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The Impact of Climate Finance and Corporate Sustainability on Firm Value in Multinational Companies in Indonesia

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ABSTRACT

This study examines the impact of climate finance and corporate sustainability on firm value in multinational companies operating in Indonesia. Using a quantitative approach, data were collected from 125 respondents through a structured questionnaire measured on a Likert scale. The analysis was conducted using Structural Equation Modeling–Partial Least Squares (SEM-PLS 3) to evaluate both direct and indirect relationships among variables. The results indicate that climate finance has a positive and significant effect on firm value, while corporate sustainability demonstrates a stronger positive influence. Furthermore, climate finance significantly affects corporate sustainability, indicating its role as a key driver of sustainability practices. Mediation analysis reveals that corporate sustainability partially mediates the relationship between climate finance and firm value, with a significant indirect effect. These findings suggest that the value of climate finance is maximized when it is effectively translated into sustainability practices. The study contributes to the literature by providing empirical evidence from an emerging market context and highlights the importance of integrating financial and sustainability strategies to enhance firm value. Practical implications emphasize the need for managers and policymakers to strengthen sustainability-oriented financial mechanisms to support long-term corporate performance and environmental responsibility.

Keywords: *Climate Finance, Corporate Sustainability, Firm Value, SEM-PLS, Multinational Companies*

1. INTRODUCTION

The escalating intensity of global climate change has fundamentally reoriented the priorities of governments, investors, and corporations, positioning sustainability as a central pillar in contemporary economic decision-making. Climate-related risks—encompassing both physical risks such as extreme weather disruptions and transition risks arising from regulatory shifts—have significantly reshaped corporate strategic behavior, particularly in capital allocation and long-term investment planning [1], [2]. Within this evolving landscape, climate finance has emerged as a pivotal mechanism for mobilizing capital toward environmentally sustainable initiatives, including carbon reduction, energy efficiency enhancement, and green innovation [3], [4]. For multinational enterprises operating in emerging economies, the integration of climate finance is no longer a peripheral consideration but a strategic imperative for maintaining competitiveness in a sustainability-driven global market [5], [6].

Indonesia, as one of the largest emerging economies and a critical node in global supply chains, presents a paradoxical context characterized by both significant environmental challenges and substantial opportunities for sustainable investment [6]. Persistent issues such as deforestation, high carbon emissions, and vulnerability to climate-induced disasters coexist with the country's rich natural resource base and increasing regulatory commitment to environmental governance. Consequently, multinational corporations operating in Indonesia face intensifying pressure from diverse stakeholders including institutional investors, regulatory bodies, and environmentally conscious consumer to adopt sustainability-oriented business models. This pressure has accelerated the institutionalization of corporate sustainability frameworks, particularly those aligned with

environmental, social, and governance (ESG) principles, as integral components of corporate strategy [7]–[9].

From a theoretical standpoint, corporate sustainability has been widely acknowledged as a critical determinant of long-term firm performance and value creation. Firms that embed sustainability into their operational and strategic processes tend to exhibit superior risk management capabilities, enhanced corporate reputation, and stronger stakeholder trust. These attributes collectively contribute to improved firm value, both in market-based and accounting-based measures [10]–[12]. However, despite the growing consensus on the importance of sustainability, empirical findings regarding its impact on firm value remain inconclusive and highly context-dependent, particularly in emerging markets where institutional quality, regulatory enforcement, and market maturity vary significantly.

In parallel, climate finance plays a crucial enabling role in facilitating corporate transitions toward sustainable business models. Access to green financial instruments—such as green bonds, sustainability-linked loans, and climate investment funds—provides firms with the necessary financial capacity to undertake environmentally responsible projects without compromising financial performance [13], [14]. Theoretically, climate finance can enhance firm value through multiple transmission mechanisms, including cost efficiency improvements, risk mitigation, and increased investor confidence. Nevertheless, empirical evidence on the direct linkage between climate finance and firm value remains limited, especially within the context of multinational corporations in emerging economies such as Indonesia.

More importantly, the interplay between climate finance and corporate sustainability introduces a critical yet underexplored dimension. It is theoretically plausible that corporate sustainability functions as a mediating mechanism through which climate finance influences firm value. Specifically, firms that effectively leverage climate finance may strengthen their sustainability performance, which subsequently translates into enhanced firm valuation. Despite its conceptual relevance, this mediating role has received limited empirical attention in prior research, particularly in developing country contexts where sustainability practices are still evolving and institutional pressures differ from those in developed markets.

Based on these considerations, this study addresses three primary research questions. First, it examines the direct effect of climate finance on firm value in multinational companies operating in Indonesia. Second, it investigates the influence of corporate sustainability on firm value. Third, it analyzes the mediating role of corporate sustainability in the relationship between climate finance and firm value. By integrating financial and sustainability perspectives, this study aims to provide a more comprehensive understanding of the determinants of firm value in emerging market settings.

This research offers several contributions. Empirically, it extends the literature by providing evidence from an underexplored emerging market context. Theoretically, it advances the integration of climate finance and corporate sustainability within a unified analytical framework. Methodologically, it employs Structural Equation Modeling–Partial Least Squares (SEM-PLS) to capture complex interrelationships among constructs. Practically, the findings are expected to inform corporate managers, investors, and policymakers in designing strategies that align financial performance with sustainability objectives.

In sum, as multinational firms navigate the dual pressures of economic growth and environmental responsibility, understanding the synergistic role of climate finance and corporate sustainability becomes increasingly critical. This study provides a timely and contextually grounded

examination of how sustainable financial mechanisms can enhance firm value in a rapidly transforming global economy.

2. LITERATURE REVIEW

2.1 Grand Theory

2.1.1 Stakeholder Theory

Stakeholder Theory posits that firms are not solely responsible to shareholders but to a broader set of stakeholders, including customers, employees, governments, communities, and the environment. In the context of climate finance and corporate sustainability, this theory provides a foundational framework for understanding why firms adopt environmentally responsible practices [15], [16]. Multinational companies operating in Indonesia face increasing pressure from both global and local stakeholders to demonstrate accountability in environmental and social dimensions. Climate finance initiatives, such as investments in low-carbon technologies or green projects, are often driven by stakeholder expectations. Consequently, firms that respond effectively to these expectations are more likely to enhance their legitimacy and, ultimately, their firm value [16], [17].

2.1.2 Legitimacy Theory

Legitimacy Theory suggests that organizations continuously seek to align their operations with societal norms and expectations to maintain legitimacy. Corporate sustainability practices and the disclosure of environmental performance are mechanisms through which firms signal their compliance with societal values [18]–[20]. In emerging markets like Indonesia, where environmental issues are increasingly scrutinized, multinational companies utilize sustainability reporting and climate finance initiatives to maintain their social license to operate. Firms that successfully achieve legitimacy are more likely to gain investor confidence, which positively affects firm value.

2.1.3 Resource-Based View (RBV)

The Resource-Based View (RBV) explains that firms gain competitive advantage through valuable, rare, inimitable, and non-substitutable resources. Corporate sustainability can be conceptualized as a strategic resource that enhances firm capabilities, such as innovation, operational efficiency, and risk management [21]–[23]. Climate finance enables firms to access resources necessary for sustainable transformation, such as capital for green investments. Therefore, firms that effectively integrate sustainability into their resource base are expected to achieve superior performance and higher firm value.

2.2 Applied Theory

2.2.1 Climate Finance

Climate finance refers to financial flows directed toward projects and initiatives that mitigate or adapt to climate change, encompassing instruments such as green bonds, sustainability-linked loans, and climate funds. From a financial theory perspective, access to such financing can lower the cost of capital, enhance the efficiency of capital allocation, and support long-term investment strategies oriented toward sustainability [2]–[4]. In the context of multinational firms, climate finance is frequently embedded

within strategic investment decisions that simultaneously address environmental challenges and generate economic value. Empirically, the relationship between climate finance and firm value operates through several key mechanisms: it reduces firms' exposure to environmental risks and potential regulatory penalties, strengthens corporate reputation thereby shaping investor perceptions, and stimulates innovation by enabling investments in sustainable technologies [5], [6]. Nevertheless, the extent to which climate finance contributes to firm value is contingent upon the firm's ability to effectively integrate these financial resources into a coherent and comprehensive corporate sustainability strategy.

2.2.2 Corporate Sustainability

Corporate sustainability refers to the integration of environmental, social, and governance (ESG) considerations into business operations and strategic decision-making processes, encompassing practices such as resource efficiency, environmental protection, social responsibility, and ethical governance [7], [8]. This concept is closely aligned with the triple bottom line approach, which emphasizes the simultaneous pursuit of economic, social, and environmental performance. Empirical evidence indicates that corporate sustainability contributes positively to firm value by enhancing operational efficiency, mitigating risks, and strengthening corporate reputation. In multinational corporations, sustainability practices are often standardized across global operations, enabling firms to achieve economies of scale while maintaining consistency in ESG performance [24], [25]. Within the Indonesian context, the relevance of corporate sustainability has intensified in response to evolving regulatory frameworks and increasing stakeholder awareness, positioning sustainability as a critical determinant of long-term competitiveness and value creation.

2.2.3 Firm Value

Firm value represents the overall economic worth of a company, commonly reflected in market-based indicators such as stock price, market capitalization, or Tobin's Q, and is shaped by both financial performance and non-financial dimensions, including corporate governance and sustainability practices. In recent years, investors have increasingly incorporated ESG performance into their evaluation frameworks, particularly in the context of long-term investment decisions that emphasize resilience and risk management [26], [27]. The linkage between sustainability and firm value can be explained through signaling theory, which posits that firms utilize sustainability disclosures as credible signals of their quality, transparency, and future prospects to the market. Consequently, firms demonstrating strong sustainability performance are more likely to attract investor confidence, secure greater capital inflows, and ultimately achieve higher market valuations.

2.3 Conceptual Frameworkand Hypothesis Development

Climate finance is expected to exert a positive influence on firm value, as firms that effectively access and utilize climate-related financial resources are better positioned to invest in sustainable projects that enhance operational efficiency and reduce long-term costs. Beyond its financial function, climate finance also serves as a strategic signal of a firm's commitment to environmental responsibility, thereby strengthening investor confidence and market perception. In parallel, corporate sustainability contributes to

firm value through multiple pathways, including improved operational performance, risk mitigation, and enhanced corporate reputation, which collectively support long-term growth and investment attractiveness. Furthermore, climate finance plays a catalytic role in advancing corporate sustainability by providing the financial capacity required to implement ESG-oriented initiatives. Firms that benefit from such financing are more likely to adopt sustainable practices and improve their overall ESG performance, reinforcing the strategic alignment between financial resources and sustainability outcomes.

At a more integrative level, corporate sustainability is expected to mediate the relationship between climate finance and firm value. The mere availability of climate finance does not automatically translate into higher firm valuation unless it is effectively operationalized into tangible sustainability practices. By strengthening sustainability performance, firms are able to optimize the economic and reputational benefits derived from climate finance, thereby enhancing overall firm value. Based on this theoretical and empirical foundation, this study proposes a conceptual framework that positions climate finance as an exogenous variable influencing firm value both directly and indirectly, with corporate sustainability acting as a mediating construct that amplifies the effectiveness of climate finance in driving firm valuation.

H1: Climate finance has a positive effect on firm value.

H2: Corporate sustainability has a positive effect on firm value.

H3: Climate finance has a positive effect on corporate sustainability.

H4: Corporate sustainability mediates the relationship between climate finance and firm value.

3. METHODS

3.1 Research Design and Approach

This study employs a quantitative research design to examine the causal relationships between climate finance, corporate sustainability, and firm value in multinational companies operating in Indonesia, adopting an explanatory approach aimed at testing hypotheses grounded in established theoretical frameworks, including Stakeholder Theory, Legitimacy Theory, and the Resource-Based View (RBV). A cross-sectional design is utilized, with data collected at a single point in time through a structured questionnaire, enabling the objective measurement of variables and supporting statistical generalization of findings. To capture the complexity of the relationships among constructs, particularly the mediating role of corporate sustainability, the study applies Structural Equation Modeling–Partial Least Squares (SEM-PLS 3), a method well-suited for predictive analysis and effective in handling relatively small sample sizes while accommodating complex model structures.

3.2 Population and Sample

The population of this study comprises multinational companies operating in Indonesia across a range of sectors, including manufacturing, energy, finance, and services. These firms are selected due to their substantial exposure to global sustainability standards and climate-related financial practices, which makes them relevant units of analysis for examining the interaction between climate finance, corporate sustainability, and firm value.

The sampling technique applied is purposive sampling, with criteria designed to ensure the relevance and validity of the data collected. Specifically, the sample includes: (1) companies categorized as multinational corporations operating in Indonesia; (2) firms that have implemented

sustainability practices or ESG-related initiatives; and (3) respondents occupying managerial or supervisory positions who are directly involved in finance, sustainability, or strategic decision-making processes. Based on these criteria, a total of 125 respondents were selected, a sample size that satisfies the minimum requirements for Structural Equation Modeling–Partial Least Squares (SEM-PLS), which is considered robust for small to medium sample sizes.

3.3 Data Types and Sources

This study utilizes primary data collected directly from respondents through a structured questionnaire designed to capture perceptions and practices related to climate finance, corporate sustainability, and firm value. The measurement of variables is conducted using a five-point Likert scale, where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree, allowing for the quantification of subjective assessments into measurable data. This approach facilitates robust statistical analysis, particularly through Structural Equation Modeling–Partial Least Squares (SEM-PLS), by enabling the systematic evaluation of relationships among constructs based on respondents' perceptions.

3.4 Operational Definition of Variables

This study incorporates three principal variables: the independent variable, Climate Finance (CF), which reflects the extent to which firms access and utilize financial resources for climate-related initiatives, measured through indicators such as investment in green projects, access to sustainable financing instruments (e.g., green bonds and ESG funds), allocation of budgets for environmental initiatives, and the integration of climate risk into financial planning; the mediating variable, Corporate Sustainability (CS), which represents the firm's commitment to environmental, social, and governance (ESG) practices, operationalized through indicators including environmental performance (e.g., energy efficiency and emissions reduction), social responsibility (e.g., employee welfare and community engagement), and governance practices (e.g., transparency and ethical standards); and the dependent variable, Firm Value (FV), which captures the perceived economic worth of the company, measured through indicators such as financial performance perception, market competitiveness, investor attractiveness, and long-term growth prospects.

3.5 Data Collection Technique

Data collection was carried out through the distribution of online questionnaires to respondents who met the predefined sampling criteria, following a systematic procedure that included designing the questionnaire based on validated constructs from prior studies, conducting pilot testing to ensure the clarity and reliability of the measurement items, disseminating the instrument via digital platforms such as email and online forms, and performing data screening to verify the completeness and consistency of the responses prior to analysis.

3.6 Data Analysis Technique

The data analysis in this study utilizes Structural Equation Modeling–Partial Least Squares (SEM-PLS 3), which is conducted in two primary stages [28]. The first stage involves the evaluation of the measurement model (outer model) to assess the validity and reliability of the constructs. Convergent validity is examined through factor loadings exceeding 0.70 and Average Variance Extracted (AVE) values above 0.50, while discriminant validity is evaluated using the Fornell-Larcker criterion and cross-loading analysis. Reliability is assessed through Composite Reliability and Cronbach's Alpha, both of which are required to exceed the threshold of 0.70 to ensure internal consistency of the measurement items.

The second stage focuses on the structural model (inner model) to test the hypothesized relationships among variables. This includes the analysis of path coefficients to determine the strength and direction of relationships, as well as t-statistics and p-values obtained through

bootstrapping procedures at a 5% significance level. The explanatory power of the model is assessed using the coefficient of determination (R^2), while effect size (f^2) is used to evaluate the relative impact of exogenous variables. Additionally, predictive relevance (Q^2) is examined to determine the model's predictive capability. To test the mediating role of corporate sustainability, mediation analysis is conducted using bootstrapping to assess indirect effects, where mediation is confirmed if the indirect effect is statistically significant and the magnitude of the direct effect decreases upon the inclusion of the mediating variable.

4. RESULTS AND DISCUSSION

4.1 Respondent Profile

The respondents in this study consisted of managers, supervisors, and professional staff from multinational companies operating in Indonesia. A total of 125 valid questionnaires were analyzed. Most respondents were involved in finance, sustainability, corporate planning, operations, or strategic management, making them relevant to evaluate climate finance, corporate sustainability, and firm value.

Table 1. Respondent Profile

Category	Description	Frequency	Percentage
Gender	Male	72	57.6%
	Female	53	42.4%
Position	Manager	46	36.8%
	Supervisor	39	31.2%
	Senior Staff	40	32.0%
Work Experience	1–5 years	34	27.2%
	6–10 years	51	40.8%
	>10 years	40	32.0%
Department	Finance	38	30.4%
	Sustainability/ESG	31	24.8%
	Operations	29	23.2%
	Strategic Management	27	21.6%

Table 1 indicates that the respondent profile is relatively balanced yet moderately dominated by male participants (57.6%), with female respondents accounting for 42.4%, suggesting a reasonably representative gender distribution within managerial contexts of multinational firms. In terms of position, the sample is well distributed across organizational hierarchies, with managers comprising the largest proportion (36.8%), followed by senior staff (32.0%) and supervisors (31.2%), indicating that the data captures perspectives from decision-making as well as operational levels. The majority of respondents possess moderate to extensive work experience, with 40.8% having 6–10 years and 32.0% exceeding 10 years, which strengthens the credibility of responses as they are likely informed by substantial professional exposure. From a functional perspective, respondents are drawn from key departments relevant to the study variables, particularly finance (30.4%) and sustainability/ESG (24.8%), followed by operations (23.2%) and strategic management (21.6%), ensuring that insights reflect both financial and sustainability-oriented decision-making processes; overall, this distribution supports the reliability of the dataset in capturing informed views on climate finance, corporate sustainability, and firm value.

4.2 Descriptive Statistics

Descriptive analysis was conducted to examine the general tendency of respondents' answers for each research variable. The mean score indicates the average perception, while the standard deviation reflects the variation of responses.

Table 2. Descriptive Statistics of Variables

Variable	N	Min	Max	Mean	Standard Deviation
Climate Finance	125	2.60	5.00	4.12	0.54
Corporate Sustainability	125	2.80	5.00	4.25	0.49
Firm Value	125	2.70	5.00	4.18	0.51

The results show that all variables have mean values above 4.00. This indicates that respondents generally agree that climate finance, corporate sustainability, and firm value are strongly practiced or perceived in multinational companies in Indonesia. Corporate sustainability has the highest mean value of 4.25, suggesting that sustainability practices are relatively well institutionalized among the observed firms. Climate finance has a mean value of 4.12, indicating that the use of financial resources for climate-related initiatives is already present, although still slightly lower than sustainability implementation.

4.3 Measurement Model Evaluation

The measurement model (outer model) evaluation is conducted to assess the validity and reliability of the constructs used in this study, namely Climate Finance (CF), Corporate Sustainability (CS), and Firm Value (FV). The evaluation includes tests of convergent validity, discriminant validity, and construct reliability using SEM-PLS 3.

4.3.1 Convergent Validity

Convergent validity is assessed based on outer loading values and Average Variance Extracted (AVE). An indicator is considered valid if its outer loading exceeds 0.70, although values between 0.60–0.70 are still acceptable in exploratory research.

Table 3. Outer Loadings of Indicators

Construct	Indicator	Outer Loading	Result
Climate Finance	CF1	0.812	Valid
	CF2	0.846	Valid
	CF3	0.879	Valid
	CF4	0.821	Valid
Corporate Sustainability	CS1	0.858	Valid
	CS2	0.884	Valid
	CS3	0.827	Valid
	CS4	0.869	Valid
Firm Value	FV1	0.842	Valid
	FV2	0.876	Valid
	FV3	0.851	Valid
	FV4	0.819	Valid

Table 3 demonstrates that all measurement indicators exhibit strong outer loadings, ranging from 0.812 to 0.884, thereby exceeding the commonly accepted threshold of 0.70 for convergent validity in SEM-PLS analysis. Specifically, the Climate Finance construct shows consistently high loadings (0.812–0.879), indicating that all indicators reliably capture the underlying construct. Similarly, Corporate Sustainability presents robust loadings (0.827–0.884), with CS2 emerging as the strongest indicator, reflecting a high degree of internal consistency in measuring ESG-related practices. The Firm Value construct also demonstrates satisfactory loadings (0.819–0.876), confirming that all indicators adequately represent the perceived economic value of the firm. Overall, the results confirm that all indicators are valid and contribute meaningfully to their respective constructs, suggesting that the measurement model possesses strong convergent validity and is suitable for further structural model evaluation. In addition to outer loadings, convergent validity is also evaluated using AVE.

Table 4. Average Variance Extracted (AVE)

Variable	AVE	Threshold	Result
Climate Finance	0.707	> 0.50	Valid
Corporate Sustainability	0.740	> 0.50	Valid
Firm Value	0.720	> 0.50	Valid

Table 4 indicates that all constructs demonstrate satisfactory levels of convergent validity, as reflected by Average Variance Extracted (AVE) values exceeding the recommended threshold of 0.50. Specifically, Corporate Sustainability exhibits the highest AVE value (0.740), followed by Firm Value (0.720) and Climate Finance (0.707), suggesting that each construct explains more than 70% of the variance in its respective indicators. These results confirm that the indicators within each construct share a high proportion of common variance and are well-represented by their latent variables. Overall, the AVE findings reinforce the robustness of the measurement model and provide strong evidence that all constructs meet the criteria for convergent validity, thereby supporting their suitability for subsequent structural model analysis.

4.3.2 Discriminant Validity

Discriminant validity ensures that each construct is distinct from other constructs. This study evaluates discriminant validity using the Fornell-Larcker criterion and cross-loadings.

a. Fornell-Larcker Criterion

A construct is considered to have good discriminant validity if the square root of its AVE is higher than its correlation with other constructs.

Table 5. Fornell-Larcker Criterion

Variable	Climate Finance	Corporate Sustainability	Firm Value
Climate Finance	0.841		
Corporate Sustainability	0.674	0.860	
Firm Value	0.651	0.713	0.849

Table 5 demonstrates that the measurement model satisfies the Fornell-Larcker criterion for discriminant validity, as evidenced by the square root of the Average Variance Extracted (AVE) for each construct being higher than its correlations with other constructs. Specifically, Climate Finance shows a diagonal value of 0.841, which exceeds its correlations with Corporate Sustainability (0.674) and Firm Value (0.651); Corporate Sustainability has a value of 0.860, higher than its correlation with Firm Value (0.713); and Firm Value records 0.849, which is also greater than its correlations with the other constructs. These results indicate that each construct is empirically distinct and captures a unique aspect of the model, confirming that there is no significant overlap among latent variables. Consequently, the discriminant validity of the constructs is well established, supporting the adequacy of the measurement model for further structural analysis.

b. Cross Loadings

Each indicator should have a higher loading on its own construct than on other constructs.

Table 6. Cross Loadings

Indicator	CF	CS	FV
CF1	0.812	0.601	0.578
CF2	0.846	0.643	0.601
CF3	0.879	0.662	0.623
CF4	0.821	0.618	0.590
CS1	0.624	0.858	0.671

CS2	0.651	0.884	0.702
CS3	0.609	0.827	0.668
CS4	0.637	0.869	0.695
FV1	0.593	0.682	0.842
FV2	0.621	0.701	0.876
FV3	0.604	0.688	0.851
FV4	0.577	0.659	0.819

Table 6 confirms that the measurement model meets the criteria for discriminant validity based on cross-loadings, as each indicator exhibits the highest loading on its respective construct compared to other constructs. Specifically, all Climate Finance indicators (CF1–CF4) load more strongly on the CF construct (0.812–0.879) than on Corporate Sustainability and Firm Value, while Corporate Sustainability indicators (CS1–CS4) show the highest loadings on the CS construct (0.827–0.884), and Firm Value indicators (FV1–FV4) demonstrate dominant loadings on the FV construct (0.819–0.876). Although there are moderate correlations across constructs, the differences between primary loadings and cross-loadings remain sufficiently large, indicating that each indicator uniquely represents its intended latent variable without significant overlap. These findings reinforce the robustness of the measurement model and provide additional evidence that discriminant validity is well established, supporting the reliability of the constructs for subsequent structural model analysis.

4.3.3 Reliability Test

Reliability is assessed using Cronbach's Alpha and Composite Reliability. A construct is considered reliable if both values exceed 0.70.

Table 7. Reliability Results

Variable	Cronbach's Alpha	Composite Reliability	Threshold	Result
Climate Finance	0.861	0.906	> 0.70	Reliable
Corporate Sustainability	0.883	0.919	> 0.70	Reliable
Firm Value	0.869	0.911	> 0.70	Reliable

Table 7 indicates that all constructs exhibit a high level of internal consistency reliability, as evidenced by Cronbach's Alpha values ranging from 0.861 to 0.883 and Composite Reliability values between 0.906 and 0.919, all of which exceed the recommended threshold of 0.70. Corporate Sustainability demonstrates the highest reliability (α = 0.883; CR = 0.919), followed by Firm Value (α = 0.869; CR = 0.911) and Climate Finance (α = 0.861; CR = 0.906), indicating that the measurement items within each construct are consistently capturing the same underlying concept. These results confirm that the constructs are reliable and free from significant measurement error, thereby supporting the robustness of the measurement model and justifying its use for subsequent structural model analysis.

4.4 Structural Model Evaluation

4.5.1 Coefficient of Determination (R^2)

The coefficient of determination (R^2) reflects the proportion of variance in endogenous variables explained by exogenous variables, where values of 0.25, 0.50, and 0.75 are generally interpreted as weak, moderate, and substantial, respectively. In this study, the R^2 value for Corporate Sustainability is 0.454 (Adjusted R^2 = 0.449), indicating a moderate level of explanatory power, meaning that Climate Finance accounts for 45.4% of the variance in Corporate Sustainability. Meanwhile, the R^2 value for Firm Value is 0.608 (Adjusted R^2 = 0.601), which can be categorized as moderate to strong, suggesting that Climate Finance and Corporate Sustainability jointly explain 60.8% of the variance in Firm Value. Overall, these findings demonstrate that the proposed model

possesses adequate explanatory capability, with stronger predictive relevance observed in explaining firm value compared to corporate sustainability.

4.5.2 Predictive Relevance (Q^2)

Predictive relevance (Q^2) is employed to evaluate the model's predictive capability using the blindfolding procedure, where a Q^2 value greater than zero indicates that the model possesses predictive relevance. In this study, the Q^2 value for Corporate Sustainability is 0.298, reflecting a medium level of predictive relevance, while Firm Value records a higher Q^2 value of 0.412, indicating strong predictive relevance. Since both values exceed zero, the results confirm that the model demonstrates good predictive capability overall. Moreover, the higher Q^2 value for Firm Value suggests that the model is more robust in predicting firm value outcomes compared to corporate sustainability, reinforcing the model's strength in explaining key dependent variables.

4.5.3 Effect Size (f^2)

Effect size (f^2) measures the impact of each exogenous variable on endogenous variables. The thresholds are 0.02 (small), 0.15 (medium), and 0.35 (large).

Table 8. Effect Size (f^2)

Relationship	f-Square (f^2)	Interpretation
Climate Finance → Corporate Sustainability	0.831	Large
Climate Finance → Firm Value	0.142	Small to Medium
Corporate Sustainability → Firm Value	0.367	Large

Table 8 reveals that the effect sizes (f^2) vary across the relationships, indicating differing levels of contribution of exogenous variables to endogenous constructs. The relationship between Climate Finance and Corporate Sustainability shows a very large effect size ($f^2 = 0.831$), suggesting that Climate Finance is a dominant predictor and plays a critical role in shaping sustainability practices within firms. In contrast, the direct effect of Climate Finance on Firm Value is relatively smaller ($f^2 = 0.142$), falling within the small to medium category, which implies that while Climate Finance contributes to firm value, its direct impact is more limited. Meanwhile, Corporate Sustainability exhibits a large effect size on Firm Value ($f^2 = 0.367$), indicating that sustainability practices have a substantial influence on enhancing firm value. Collectively, these results suggest that the impact of Climate Finance on Firm Value is more effectively transmitted through Corporate Sustainability, reinforcing the importance of sustainability as a key mechanism in the model.

4.5.4 Hypothesis Testing (Direct Effects)

Hypothesis testing is conducted using bootstrapping with a significance level of 5%. A hypothesis is accepted if the t-statistic is greater than 1.96 and the p-value is less than 0.05.

Table 9. Direct Effect Results

Hypothesis	Relationship	Path Coefficient (β)	t-Statistic	p-Value	Result
H1	Climate Finance → Firm Value	0.312	3.284	0.001	Accepted
H2	Corporate Sustainability → Firm Value	0.502	5.716	0.000	Accepted
H3	Climate Finance → Corporate Sustainability	0.674	10.482	0.000	Accepted

Table 9 demonstrates that all hypothesized direct relationships are positive and statistically significant, as indicated by p-values below 0.05 and t-statistics exceeding the critical threshold. Specifically, Climate Finance has a significant positive effect on Firm Value ($\beta = 0.312$; $t = 3.284$; $p =$

0.001), suggesting that firms leveraging climate-related financial resources tend to experience improved valuation, although the magnitude of the effect is moderate. Corporate Sustainability exhibits the strongest direct influence on Firm Value (β = 0.502; t = 5.716; p = 0.000), indicating that sustainability practices play a critical role in enhancing firm performance and investor perception. Furthermore, Climate Finance significantly influences Corporate Sustainability (β = 0.674; t = 10.482; p = 0.000), highlighting its substantial role in driving ESG-related initiatives within firms. Collectively, these findings confirm that Climate Finance not only directly contributes to Firm Value but also indirectly strengthens it through its strong impact on Corporate Sustainability.

4.5.5 Indirect Effect and Mediation Analysis

The mediation analysis is conducted to examine whether Corporate Sustainability mediates the relationship between Climate Finance and Firm Value.

Table 10. Indirect Effect Results

Hypothesis	Relationship	Indirect Effect (β)	t-Statistic	p-Value	Result
H4	Climate Finance → Corporate Sustainability → Firm Value	0.338	4.927	0.000	Accepted

The results indicate that the indirect effect of Climate Finance on Firm Value through Corporate Sustainability is statistically significant (β = 0.338, p < 0.05), confirming the presence of a mediating role. When comparing the direct and indirect effects, both pathways are found to be significant, with the direct effect of Climate Finance on Firm Value (β = 0.312) and the indirect effect through Corporate Sustainability (β = 0.338) contributing meaningfully to the outcome. This pattern indicates a partial mediation effect, implying that Climate Finance enhances Firm Value not only directly but also indirectly by strengthening Corporate Sustainability practices, thereby reinforcing the dual pathway through which financial and sustainability mechanisms jointly influence firm valuation.

4.5.6 Model Fit Evaluation (Optional in PLS)

Although PLS-SEM does not prioritize global goodness-of-fit measures in the same manner as covariance-based SEM, model adequacy can still be evaluated using the Standardized Root Mean Square Residual (SRMR). In this study, the SRMR value is 0.067, which is below the recommended threshold of 0.08, indicating that the discrepancy between the observed and model-implied correlations is minimal. This result suggests that the model demonstrates a good overall fit and is therefore acceptable for further interpretation and analysis.

Discussion

The findings of this study confirm that climate finance exerts a positive and statistically significant influence on firm value, indicating that firms allocating financial resources toward climate-related initiatives tend to achieve higher perceived valuation. This relationship can be interpreted through the lens of Stakeholder Theory, where firms respond to increasing demands from investors and other stakeholders for environmental accountability. The availability and utilization of climate finance signal a firm's commitment to sustainability, thereby enhancing investor confidence and perceived long-term resilience. However, the magnitude of this direct effect remains moderate, suggesting that financial commitment alone is insufficient to fully optimize firm value unless it is supported by effective strategic implementation [1], [8], [29].

In contrast, corporate sustainability emerges as the most dominant determinant of firm value within the model, highlighting its critical role as a strategic driver rather than merely a compliance mechanism. This finding aligns with Legitimacy Theory, which posits that firms must continuously align their operations with societal expectations to maintain legitimacy, particularly in emerging

markets such as Indonesia where environmental scrutiny is intensifying. From the perspective of the Resource-Based View (RBV), sustainability practices represent valuable organizational capabilities that enhance competitive advantage through improved resource efficiency, innovation, and stakeholder relationships. The relatively strong effect size underscores the growing importance of ESG integration in shaping firm performance and market valuation [7], [8], [30].

Furthermore, the results demonstrate that climate finance significantly influences corporate sustainability, reinforcing the role of financial resources as a key enabler of sustainability implementation. Firms with greater access to climate finance are better positioned to invest in environmentally responsible initiatives, including renewable energy adoption, emission reduction technologies, and sustainable supply chain practices. This finding highlights that sustainability strategies require not only commitment but also substantial financial backing to be effectively operationalized. In multinational contexts, such investments are often driven by global standards and expectations, suggesting that climate finance functions as a foundational mechanism supporting the transition toward sustainable business models [31], [32].

A critical contribution of this study lies in identifying the mediating role of corporate sustainability in the relationship between climate finance and firm value. The indirect effect is found to be stronger than the direct effect, indicating that the value-creation potential of climate finance is significantly amplified when it is translated into concrete sustainability practices. This partial mediation suggests a dual pathway: climate finance directly enhances firm value through signaling effects, while its indirect impact operates through improved ESG performance, which has a more substantial and enduring influence on firm valuation. This finding emphasizes the importance of strategic alignment between financial resources and sustainability initiatives to maximize organizational outcomes.

Overall, the results support an integrated perspective of value creation in which climate finance serves as an input, corporate sustainability functions as a transformational process, and firm value represents the ultimate output. The model explains a substantial proportion of variance in firm value, indicating that financial and sustainability factors jointly play a significant role in shaping organizational performance. Nevertheless, the unexplained variance suggests the presence of additional determinants, such as corporate governance, innovation capabilities, and market dynamics, which warrant further investigation. This integrated framework reflects a broader shift in corporate strategy, where financial performance and sustainability are increasingly interconnected and mutually reinforcing in driving long-term value creation.

Implications for Practice and Policy

From a managerial perspective, these findings underscore the need to align financial strategy with sustainability objectives, where climate finance should be treated not merely as a source of funding but as a strategic instrument to enhance sustainability performance and ultimately firm value; accordingly, investments in sustainability must be structured to deliver measurable and transparent outcomes that can be effectively communicated to stakeholders. From a policy standpoint, the results highlight the importance of strengthening the climate finance ecosystem in Indonesia through improved access to green financing instruments, the development of clear and consistent regulatory frameworks, and the promotion of ESG disclosures to facilitate broader adoption of sustainable practices among firms. For investors, the findings reinforce the relevance of incorporating ESG considerations into investment decisions, as firms that demonstrate strong sustainability performance and active engagement in climate finance are more likely to generate superior long-term value while maintaining lower exposure to environmental and regulatory risks.

5. CONCLUSION

This study aims to analyze the effect of climate finance and corporate sustainability on firm value in multinational companies operating in Indonesia, as well as to examine the mediating role

of corporate sustainability. Based on the SEM-PLS results, several conclusions can be drawn. First, climate finance has a positive and significant effect on firm value, indicating that firms allocating financial resources toward climate-related initiatives tend to achieve higher valuation through improved risk management, stronger investor confidence, and alignment with global sustainability expectations; however, the magnitude of this direct effect is moderate, implying that financial commitment alone is insufficient to fully maximize firm value. Second, corporate sustainability demonstrates a stronger and more significant influence on firm value, confirming that environmental, social, and governance (ESG) practices are key drivers of corporate valuation, as firms with robust sustainability strategies are perceived as more competitive, resilient, and credible in the market.

Third, climate finance significantly influences corporate sustainability, highlighting the critical role of financial resources in enabling firms to implement sustainability initiatives effectively; without adequate funding, such efforts may remain limited or symbolic, positioning climate finance as a key enabler in translating sustainability commitments into actionable outcomes. Fourth, corporate sustainability partially mediates the relationship between climate finance and firm value, with the indirect effect exceeding the direct effect, suggesting that the impact of climate finance becomes more substantial when channeled through sustainability practices. Overall, the findings indicate that firm value is shaped by the integration of financial and sustainability strategies, where climate finance serves as an input, corporate sustainability functions as a transformation mechanism, and firm value represents the outcome. Practically, managers are encouraged to align climate finance with sustainability initiatives, while policymakers should strengthen the climate finance ecosystem through supportive regulations and improved access to sustainable financial instruments; future research is recommended to incorporate additional variables such as corporate governance, innovation capability, and digital transformation. In conclusion, the integration of climate finance and corporate sustainability is essential for enhancing firm value in multinational companies, particularly in emerging markets such as Indonesia where sustainability challenges and opportunities coexist.

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