader populace (Freeman et al., 2018). This theoretical precept underscores that corporations must dutifully satisfy stakeholder expectations in order to perpetuate enduring commercial viability and attain competitive ascendancy. Within the purview of sustainability conduct, stakeholder theory posits that corporations are impelled to espouse environmentally conscientious stratagems, such as green investment, eco-efficiency, and carbon emission disclosure, so as to consolidate stakeholder conviction and ameliorate corporate repute.

Companies that actively engage in sustainability initiatives are more likely to gain positive responses from investors because such activities signal long-term commitment to environmental responsibility and risk management. Consequently, stakeholder-oriented sustainability practices may improve market perceptions and ultimately enhance firm value. However, stakeholder responses toward sustainability activities may vary depending on investor awareness, market conditions, and the perceived economic benefits of environmental initiatives.

Nevertheless, the literature reveals notable divergences in how stakeholder theory is applied empirically. Freeman et al. (2018) original formulation treated stakeholder engagement as a broadly normative obligation, whereas subsequent studies have operationalised it more instrumentally, focusing on measurable outcomes such as firm value, investor returns, and reputation scores. This shift has been critiqued for reducing stakeholder accountability to a strategic calculus rather than a genuine ethical commitment (Donaldson & Preston, 1995). Furthermore, empirical substantiation pertaining to the nexus between stakeholder-oriented sustainability conduct and firm performance remains conspicuously equivocal: investigations conducted within developed markets predominantly yield affirmative associations, whereas corroborating evidence emanating from nascent economies proves considerably more nebulous, intimating that institutional milieu, regulatory preponderance, and investor discernment substantially attenuate the aforementioned relationship (Surroca et al., 2010). This variability indicates that stakeholder theory, while foundational, requires contextual calibration when applied to sustainability and environmental disclosure research.

2.2. Legitimacy Theory

Legitimacy theory elucidates that corporations perpetually endeavour to solicit societal acquiescence by ascertaining that their operational undertakings remain consonant with prevailing communal norms, axioms, and expectations (Suchman, 1995). Companies are expected to demonstrate social and environmental responsibility in order to maintain public trust and secure long-term business continuity. Environmental disclosure and sustainability reporting are therefore considered important instruments for obtaining and maintaining corporate legitimacy.

In the context of this study, legitimacy theory explains why companies disclose environmental information, including carbon emission disclosure, and implement sustainability-related initiatives. Through such disclosures, companies attempt to demonstrate conformity with environmental expectations and regulatory standards. Firms that successfully maintain legitimacy are more likely to gain positive public perception, stronger investor confidence, and improved firm value. Nevertheless, the effectiveness of legitimacy strategies depends on whether stakeholders perceive sustainability disclosures as substantive commitments or merely symbolic actions.

However, the literature reflects an important conceptual divide in how legitimacy-seeking behaviour is interpreted. Suchman (1995) distinguishes between substantive legitimacy, grounded in genuine organisational change, and symbolic legitimacy, achieved through impression management without corresponding operational reform. Empirical studies have found that a considerable share of corporate environmental disclosures align more closely with the latter, functioning as reputational management tools rather than reflections of actual environmental performance (Cho & Patten, 2007). This distinction is particularly consequential in carbon emission disclosure research, where greenwashing, the strategic use of disclosure to signal environmental responsibility while maintaining high-emission operations, has been documented across both developed and developing market contexts. Furthermore, while legitimacy theory and stakeholder theory are often applied in parallel, scholars have noted that they carry different explanatory logics: legitimacy theory foregrounds societal-level normative pressures, whereas stakeholder theory emphasises dyadic relationships with specific groups (Deegan, 2011). Recognising this distinction is important for interpreting why firms may disclose environmental information in ways that satisfy broad public expectations while falling short of the specific informational demands of investors or regulators.

2.3. Research Hypothesis

2.3.1. Green Investment and Firm Value

Green investment connotes corporate capital allocation channelled toward environmentally benign endeavours, renewable energy procurement, pollution abatement, and the judicious stewardship of finite resources. Such investment exemplifies a corporation's unwavering dedication to environmental perpetuity and protracted strategic advancement. According to stakeholder theory, green investment may strengthen investor confidence because environmentally responsible investments are often perceived as indicators of good corporate governance and sustainable business performance.

Antecedent empirical investigations have predominantly ascertained that green investment exerts a propitious bearing on firm valuation, owing to investors' proclivity to commend corporations that accord primacy to sustainability and environmental stewardship. Environmentally oriented capital allocation may likewise attenuate ecological hazards and ameliorate corporate repute, thereby augmenting market valuation. Notwithstanding, several scholarly endeavours have uncovered inconsequential relationships, contending that the pecuniary dividends of green investment may not be expeditiously materialised on account of substantial implementation expenditures and the protracted nature of returns. Based on stakeholder theory and previous empirical findings, this study proposes the following hypothesis:

H1: Green investment has a positive effect on firm value.

2.3.2. Eco-efficiency and Firm Value

Eco-efficiency refers to a company's ability to generate economic value while minimizing environmental impact through efficient resource utilization and environmentally friendly production processes. Eco-efficiency is commonly reflected through environmental management systems such as ISO 14001 certification. Companies implementing eco-efficiency are expected to improve operational effectiveness, reduce waste, and enhance sustainability performance.

From the perspective of stakeholder theory, eco-efficiency demonstrates corporate commitment to responsible environmental management, which may improve investor trust and corporate image. However, eco-efficiency implementation often requires substantial investment in technology, operational adjustments, and environmental management systems. Consequently, some investors may perceive eco-efficiency initiatives as short-term financial burdens rather than immediate value-generating activities.

Previous studies produced inconsistent findings regarding the relationship between eco-efficiency and firm value. Some studies found positive effects because eco-efficiency improves operational performance and environmental reputation, whereas others reported negative or insignificant effects due to high implementation costs and delayed financial benefits.

Therefore, this study proposes the following hypothesis:

H2: Eco-efficiency has a positive effect on firm value.

2.3.3. Carbon Emission Disclosure and Firm Value

Carbon emission disclosure refers to the extent to which companies disclose information regarding greenhouse gas emissions, emission reduction strategies, and environmental management activities. Carbon disclosure reflects corporate transparency and accountability regarding environmental impacts. Pursuant to legitimacy theory, corporations divulge carbon emission intelligence with the express intention of preserving societal acquiescence and manifesting conformity with prevailing communal expectations pertaining to environmental accountability.

Greater transparency regarding carbon emissions may strengthen investor confidence by reducing information asymmetry and improving corporate credibility. Corporations exhibiting more copious levels of carbon emission disclosure are likewise more predisposed to garner propitious public approbation and fortify their market valuation. Empirical studies conducted by Harnida et al. (2025) and Darmayanti et al. (2025) found that carbon emission disclosure positively affects firm value. However, several studies also suggested that investors in emerging markets may still prioritize short-term financial performance over environmental disclosure quality.

Therefore, the following hypothesis is proposed:

H3: Carbon Emission Disclosure has a positive effect on firm value.

2.4. Research Framework

The investigative framework delineated in Figure 1 elucidates that firm valuation is impinged upon by three principal independent variables, namely green investment, eco-efficiency, and carbon emission disclosure. Green investment epitomises a corporation's unwavering commitment to environmentally oriented capital allocation that may conceivably bolster enduring viability and fortify investor conviction. Eco-efficiency represents a company's ability to utilize resources efficiently while minimizing environmental impacts through environmentally friendly operational practices. Meanwhile, carbon emission disclosure reflects corporate transparency regarding greenhouse gas emissions and

environmental responsibility, which may influence stakeholder perceptions and market valuation (Setyaningsih & Arrahman, 2025).

According to stakeholder theory, companies implementing sustainability practices are expected to fulfill stakeholder expectations and strengthen corporate reputation, which may ultimately enhance firm value. In addition, legitimacy theory explains that companies seek legitimacy through environmental responsibility and transparency in sustainability reporting. Therefore, companies that actively engage in green investment, eco-efficiency, and carbon emission disclosure are expected to gain positive market responses and improve firm value.

Based on the theoretical framework and previous empirical findings, this study examines the influence of green investment, eco-efficiency, and carbon emission disclosure on firm value among companies listed on the Indonesian Sharia Stock Index (ISSI) during the 2022–2024 period. The proposed conceptual framework is presented in Figure 1.

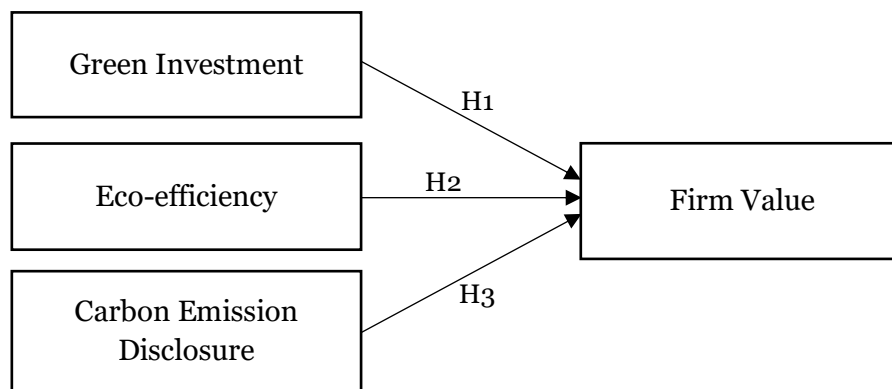


Figure 1. Research Framework
 Source: Researcher’s compilation, 2026

3. Methods

This inquiry employed a quantitative investigative approach underpinned by a causal-associative design to scrutinise the nexus between green investment, eco-efficiency, carbon emission disclosure, and firm valuation. A quantitative approach was deliberately espoused given that this study endeavours to empirically corroborate the bearing of independent variables on firm valuation through the utilisation of measurable numerical data and rigorous statistical interrogation. According to Sugiyono (2018), quantitative research is used to examine relationships among variables through systematic measurement and statistical procedures.

The population of encompassed manufacturing enterprises within the food and beverage sub-sector enumerated on the Indonesian Sharia Stock Index (ISSI) throughout the 2022–2024 period. The ISSI was deliberately designated given that corporations enlisted within the index are anticipated to adhere not exclusively to financial performance benchmarks but likewise to ethical and sustainability precepts consonant with Islamic investment axioms. The requisite research data were procured from annual reports and sustainability reports disseminated through the corporations' official digital repositories and the Indonesia Stock Exchange (IDX) portal.

This study employed purposive sampling to handpick corporations satisfying stipulated research criteria. Purposive sampling was judiciously espoused owing to the circumstance that not all corporations consistently divulged intelligence pertaining to green investment, eco-efficiency, carbon emission disclosure, and firm valuation throughout the observational

period. Consequently, exclusively corporations furnishing comprehensive and germane data were incorporated into the sample. The sampling criteria are delineated in Table 1.

Table 1. Sampling Criteria

Criteria	Sample
The total number of manufacturing companies in the food and beverage sub-sector for the 2022–2024 period.	30
Companies that were excluded from the Indonesian Sharia Stock Index (ISSI) and did not consistently remain listed during the 2022–2024 period.	(9)
Companies that did not provide complete data for the variables under study.	(6)
Number of Firms in the Sample	15
Observation Period (2022-2024)	3
Total sample over 3 years (15x3)	45

Source: Data processed, 2026

Based on the sampling criteria, 15 companies were selected as the final sample, resulting in 45 panel data observations over the three-year research period. The sample size was considered adequate because panel data analysis emphasizes data consistency and completeness across observation periods rather than large cross-sectional observations. In addition, the selected sample was considered representative of manufacturing companies implementing sustainability-related practices within the ISSI context.

This inquiry employed panel data regression analysis utilising EViews 12 software. Panel data regression was deliberately espoused given that it amalgamates cross-sectional and time-series data, facilitating the analytical capacity to simultaneously capture inter-corporate disparities and temporal fluctuations. In contradistinction to conventional cross-sectional or time-series analysis, panel data regression proffers more efficacious estimators and augmented data variability, thereby ameliorating the precision of the analytical outcomes.

The dependent variable in this inquiry is firm valuation, quantified through the Tobin's Q metric. The independent variables encompass green investment, eco-efficiency, and carbon emission disclosure. Green investment epitomises environmentally oriented corporate capital allocation, eco-efficiency connotes operational proficiency in attenuating environmental repercussions, and carbon emission disclosure reflects the magnitude of environmental transparency pertaining to greenhouse gas emanations. The operational delineations and mensuration of variables are expounded in Table 2.

Table 2. Operational Definitions and Measurement of Variables

Variable	Definition	Measurement
Green Investment	Green investment refers to corporate investments in activities that support sustainable environmental management, such as energy efficiency, waste management, and the use of environmentally friendly technologies (Astuti et al., 2025).	PROPER 1-5
Eco-efficiency	Eco-efficiency refers to a company's ability to manage resources and energy efficiently in order to produce goods with minimal environmental impact (Yuliandhari et al., 2023).	Dummy 1 = Companies that possess ISO 14001 certification 0 = Companies without ISO 14001 certification

Carbon Emission Disclosure	According to Sari et al. (2025), disclosure levels about greenhouse gas emissions from a company's operational operations are referred to as Carbon Emission Disclosure (CED).	$CED = \frac{\text{Number of disclosure items disclosed}}{\text{Total disclosure items}}$
Firm Value	Firm value reflects investors' perceptions of a company's ability to effectively manage its resources to enhance shareholder wealth (Noor & Ginting, 2022).	$\text{Tobin's Q} = \frac{\text{Market Value of Equity} + \text{Total Liabilities}}{\text{Total Assets}}$

As summarized in Table 2, this investigation encompasses four variables: green investment, eco-efficiency, Carbon emissions and firm value disclosure. "Green investment" refers to capital expenditures made by corporations in areas like as such management, energy efficiency, and eco-friendly technologies (Astuti et al., 2025). Using a scale from 1 to 5, the PROPER grading system evaluates eco-friendly investments. According to Yuliandhari et al. (2023), eco-efficiency is the ability to manage resources and energy effectively in order to manufacture things with little environmental impact. Companies who have received ISO 14001 certification are given a rating of 1. Companies without ISO 14001 certification were assigned a score of 0. The amount of information that a corporation discloses about its greenhouse gas emissions from operations is measured by carbon emission disclosure (CED), according to Sari et al. (2025). The disclosure index was calculated by dividing the number of disclosed items by the total disclosure items. Firm value, which investors use to gauge a company's success and future prospects, may be calculated using Tobin's Q, which is the ratio of market equity plus liabilities to total book value of assets (Noor & Ginting, 2022).

4. Results and Discussion

4.1. Research Results

4.1.1. Descriptive Statistical Analysis

The breadth, minimum threshold, arithmetic mean, and standard deviation of all pertinent variables were computed through descriptive statistical interrogation. The corresponding outcomes are expounded in Table 3.

Table 3. Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Green Investment	45	3	5	3.177778	0.613814
Eco-Efficiency	45	0	1	0.622222	0.490310
Carbon Emission Disclosure	45	0.50	0.94	0.741111	0.142657
Firm Value	45	-0.415515	2.358020	0.708738	0.690202
Valid N (listwise)	45				

Source: Data processed, 2026

As presented in Table 3, the descriptive statistics indicate considerable variation in firm value among the sampled companies, reflecting differences in market valuation and investor perceptions. Green investment demonstrates relatively limited variation, suggesting that most ISSI-listed companies have implemented environmentally oriented investment activities as part of their sustainability strategies. Eco-efficiency also varies across firms, indicating

differences in the adoption of environmentally efficient operational practices. Meanwhile, carbon emission disclosure exhibits relatively high average values with limited variation, suggesting that environmental transparency and carbon-related disclosure practices have become increasingly common among ISSI-listed companies.

4.1.2. Model Estimation

Panel data model estimation was executed through the application of the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). Model adjudication was subsequently undertaken employing the Chow, Hausman, and Lagrange Multiplier (LM) tests to ascertain the most apposite estimation model befitting the investigative objectives.

4.1.3. Model Selection

The Chow test results indicate that the Fixed Effect Model was preferred over the Common Effect Model ($p < 0.05$). However, the Hausman test results ($p > 0.05$) suggested that the Random Effect Model was more appropriate. Furthermore, the Lagrange Multiplier test confirmed the suitability of the Random Effect Model for this study.

4.1.4. Classical Assumption Test

The classical assumption test results and partial t-test outcomes are reported in Table 4. As shown, the research model meets all classical assumption criteria including normality, multicollinearity, and autocorrelation. The table also presents the effect of each independent variable on firm value.

Table 4. Classical Assumption Test Results

Model	Normality Test	Multicollinearity Test	Autocorrelation Test
	Asymp. Sig.	VIF	Durbin-Watson
(Constant)	0.554298		1.768947
Green Investment		1.126771	
Eco-efficiency		1.125599	
Carbon Emission Disclosure		1.174839	

Dependent Variable: Firm Value

Source : Eviews 12, 2026

To ascertain that the regression model attains BLUE compliance, a battery of classical assumption diagnostics was administered. A probability value of 0.554298 (> 0.05) was procured from the normality test employing the Jarque-Bera statistic, corroborating that the residuals conform to a normal distribution. All three independent variables ($X_1 = 1.126771$; $X_2 = 1.125599$; and $X_3 = 1.174839$) yielded Variance Inflation Factor (VIF) magnitudes below the threshold of 10, substantiating the absence of deleterious intercorrelation among them, as corroborated by the multicollinearity diagnostic.

Within the stipulated bounds of 1.6662 to 2.3338, the autocorrelation examination employing the Durbin-Watson statistic yielded a value of 1.768947, intimating that the model is devoid of autocorrelation and is thereby deemed amenable for subsequent analytical deliberation.

4.1.5. Panel Data Regression Analysis

Predicated upon the estimation outcomes of the Random Effect Model (REM), the regression equation may be articulated as follows:

$$Y = 0.186608 + 0.202782X_1 - 0.353035X_2 + 0.101327X_3 + \epsilon$$

The model interpretation, substantiated by the constant of 0.186608, stipulates that firm valuation retains a propitious magnitude even when all independent variables are concurrently reduced to zero. The affirmative bearing of green investment on firm valuation (coefficient of 0.202782) intimates that an accretion in green investment characteristically precipitates a corresponding aggrandisement in corporate worth.

A negative correlation of -0.353035 for eco-efficiency, on the other hand, suggests that, at least in the near run, a rise in environmental efficiency is correlated with a fall in firm value. This finding may indicate that the financial benefits of eco-efficiency initiatives are not immediately realized by investors.

4.1.6. T-test

To determine how carbon emission disclosure (CED), eco-efficiency, and green investment all contribute to firm value, we use a partial t-test. Table 5 presents the t-test results.

Table 5. T Test Results

Model	Unstandardized		T-Stat	Sig.
	Coefficients			
	B	Std. Error		
(Constant)	0.185599	0.471414	0.393706	0.6958
Green Investment	0.212678	0.101749	2.090227	0.0428
Eco-efficiency	-0.283351	0.093154	-3.041760	0.0041
Carbon Emission Disclosure	0.031848	0.542539	0.058703	0.9535

Source: EViews 12 Output

The partial t-test findings show that green investment significantly impacts business value in a favourable way ($p = 0.0428 < 0.05$). Additionally, eco-efficiency has a significant impact, although a negative one ($p = 0.0041 < 0.05$). Firm value is unaffected by carbon emission disclosure ($p = 0.9535 > 0.05$).

4.1.7. F-test

Table 6 displays the F-value and p-value that were obtained from the simultaneous F-test. These numbers are needed to establish whether green investment, eco-efficiency, and carbon emission disclosure all have an impact on the value of a company's stock.

Table 6. F Test Results

Regression Model	F-value	Prob	Sig	Desc.
Random Effect Model	4.189286	0.011240	0.05	Significant

Source: EViews 12 Output

The outcomes of the F-test divulge an F-statistic of 4.189286 accompanied by a probability value of 0.011240 (< 0.05), intimating that all independent variables conjointly exert a consequential and substantive bearing on firm valuation.

4.1.8. Coefficient of Determination Test

Table 7 proffers the outcomes of the coefficient of determination analysis, wherein the R, R Square, and Adjusted R Square statistics are deployed to gauge the magnitude to which green investment, eco-efficiency, and carbon emission disclosure conjointly elucidate the variance inherent in firm valuation.

Table 7. Determination Coefficient Test Results

Model	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.234616	0.178612	0.159665

Source: EViews 12 Output

Table 7 proffers the outcomes of the coefficient of determination analysis, which gauges the elucidatory potency of green investment, eco-efficiency, and carbon emission disclosure on firm valuation. The Adjusted R-Square magnitude of 0.178612 intimates that approximately 17.86% of the fluctuation in firm valuation is explicable by the independent variables encompassed within this inquiry, namely green investment, eco-efficiency, and carbon emission disclosure.

Meanwhile, the remaining 82.14% is influenced by other factors outside the research model that were not examined in this study, such as profitability, firm size, leverage, corporate governance, and macroeconomic conditions. Although the explanatory power of the model is relatively moderate, the results indicate that sustainability-related variables still contribute to explaining variations in firm value among companies listed on the Indonesian Sharia Stock Index (ISSI).

4.2. Discussion

4.2.1. The effect of green investment on firm value in Manufacturing Companies Listed in the Indonesian Sharia Stock Index

The empirical outcomes divulge that green investment exerts a propitious bearing on firm valuation, as corroborated by a t-statistic magnitude of 2.090227 and a probability value of 0.0428 (< 0.05). This substantiation intimates that corporations effectuating more copious levels of environmentally oriented capital allocation tend to attain more elevated market valuations. Investors may construe green investment as an auspicious harbinger of sustainability dedication, environmental stewardship, and protracted commercial perpetuity.

This result supports Stakeholder Theory proposed by Freeman et al. (2018), which suggests that companies fulfilling stakeholder expectations through sustainability initiatives are more likely to gain investor trust and strengthen corporate reputation. Green investment may also reduce environmental risks and enhance long-term competitive advantage, thereby contributing to higher firm value.

In the context of companies listed on the Indonesian Sharia Stock Index (ISSI), green investment may reflect alignment with Islamic investment principles emphasizing ethical responsibility, sustainability, and social accountability. Consequently, investors in the Islamic capital market may respond positively to companies demonstrating strong environmental commitment through green investment activities.

The findings of this study are consistent with previous studies conducted by Maharani et al. (2024), Widarwati et al. (2024), Astuti et al. (2025), and Lisandri et al. (2026), which found that green investment positively influences firm value. However, the findings contradict studies conducted by Asyura et al. (2023) and Sulistiani and Latrini (2025), who reported that green investment does not significantly affect firm value. These inconsistencies may arise from

differences in industrial characteristics, market conditions, environmental regulations, investor awareness, and the time horizon required for sustainability initiatives to generate financial benefits.

4.2.2. The effect of eco-efficiency on firm value in Manufacturing Companies Listed in the Indonesian Sharia Stock Index

The findings reveal that eco-efficiency negatively influences firm value, as reflected by a t-statistic value of -3.041760 and a probability value of 0.0041 (< 0.05). This result indicates that investors tend to perceive eco-efficiency initiatives as short-term financial burdens because companies are required to allocate substantial resources to environmentally friendly technologies, environmental management systems, and operational adjustments.

In the context of the Indonesian capital market, particularly among companies listed on the Indonesian Sharia Stock Index (ISSI), investors still appear to prioritize short-term profitability and immediate financial performance over long-term environmental efficiency benefits. Although eco-efficiency is expected to improve operational effectiveness and reduce environmental impacts, the economic benefits of sustainability initiatives are generally realized gradually and are not immediately reflected in market valuation. Consequently, the market may respond negatively when firms allocate significant expenditures to environmental efficiency programs without generating direct short-term financial returns.

From the perspective of Stakeholder Theory proposed by Freeman et al. (2018), environmentally responsible practices are expected to strengthen stakeholder trust and enhance corporate reputation. However, the findings of this study suggest that stakeholder expectations in emerging markets such as Indonesia remain largely dominated by financial considerations. Investors may appreciate sustainability initiatives conceptually; nevertheless, profitability and dividend potential continue to be the primary considerations in evaluating firm value.

Furthermore, within the Islamic capital market context, sustainability practices are theoretically aligned with Islamic principles, emphasizing ethical responsibility, environmental balance, and long-term welfare. Despite this alignment, sustainability strategies may not yet be fully appreciated by investors due to limited market awareness regarding the long-term economic benefits of eco-efficiency practices. This condition indicates that sustainability awareness and environmentally oriented investment behavior within the Indonesian Islamic capital market are still developing.

The findings are consistent with previous studies conducted by Fauziah et al. and Saputra and Widodo, which reported a negative relationship between eco-efficiency and firm value. However, the results contradict the findings of Atiningsih and Setiyono (2023), Noor et al. (2022), and Anjarsari and Ilmiddaviq (2023), which found that eco-efficiency positively affects firm value. These inconsistencies may be attributed to differences in industrial characteristics, investor perceptions, environmental awareness, market maturity, and the time horizon required for sustainability initiatives to generate financial benefits.

4.2.3. The effect of carbon emission disclosure on firm value in Manufacturing Companies Listed in the Indonesian Sharia Stock Index

The findings suggest that carbon emission disclosure is positively associated with firm value; however, the relationship is statistically insignificant, as reflected by a t-statistic value of 0.058703 and a probability value of 0.9535 (> 0.05). This result indicates that although companies disclose carbon emission information as part of sustainability reporting, investors may not yet consider such disclosure a major determinant of firm value.

Pursuant to Legitimacy Theory, corporations divulge environmental intelligence with the deliberate intention of preserving societal acquiescence and manifesting conformity with prevailing communal and regulatory expectations pertaining to environmental stewardship. Carbon emission disclosure may help companies improve transparency and reduce information asymmetry between firms and stakeholders. However, the insignificant effect found in this study indicates that environmental disclosure alone may be insufficient to significantly influence investor decision-making within the Indonesian capital market.

From the vantage point of Stakeholder Theory, carbon emission disclosure epitomises a corporation's endeavour to fulfil stakeholder anticipations pertaining to environmental transparency and accountability. Notwithstanding, investors may yet accord greater preponderance to financial performance indicators rather than the calibre of environmental disclosure when adjudicating firm valuation.

The findings are consistent with studies conducted by Adrizky et al. (2025), Siswati and Sumayyah (2025), and Nugraha (2024), which found that carbon emission disclosure does not significantly affect firm value. However, the results contradict studies conducted by Harnida et al. (2025) and Darmayanti et al. (2025), which reported a significant positive effect of carbon emission disclosure on firm value.

5. Conclusion

This inquiry proffers empirical substantiation pertaining to the bearing of green investment, eco-efficiency, and carbon emission disclosure on the firm valuation of manufacturing enterprises enumerated on the Indonesian Sharia Stock Index (ISSI) throughout the 2022–2024 period. The empirical outcomes divulge that green investment substantively ameliorates firm valuation, intimating that investors respond propitiously to environmentally oriented capital allocation and sustainability dedications. In contrast, eco-efficiency is negatively associated with firm value, indicating that investors may still perceive environmental efficiency initiatives as short-term financial burdens. Meanwhile, carbon emission disclosure demonstrates a positive but insignificant relationship with firm value, implying that environmental transparency has not yet become a major consideration in investor decision-making.

This inquiry augments the extant literature by concurrently scrutinising green investment, eco-efficiency, and carbon emission disclosure within the contextual purview of the Indonesian Islamic capital market. The findings also provide practical implications for companies and investors regarding sustainability-oriented business strategies. Companies should prioritize sustainability initiatives that generate measurable long-term economic benefits in order to strengthen investor confidence and improve market valuation. In addition, companies are encouraged to improve the quality of environmental disclosure and sustainability implementation to enhance transparency, corporate reputation, and long-term business sustainability.

The Adjusted R-Square magnitude of 17.86% intimates that firm valuation is likewise impinged upon by extraneous determinants transcending the boundaries of the investigative model. This inquiry is further circumscribed by the comparatively abbreviated observational period and the constrained sample magnitude. Therefore, future studies are recommended to include additional variables, larger samples, and longer observation periods in order to obtain more comprehensive findings regarding sustainability practices and firm value.

6. References

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