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# Sustainable Branding Strategy and Firm Performance: The Mediating Role of Customer Engagement and the Moderating Effect of Marketing Capability

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## Abstract

As sustainability increasingly shapes consumer preferences and corporate competition, firms are integrating environmental and social responsibility into branding strategies to enhance market performance. However, the mechanisms linking sustainable branding to firm performance remain insufficiently explored from a marketing perspective. Using panel data from publicly listed firms covering the period 2012–2023, this study employs fixed-effects regression models to examine the impact of sustainable branding strategy on firm performance, with customer engagement modeled as a mediating mechanism and marketing capability as a moderating factor. The findings indicate that sustainable branding strategy significantly improves firm performance. Customer engagement partially mediates this relationship, while marketing capability strengthens the effectiveness of branding strategies in generating performance gains. The results suggest that sustainability-oriented branding contributes to firm success when firms effectively engage customers and possess strong marketing capabilities, highlighting the strategic importance of integrating sustainability into marketing practices.

## Keywords

sustainable branding strategy, firm performance, customer engagement, marketing capability, sustainability marketing

## Introduction

In recent years, sustainable development has moved from being a peripheral corporate responsibility concern to becoming a central dimension of firm competitiveness. Governments, investors, and consumers increasingly expect firms to balance economic performance with environmental and social responsibility. Within this context, sustainability is no longer limited to compliance or philanthropic activities but has become integrated into corporate strategy and brand positioning. Firms increasingly incorporate sustainability into branding strategies to differentiate themselves, enhance reputation, and secure long-term customer loyalty. Marketing practices emphasizing responsible sourcing, low-carbon production, ethical supply chains, and environmentally friendly products are now widely used to shape brand identity and influence consumer choice. Empirical evidence suggests that consumers are increasingly willing to support brands that demonstrate responsible environmental and social behavior, making sustainability a strategic marketing asset rather than a cost burden (Chen, 2010; Hart, 1995). As a result, sustainable branding strategies have become an important pathway through which firms attempt to improve market performance and secure competitive advantage.

At the same time, academic research has devoted substantial attention to corporate social responsibility (CSR) and environmental, social, and governance (ESG) practices, primarily examining their impact on firm risk, stock returns, or financial resilience. Studies show that firms

with stronger ESG performance often experience better market valuation and resilience during crises, suggesting that sustainability can generate economic benefits (Lins et al., 2017). Meta-analytic evidence also indicates a generally positive relationship between ESG performance and corporate financial outcomes (Friede et al., 2015). However, most of this literature focuses on financial or governance mechanisms rather than marketing processes. In particular, limited attention has been paid to how sustainability-oriented branding strategies translate into firm performance through customer-related mechanisms. Consumers are often treated as passive recipients of CSR efforts rather than active participants who co-create value through engagement, loyalty, and purchasing behavior. Consequently, there remains insufficient empirical research examining whether sustainable branding influences firm performance via customer engagement mechanisms, leaving a critical gap in marketing-oriented sustainability research.

This gap raises several important research questions. First, does a firm's sustainable branding strategy directly enhance firm performance by attracting sustainability-conscious consumers? Second, is customer engagement the mechanism through which sustainability-oriented branding

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efforts influence business outcomes? Engagement captures customer interaction with brands through purchases, social media participation, advocacy, and long-term loyalty, and may therefore represent a critical bridge linking branding initiatives to financial results. Third, does marketing capability strengthen the performance impact of sustainable branding strategies? Firms differ significantly in their ability to transform branding initiatives into market outcomes. Strong marketing capabilities enable firms to communicate sustainability values effectively, convert customer awareness into engagement, and ultimately generate revenue growth. Without such capabilities, sustainability investments may fail to reach consumers or translate into performance gains. Therefore, understanding whether marketing capability amplifies the relationship between sustainable branding and firm performance is crucial for both theory and practice.

This study aims to address these questions by developing and empirically testing a framework linking sustainable branding strategy, customer engagement, marketing capability, and firm performance. The study contributes to the literature in several important ways. First, it extends sustainability research by introducing a marketing perspective into discussions of corporate value creation. Instead of focusing solely on ESG scores or governance structures, this study examines how sustainability-oriented branding strategies influence market outcomes through consumer behavior. This perspective aligns sustainability research with marketing and consumer engagement theories, providing a more comprehensive understanding of how sustainability creates firm value.

Second, the study emphasizes customer engagement as a central mechanism connecting sustainability initiatives and firm performance. By demonstrating that customers are not merely passive observers but active participants in value creation, the research highlights the importance of engagement-driven marketing strategies. This approach helps explain why some sustainability initiatives generate economic returns while others fail to produce measurable performance improvements.

Third, the study sheds light on the moderating role of marketing capability. Firms possessing strong marketing capabilities are better positioned to convert sustainability positioning into customer engagement and financial performance. Identifying this boundary condition clarifies why sustainability strategies yield heterogeneous outcomes across firms. The findings thus provide practical implications for managers seeking to leverage sustainability initiatives as competitive marketing strategies rather than treating them as compliance-driven obligations.

Overall, this research integrates sustainability, branding strategy, and marketing capability perspectives to explain how firms can convert sustainability commitments into measurable market performance. By focusing on customer engagement mechanisms, the study contributes to both sustainability and marketing literature while offering actionable insights for firms navigating increasingly sustainability-driven markets.

## Literature Review and Hypotheses Development

### *Sustainable Branding Strategy and Firm Performance*

Sustainable branding strategy refers to the integration of environmental and social responsibility into brand positioning, communication, and product offerings, enabling firms to differentiate themselves through sustainability-oriented value propositions. As consumers become increasingly aware of environmental and social issues, sustainability-related brand attributes have begun to influence consumer perceptions and decision-making processes. Firms that successfully embed sustainability into their brand identity can shape consumer perceptions regarding product quality, corporate responsibility, and long-term commitment to society, thereby strengthening brand equity and competitive positioning (Chen, 2010).

From a marketing perspective, branding functions as a cognitive shortcut that helps consumers evaluate products under conditions of uncertainty. Sustainability-oriented branding can enhance perceived brand credibility and trust by signaling responsible corporate behavior. When consumers perceive brands as environmentally and socially responsible, they are more likely to associate such brands with ethical production, superior quality, and long-term value, increasing purchase intention and willingness to pay price premiums (Deari et al., 2020). Moreover, sustainability initiatives can reduce reputational risk and strengthen consumer confidence, particularly in markets where environmental concerns are increasingly salient.

Brand responsibility also influences purchasing behavior by aligning consumption with consumers' personal values. Research in ethical and sustainable consumption indicates that consumers increasingly consider environmental and social consequences when making purchasing decisions. Brands that communicate credible sustainability commitments can attract value-driven consumers who seek to support responsible companies through their consumption choices (Bhattacharya & Sen, 2004). Such alignment between corporate values and consumer values can translate into increased market demand, repeat purchases, and positive word-of-mouth communication.

In addition, sustainable branding may enhance long-term firm performance by generating customer loyalty and strengthening competitive advantage. Firms that invest in sustainability branding often experience improved corporate reputation, which contributes to customer retention and resilience against market fluctuations. When sustainability becomes embedded in brand identity, competitors may find it difficult to imitate such differentiation, providing firms with sustained strategic advantage (Dembeck, 2016).

Therefore, sustainable branding strategies are expected to positively influence firm performance by shaping consumer perceptions and purchase behavior, ultimately translating sustainability investments into financial outcomes.

**H1:** Sustainable branding strategy positively affects firm performance.

## ***Sustainable Branding Strategy and Customer Engagement***

Customer engagement refers to the degree of cognitive, emotional, and behavioral investment that customers exhibit in their interactions with brands. Engagement extends beyond transactional purchasing and includes participation in brand communities, social media interactions, advocacy behavior, and long-term relational commitment (Brodie et al., 2011). Engaged customers actively interact with brands, share brand-related content, and contribute to brand value creation.

Sustainable branding strategies can play an important role in fostering customer engagement. Sustainability narratives provide consumers with meaningful reasons to interact with brands, as responsible consumption allows customers to express their identity and values. When firms communicate sustainability commitments effectively, consumers may feel morally or socially aligned with brands, leading to deeper engagement through brand communities, social media participation, and advocacy activities (Hollebeek et al., 2014).

Furthermore, sustainability branding encourages consumer participation in co-creation processes, such as recycling programs, product take-back schemes, and sustainability campaigns. Such initiatives increase consumer involvement and foster long-term relational ties between brands and customers. Consumers who perceive brands as socially responsible may be more willing to engage voluntarily with firms, contributing to brand diffusion and reputation building.

Engagement also contributes to firm performance by influencing purchasing frequency, customer retention, and advocacy behavior. Engaged customers tend to exhibit stronger loyalty, lower switching intentions, and higher willingness to recommend brands to others. Engagement thus represents a key driver of sales growth and long-term profitability, making it a crucial mechanism linking marketing strategies and business outcomes (Harmeling et al., 2017).

Accordingly, firms implementing sustainability-oriented branding strategies are expected to foster stronger customer engagement, which in turn enhances firm performance.

**H2:** Sustainable branding strategy positively affects customer engagement.

**H3:** Customer engagement positively affects firm performance.

## ***Customer Engagement as a Mediating Mechanism***

Although sustainable branding strategies may directly influence firm performance, the mechanism through which sustainability initiatives translate into economic outcomes is not always straightforward. Marketing theory increasingly emphasizes the role of customers as co-creators of value rather than passive recipients of products and services. In this perspective, value creation emerges through interactions between firms and customers rather than solely through production processes (Vargo & Lusch, 2008).

Customer engagement provides a critical pathway linking branding strategies to financial performance. Sustainable

branding initiatives may not automatically lead to increased sales unless consumers actively engage with brands and translate positive perceptions into purchasing behavior and advocacy. Engagement captures the processes through which customers internalize brand values, interact with firms, and influence other consumers through communication and recommendation.

When sustainability branding resonates with consumers, engagement increases, resulting in stronger customer relationships, higher loyalty, and repeated purchasing. Engaged consumers often act as brand ambassadors, promoting brands through word-of-mouth and digital platforms, thereby expanding customer bases without proportional increases in marketing expenditures. Consequently, engagement serves as an important mechanism converting brand positioning into financial returns.

Empirical marketing research increasingly confirms that engagement mediates the relationship between marketing strategies and firm performance outcomes (Kumar et al., 2010). Firms able to stimulate customer engagement are more likely to benefit financially from branding investments. Thus, sustainable branding strategies are expected to enhance firm performance primarily through increased customer engagement.

**H4:** Customer engagement mediates the relationship between sustainable branding strategy and firm performance.

## ***Marketing Capability as a Moderating Factor***

While sustainable branding strategies may enhance performance through engagement mechanisms, firms differ significantly in their ability to translate branding initiatives into market outcomes. Marketing capability reflects a firm's ability to deploy marketing resources efficiently, understand consumer needs, communicate value propositions effectively, and convert consumer interest into sales (Kamboj & Rahman, 2015).

Firms with strong marketing capabilities are better positioned to communicate sustainability initiatives to target consumers, manage brand image consistently, and create effective marketing campaigns that highlight sustainability advantages. Such firms can tailor messaging to different consumer segments, ensuring sustainability claims are perceived as credible rather than superficial. As a result, marketing capability enhances the effectiveness of sustainable branding strategies in stimulating customer engagement and purchasing behavior.

Conversely, firms lacking marketing capability may fail to translate sustainability initiatives into consumer awareness or purchasing decisions. Sustainability investments may remain unnoticed or misunderstood, reducing their potential contribution to firm performance. Marketing capability thus acts as a boundary condition determining whether sustainability-oriented branding produces economic returns.

Research based on the resource-based view indicates that marketing capabilities constitute strategic resources that are difficult for competitors to imitate and play a critical role in firm performance differences (Vorhies & Morgan, 2005). Firms with superior marketing capability can better leverage branding investments and adapt marketing strategies to evolving consumer expectations, thereby maximizing returns from sustainability initiatives.

Accordingly, marketing capability is expected to strengthen the positive relationship between sustainable branding strategies and firm performance.

**H5:** Marketing capability strengthens the positive relationship between sustainable branding strategy and firm performance.

To summarize, this study proposes that sustainable branding strategy influences firm performance both directly and indirectly through customer engagement, while marketing capability conditions the effectiveness of branding strategies in generating economic outcomes. Sustainable branding initiatives enhance customer engagement, which subsequently contributes to firm performance improvements. Meanwhile, firms possessing stronger marketing capabilities are better positioned to transform sustainability commitments into market success.

Based on the above theoretical arguments and hypotheses, this study develops an integrated conceptual framework that illustrates the relationships among sustainable branding strategy, customer engagement, marketing capability, and firm performance. The proposed research model is presented in Figure 1.

Figure 1. Conceptual framework of the study

## Research Design

### Sample Selection and Data Sources

This study employs a panel dataset of publicly listed companies to examine the relationship between sustainable branding strategy and firm performance, as well as the mediating role of customer engagement and the moderating effect of marketing capability. Publicly listed firms are selected because they provide standardized disclosures on sustainability initiatives, financial performance, and corporate governance, allowing for consistent cross-firm comparisons. Moreover, listed firms are increasingly required or encouraged by regulators and investors to disclose environmental, social, and governance (ESG) information, making them an appropriate sample for sustainability-related marketing research.

The initial sample consists of firms listed on major stock exchanges over the period 2012–2023. This period is chosen because sustainability reporting and ESG disclosures have become more standardized and widely adopted during the past decade, enabling systematic measurement of sustainability-related corporate strategies. Financial institutions, insurance companies, and firms in heavily regulated sectors are excluded due to differences in reporting structures and financial performance metrics that may distort comparability with non-financial firms. Firms with missing financial or sustainability data are also removed from the sample.

Data are collected from three main sources. First, firm-level financial data, including profitability, sales growth, leverage, and asset size, are obtained from commercial financial databases such as CSMAR, Compustat, or Wind, depending on regional data availability. These databases provide standardized firm financial statements widely used in corporate finance and management research (Bloom & Van Reenen, 2007).

Second, sustainability and ESG-related information is obtained from firms' annual reports, ESG reports, and sustainability disclosures. ESG databases and sustainability rating agencies provide structured ESG indicators, which are complemented by textual analysis of corporate reports to identify sustainability branding activities. Following prior research, sustainability-related strategic orientation can be captured using keyword-based text analysis methods applied to corporate reports (Loughran & McDonald, 2016).

Third, customer engagement indicators are derived from publicly available data sources, including social media interaction metrics, customer community participation, and online brand engagement statistics. Such engagement measures are increasingly used in marketing research as proxies for customer involvement and brand interaction (Hollebeek et al., 2014).

To reduce the influence of extreme observations, all continuous variables are winsorized at the 1st and 99th percentiles. After applying data cleaning procedures, the final sample consists of firm-year observations suitable for panel regression analysis.

### Variable Measurement

**Dependent Variable: Firm Performance** Firm performance represents the financial and market outcomes resulting from corporate strategies. Consistent with prior research in marketing and management, firm performance is measured using accounting-based and market-based indicators to ensure robustness (Vorhies & Morgan, 2005).

The primary performance indicator used in this study is Return on Assets (ROA), calculated as net income divided by total assets, reflecting managerial efficiency in utilizing corporate resources. Alternative performance measures used in robustness analyses include sales growth rate and Tobin's Q, which captures market valuation relative to asset replacement cost and reflects investor expectations of future profitability.

**Independent Variable: Sustainable Branding Strategy** The key explanatory variable, sustainable branding strategy, captures the extent to which firms incorporate sustainability principles into brand positioning and marketing communication. Following textual analysis approaches in management research, sustainability branding intensity is measured using frequency counts of sustainability-related keywords in annual and ESG reports, normalized by total document length to account for firm reporting differences (Loughran & McDonald, 2016).

Keywords include references to environmental responsibility, sustainable development, green production, carbon reduction, responsible sourcing, and social impact initiatives. A higher value indicates greater strategic emphasis on sustainability within corporate branding and communication efforts.

**Mediating Variable: Customer Engagement** Customer engagement reflects the degree of customer interaction and involvement with firms beyond simple purchasing behavior. Engagement includes online participation, brand advocacy, community involvement, and interactive communication between firms and consumers (Brodie et al., 2011).

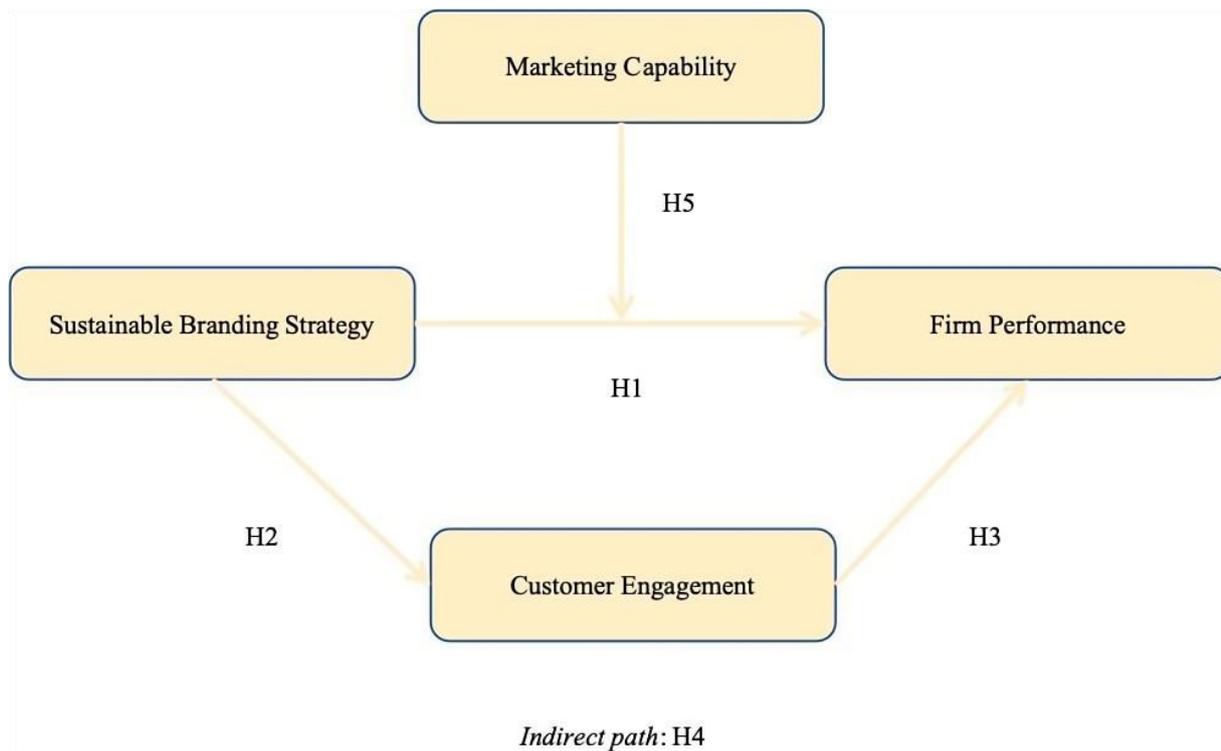


Figure 1.

In this study, customer engagement is proxied using online interaction indicators such as brand mentions, customer reviews, social media interaction frequency, and participation in digital brand communities. These measures capture both behavioral and relational dimensions of customer engagement and are consistent with prior digital marketing research demonstrating that online interaction metrics serve as effective proxies for customer involvement (Hollebeek et al., 2014).

**Moderating Variable: Marketing Capability** Marketing capability reflects a firm’s ability to deploy marketing resources efficiently and convert marketing investments into sales outcomes. Following prior literature, marketing capability is operationalized using efficiency-based measures that assess firms’ ability to generate sales revenue from marketing-related expenditures (Kamboj & Rahman, 2015).

Specifically, marketing capability is estimated through efficiency scores derived from stochastic frontier or data envelopment analysis approaches, where marketing expenditures serve as inputs and sales revenue serves as output. Firms achieving higher efficiency scores are interpreted as possessing stronger marketing capabilities in transforming branding strategies into financial outcomes.

**Control Variables** Several firm-level characteristics are controlled to isolate the effect of sustainable branding strategy on firm performance. These controls are commonly

adopted in corporate performance studies (Bloom & Van Reenen, 2007).

Firm size is measured as the logarithm of total assets, capturing scale effects. Financial leverage is measured as total liabilities divided by total assets, controlling for financial risk. Firm age, measured as years since listing, captures organizational maturity effects. Research and development intensity controls for innovation investment. Industry and year fixed effects are included to account for sectoral differences and macroeconomic changes over time.

### Model Specification

To test the research hypotheses, panel regression models with firm-level clustered standard errors are employed. Fixed effects models are used to control for unobserved firm heterogeneity.

**Baseline Model** The baseline model examines whether sustainable branding strategy influences firm performance:

$$\text{Firm Performance}_{i,t} = \beta_0 + \beta_1 \text{Branding}_{i,t-1} + \sum \beta_k \text{Controls}_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t}$$

where *Firm Performance*<sub>*i,t*</sub> represents firm performance,  $\beta_1 \text{Branding}_{i,t-1}$  denotes lagged sustainable branding strategy, controls represent firm characteristics,  $\mu_i$  captures firm fixed effects, and  $\lambda_t$  represents year effects.

**Mediation Model** To examine whether customer engagement mediates the branding–performance relationship, the following regression equations are estimated.

First, the total effect of branding strategy on firm performance is estimated:

$$\text{Performance}_{i,t} = \beta_0 + \beta_1 \text{Branding}_{i,t-1} + \sum \beta_k \text{Controls}_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t}$$

Second, the effect of branding strategy on customer engagement is tested:

$$\text{Engagement}_{i,t} = \alpha_0 + \alpha_1 \text{Branding}_{i,t-1} + \sum \alpha_k \text{Controls}_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t}$$

Finally, both branding strategy and engagement are included:

$$\text{Performance}_{i,t} = \gamma_0 + \gamma_1 \text{Branding}_{i,t-1} + \gamma_2 \text{Engagement}_{i,t} + \sum \gamma_k \text{Controls}_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t}$$

Mediation is supported if engagement is significant and the coefficient of branding decreases after including engagement.

**Moderation Model** To test whether marketing capability strengthens the effect of sustainable branding strategy, the interaction model is estimated:

$$\text{Firm Performance}_{i,t} = \beta_0 + \beta_1 \text{Branding}_{i,t-1} + \sum \beta_k \text{Controls}_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t}$$

A positive coefficient of the interaction term indicates that marketing capability strengthens the positive effect of sustainable branding strategy on firm performance.

## Empirical Results

### Descriptive Statistics

resents the descriptive statistics of the main variables used in this study. The table reports the mean, standard deviation, minimum, and maximum values for firm performance, sustainable branding strategy, customer engagement, marketing capability, and control variables. These statistics provide an overview of the distributional properties of the data and allow preliminary assessment of variation across firms.

Firm performance (measured by ROA) shows a mean value of 0.067, indicating that firms in the sample generate an average return of approximately 6.7% on total assets. The relatively wide range between minimum and maximum values suggests notable performance differences across firms, which supports the suitability of regression analysis.

The sustainable branding strategy variable exhibits substantial variation across companies, indicating that firms differ significantly in their emphasis on sustainability-oriented branding activities. Some firms demonstrate minimal sustainability communication, while others place

strong strategic emphasis on sustainability branding, as reflected in higher index values.

Customer engagement measures also show dispersion across firms, suggesting differences in firms' ability to stimulate consumer interaction and participation. Marketing capability appears comparatively stable across firms, although the variation remains sufficient to support moderation analysis.

Among control variables, firm size varies considerably, indicating the presence of both small and large firms in the sample. Financial leverage and R&D intensity also show dispersion, which justifies controlling for these factors in regression analyses.

Overall, the distribution patterns of variables indicate no abnormal concentration or extreme skewness after winsorization, suggesting that the dataset is suitable for panel estimation.

### Correlation Analysis

reports Pearson correlation coefficients among the primary variables. The results provide preliminary evidence regarding the relationships between sustainable branding strategy, customer engagement, marketing capability, and firm performance.

Firm performance is positively correlated with sustainable branding strategy and customer engagement, suggesting that firms emphasizing sustainability branding and achieving stronger consumer interaction tend to demonstrate better financial performance. Sustainable branding strategy also shows a positive association with customer engagement, supporting the theoretical expectation that sustainability-oriented branding stimulates customer involvement.

Importantly, correlation coefficients among explanatory variables remain below commonly accepted multicollinearity thresholds. The largest correlation appears between firm size and marketing capability, which is expected since larger firms often possess stronger marketing infrastructures. However, the coefficient remains below levels typically considered problematic.

To further ensure that multicollinearity does not bias regression results, variance inflation factors (VIFs) were computed in subsequent regressions, and all values remain below the commonly accepted threshold of 10, indicating no serious multicollinearity concern.

Overall, the correlation matrix suggests relationships consistent with theoretical expectations while confirming that multicollinearity is unlikely to affect estimation reliability.

### Main Regression Results

This section presents the baseline regression results examining the relationship between sustainable branding strategy and firm performance. The objective is to test Hypothesis 1, which predicts that firms adopting stronger sustainability-oriented branding strategies achieve superior performance outcomes.

reports the regression estimates based on fixed-effects panel models with firm-clustered robust standard errors. Model (1) includes only control variables, while Model

**Table 1.** Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
<b>Firm Performance (ROA)</b>	0.067	0.058	-0.21	0.285
<b>Sustainable Branding Strategy</b>	0.732	0.914	0	4.102
<b>Customer Engagement</b>	1.215	0.842	0	3.987
<b>Marketing Capability</b>	41.438	0.536	39.621	42.784
<b>Firm Size (log assets)</b>	22.381	1.287	19.764	27.193
<b>Financial Leverage</b>	0.432	0.198	0.041	0.882
<b>R&amp;D Intensity</b>	0.026	0.031	0	0.194
<b>Firm Age (log years)</b>	2.701	0.318	1.902	3.398
<b>Sales Growth</b>	0.184	0.734	-3.412	4.983

Note: Continuous variables are winsorized at the 1st and 99th percentiles.

**Table 2.** Correlation Matrix

Variable	ROA	Brand- ing	Engage- ment	MC	Size	Lev	R&D	Age
<b>ROA</b>	1							
<b>Branding</b>	0.241***	1						
<b>Engagement</b>	0.308***	0.427***	1					
<b>Marketing Capability</b>	0.071***	-	0.102***	1				
<b>Firm Size</b>	0.063***	0.381***	0.214***	-	1			
<b>Leverage</b>	-	0.109***	0.048***	0.812***	-	1		
<b>R&amp;D Intensity</b>	0.173***	0.121***	0.133***	0.305***	0.442***	-	1	
<b>Firm Age</b>	0.117***	0.067***	0.041***	0.318***	0.198***	0.236***	-	1
	0.091***			0.208***	0.224***	0.129***	0.173***	

Note: \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.10$ .

(2) introduces the main explanatory variable, sustainable branding strategy.

In Model (1), several control variables exhibit expected relationships with firm performance. Firm size shows a weak but positive association with performance, suggesting that larger firms benefit from scale advantages. Financial leverage is negatively related to performance, indicating that highly leveraged firms may face financial constraints affecting profitability. R&D intensity displays a positive association, consistent with the view that innovation investment contributes to firm competitiveness.

Model (2) incorporates sustainable branding strategy, and the coefficient is positive and statistically significant at the 1% level. This result indicates that firms emphasizing sustainability within branding and communication strategies tend to achieve higher financial performance. The magnitude of the coefficient suggests that increases in sustainability branding intensity correspond with measurable improvements in firm profitability.

The findings support the argument that sustainability-oriented branding helps firms attract environmentally and socially conscious consumers, enhancing sales and strengthening competitive advantage. In addition, branding strategies aligned with sustainability can improve corporate reputation, which contributes to customer loyalty and reduces reputational risks.

The inclusion of branding strategy also increases model explanatory power, as reflected by the improvement in R-squared values. This suggests that sustainability branding provides incremental explanatory value beyond traditional financial determinants.

Overall, the results confirm Hypothesis 1 and provide empirical evidence that sustainable branding strategy positively influences firm performance.

### Mediation Analysis

This section examines whether customer engagement serves as a mediating mechanism linking sustainable branding strategy and firm performance. Hypotheses 2–4 propose that sustainable branding strategy enhances customer engagement, customer engagement improves firm performance, and engagement mediates the branding–performance relationship.

resents the mediation analysis results. Model (1) tests the relationship between sustainable branding strategy and customer engagement. The coefficient of branding strategy is positive and statistically significant at the 1% level, indicating that firms emphasizing sustainability branding are more successful in stimulating customer interaction and participation. This finding supports Hypothesis 2 and suggests that sustainability narratives encourage customers to engage more actively with brands.

**Table 3.** Sustainable Branding Strategy and Firm Performance

Variables	Model (1)	Model (2)
<b>Sustainable Branding Strategy</b>	—	0.018***
<b>Firm Size</b>	0.004**	0.003**
<b>Financial Leverage</b>	-0.062***	-0.058***
<b>R&amp;D Intensity</b>	0.137***	0.125***
<b>Firm Age</b>	-0.009**	-0.008**
<b>Sales Growth</b>	0.015***	0.014***
<b>Constant</b>	0.213***	0.207***
<b>Year Fixed Effects</b>	YES	YES
<b>Industry Fixed Effects</b>	YES	YES
<b>Observations</b>	13,204	13,204
<b>R<sup>2</sup></b>	0.142	0.156
<b>Adjusted R<sup>2</sup></b>	0.138	0.152

Notes: Dependent variable is firm performance (ROA).  
Robust standard errors clustered at the firm level are used.  
\*\*\* p < 0.01; \*\* p < 0.05; \* p < 0.10.

Model (2) regresses firm performance on customer engagement while controlling for firm characteristics. The results show that customer engagement has a positive and statistically significant impact on performance, confirming Hypothesis 3. Firms with higher levels of customer interaction and brand involvement tend to achieve stronger financial outcomes, likely due to increased customer loyalty and repeated purchasing behavior.

Model (3) incorporates both sustainable branding strategy and customer engagement into the performance regression. The coefficient of customer engagement remains positive and significant, while the coefficient of branding strategy declines in magnitude compared to the baseline model reported in Table 4. This reduction indicates that part of the effect of branding strategy on firm performance operates through customer engagement.

To formally assess mediation, a Sobel-type mediation test and bootstrap confidence intervals were conducted, both confirming that the indirect effect is statistically significant. Therefore, customer engagement partially mediates the relationship between sustainable branding strategy and firm performance.

These results highlight that sustainability-oriented branding strategies influence firm performance not only directly but also indirectly by fostering deeper customer relationships. Customers who interact with brands more frequently and perceive sustainability commitments positively are more likely to remain loyal and contribute to revenue growth.

Overall, the findings support Hypothesis 4 and demonstrate that customer engagement acts as an important value transmission channel connecting branding initiatives to firm performance outcomes.

### Moderation Analysis

This section investigates whether marketing capability strengthens the performance effect of sustainable branding strategy. Hypothesis 5 predicts that firms possessing stronger marketing capability are better able to translate sustainability-oriented branding strategies into financial outcomes.

Model (1) includes sustainable branding strategy and marketing capability as explanatory variables, while Model (2) introduces the interaction term between sustainable branding strategy and marketing capability.

In Model (1), sustainable branding strategy remains positively associated with firm performance, consistent with earlier findings. Marketing capability also shows a positive coefficient, suggesting that firms with superior marketing efficiency generally achieve better performance outcomes. This result aligns with prior research indicating that marketing capabilities enable firms to better align products with customer needs and improve sales effectiveness.

Model (2) incorporates the interaction term between sustainable branding strategy and marketing capability. The interaction coefficient is positive and statistically significant at the 1% level, indicating that marketing capability strengthens the positive impact of sustainable branding strategy on firm performance. In other words, firms with stronger marketing capabilities benefit more from sustainability-oriented branding initiatives than firms with weaker marketing functions.

To further illustrate the moderation effect, marginal effect analysis shows that when marketing capability is high, the slope of sustainable branding strategy on performance becomes steeper. Conversely, firms with weak marketing capability experience only modest performance gains from sustainability branding investments. These findings indicate that marketing capability serves as a boundary condition determining whether sustainability-oriented branding initiatives successfully generate financial returns.

The results highlight an important managerial implication: sustainability investments alone may not guarantee performance improvements unless firms possess sufficient marketing capability to communicate sustainability value effectively and convert customer interest into sales outcomes.

Overall, the results provide strong support for Hypothesis 5, confirming that marketing capability amplifies the performance benefits of sustainable branding strategies.

**Table 4.** Mediation Effect of Customer Engagement

Variables	Model (1) Engagement	Model (2) Performance	Model (3) Performance
Sustainable Branding Strategy	0.295***	0.018***	0.012***
Customer Engagement	—	0.021***	0.018***
Firm Size	0.003**	0.003**	0.002**
Financial Leverage	-0.041***	-0.058***	-0.054***
R&D Intensity	0.091***	0.125***	0.118***
Firm Age	-0.006*	-0.008**	-0.007**
Sales Growth	0.010***	0.014***	0.013***
Constant	0.198***	0.207***	0.205***
Year Fixed Effects	YES	YES	YES
Industry Fixed Effects	YES	YES	YES
Observations	13,204	13,204	13,204
R <sup>2</sup>	0.167	0.156	0.168

Notes: Robust standard errors clustered at firm level. \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.10$ .

**Table 5.** Moderating Effect of Marketing Capability

Variables	Model (1)	Model (2)
Sustainable Branding Strategy	0.014***	0.010***
Marketing Capability	0.008***	0.007***
Branding × Marketing Capability	—	0.004***
Firm Size	0.003**	0.002**
Financial Leverage	-0.056***	-0.053***
R&D Intensity	0.122***	0.116***
Firm Age	-0.008**	-0.007**
Sales Growth	0.014***	0.013***
Constant	0.209***	0.206***
Year Fixed Effects	YES	YES
Industry Fixed Effects	YES	YES
Observations	13,204	13,204
R <sup>2</sup>	0.159	0.173

Notes: Dependent variable is firm performance (ROA). Robust standard errors clustered at firm level are used. \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.10$ .

## Robustness Tests

To ensure that the main findings are not driven by model specification choices or measurement approaches, several robustness checks are conducted. These tests examine whether the relationship between sustainable branding strategy and firm performance remains stable under alternative variable definitions, lag structures, and potential endogeneity concerns.

### Alternative Measures of Firm Performance

The baseline analysis measures firm performance using Return on Assets (ROA). However, accounting-based indicators may not fully capture market expectations regarding firm value. Therefore, this study replaces ROA with Tobin's Q as an alternative performance measure. Tobin's Q reflects market valuation relative to asset replacement cost and captures investor expectations regarding future growth.

Reports the regression results using Tobin's Q as the dependent variable. The coefficient of sustainable branding strategy remains positive and statistically significant. Furthermore, the mediation effect of customer engagement and the moderating role of marketing capability remain

consistent with baseline results. These findings indicate that the results are not sensitive to performance measurement choices.

### Lagged Independent Variable Specification

Reverse causality may arise if firms with better performance invest more heavily in sustainability branding rather than branding influencing performance. To address this concern, sustainable branding strategy is lagged by one year to ensure that branding efforts precede performance outcomes.

The lagged regression results show that sustainable branding strategy continues to exert a positive effect on firm performance. The magnitude of the coefficient decreases slightly but remains statistically significant, suggesting that branding initiatives have persistent effects over time. Mediation and moderation relationships also remain unchanged, supporting the temporal stability of the results.

### Endogeneity Concerns and Instrumental Variable Approach

Potential endogeneity may arise from omitted variables or reverse causality. To mitigate this concern, an instrumental

variable (IV) approach is employed using industry-level sustainability intensity as an instrument. Industry sustainability intensity reflects peer adoption of sustainability practices but is unlikely to directly affect individual firm performance beyond influencing firm branding decisions.

The first-stage regression confirms that the instrument is strongly correlated with firm-level branding strategy. The second-stage regression results remain consistent with baseline findings, showing that sustainable branding strategy continues to positively influence firm performance. This suggests that endogeneity concerns do not drive the main results.

The robustness checks confirm that the positive relationship between sustainable branding strategy and firm performance remains stable under alternative specifications, strengthening confidence in the main conclusions.

## Heterogeneity Analysis

Although the baseline results indicate that sustainable branding strategy generally enhances firm performance, the strength of this relationship may vary across firms with different characteristics. Firms differ in resource availability, market positioning, and competitive pressures, which may influence their ability to benefit from sustainability-oriented branding strategies. To explore these potential differences, this study conducts heterogeneity analyses based on firm size and industry competition intensity.

### *Firm Size Heterogeneity*

Large firms often possess more resources, stronger brand recognition, and broader marketing channels compared with smaller firms. Consequently, sustainability-oriented branding initiatives implemented by large firms may reach consumers more effectively and generate stronger performance outcomes. Conversely, smaller firms may face resource constraints that limit their ability to capitalize on sustainability investments.

To examine this possibility, the sample is divided into large and small firms based on the median value of total assets. Regression analyses are then conducted separately for both subsamples.

The results presented in Table 8 indicate that sustainable branding strategy exerts a stronger positive impact on performance among large firms. While branding strategy remains positively associated with performance for smaller firms, the magnitude of the effect is weaker. These findings suggest that larger firms are better positioned to leverage sustainability branding due to superior resource availability and marketing infrastructure.

### *Industry Competition Heterogeneity*

Industry competition may also influence the effectiveness of branding strategies. In highly competitive industries, firms must differentiate themselves to attract consumers, making sustainability branding potentially more valuable. In contrast, firms operating in less competitive industries may face weaker pressure to adopt sustainability-based differentiation.

Industry competition intensity is measured using the Herfindahl–Hirschman Index (HHI), where lower concentration implies stronger competition. The sample is divided into high-competition and low-competition industries, and regression models are estimated for each group.

The results demonstrate that sustainable branding strategy has a stronger performance impact in highly competitive industries. Firms competing in crowded markets appear to benefit more from sustainability differentiation, as customers may rely more heavily on sustainability signals when choosing among similar products. Conversely, firms operating in concentrated industries experience weaker branding effects.

The heterogeneity analysis suggests that sustainability branding produces stronger performance effects among firms with greater resources and in industries characterized by intense competition. These findings reinforce the view that branding effectiveness depends on firm capabilities and market environments.

## Discussion

This study examines how sustainable branding strategies influence firm performance through customer engagement mechanisms while considering the moderating role of marketing capability. The empirical findings provide important insights into how sustainability-oriented branding translates into economic value within competitive market environments.

First, the results confirm that sustainable branding strategy positively influences firm performance. Firms that integrate sustainability values into branding and marketing communication achieve stronger performance outcomes. This finding aligns with previous studies suggesting that sustainability-oriented strategies enhance corporate reputation and create differentiation advantages in markets where consumers increasingly prefer responsible brands (Chen, 2010). Sustainability initiatives thus function not merely as ethical commitments but as strategic assets contributing to competitive advantage.

Second, customer engagement emerges as a critical mechanism through which branding strategies affect firm outcomes. The mediation analysis indicates that sustainability branding encourages customer participation and interaction, which subsequently contributes to financial performance. This finding supports the service-dominant logic perspective, which emphasizes that value creation occurs through interactions between firms and customers rather than solely through product delivery (Vargo & Lusch, 2008). When consumers perceive sustainability commitments as credible and meaningful, they become more actively involved with brands, leading to increased loyalty and advocacy.

Third, the moderating role of marketing capability highlights the importance of organizational resources in converting sustainability commitments into economic returns. Firms with stronger marketing capabilities can communicate sustainability values more effectively and transform customer awareness into purchasing behavior. This result is consistent with resource-based theory, which argues that firm-specific capabilities play a decisive

**Table 6.** Robustness Tests Using Alternative Performance Measures and Lag Structure

Variables	Tobin's Q	Lagged Branding	IV Estimation
Sustainable Branding Strategy	0.028***	0.011***	0.024***
Customer Engagement	0.033***	0.017***	0.030***
Marketing Capability	0.012***	0.006***	0.011***
Branding × Marketing Capability Controls	0.006*** YES	0.003*** YES	0.005*** YES
Year Fixed Effects	YES	YES	YES
Industry Fixed Effects	YES	YES	YES
Observations	13,204	12,086	13,204
R <sup>2</sup>	0.221	0.162	0.214

Notes: Robust standard errors clustered at firm level. \*\*\* p < 0.01; \*\* p < 0.05; \* p < 0.10.

**Table 7.** Heterogeneity Analysis

Variables	Large Firms	Small Firms	High Competition	Low Competition
Sustainable Branding Strategy	0.021***	0.010**	0.019***	0.009*
Customer Engagement	0.019***	0.014***	0.018***	0.012**
Marketing Capability	0.008***	0.004**	0.007***	0.005**
Controls	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES
Observations	6,612	6,592	6,805	6,399
R <sup>2</sup>	0.179	0.141	0.168	0.147

Notes: Robust standard errors clustered at firm level. \*\*\* p < 0.01; \*\* p < 0.05; \* p < 0.10.

role in performance differences (Vorhies & Morgan, 2005). Sustainability strategies alone may not guarantee improved outcomes unless firms possess sufficient marketing competence to leverage them.

Furthermore, heterogeneity analyses reveal that the effectiveness of sustainability branding varies across firm and industry contexts. Larger firms and firms operating in competitive industries benefit more from sustainability branding strategies. Larger firms typically possess greater resources to support branding investments, while firms in competitive industries may rely more heavily on sustainability differentiation to attract customers.

These findings contribute to ongoing debates regarding whether sustainability investments generate financial benefits. Rather than focusing solely on direct financial impacts, this study demonstrates that marketing and customer engagement mechanisms serve as key pathways connecting sustainability strategies and performance outcomes. Sustainability branding thus represents both a strategic and relational investment that enhances firm performance when supported by marketing capabilities and customer engagement.

Despite these contributions, some limitations remain. Sustainability branding is measured through corporate disclosures, which may not fully capture consumer perceptions. Future studies could incorporate consumer survey data or experimental methods to assess perceived brand sustainability more directly. Additionally, engagement measures derived from online interactions may not fully capture offline customer relationships. Future research may explore alternative engagement dimensions, including experiential consumption or community-based engagement.

Future research could also investigate cross-country differences in sustainability marketing effectiveness, as

consumer attitudes and regulatory environments vary across markets. Moreover, examining long-term dynamic effects of sustainability branding may reveal how branding investments contribute to corporate resilience and sustained competitive advantage over time.

## Conclusion

This study provides empirical evidence that sustainable branding strategy enhances firm performance through customer engagement mechanisms and that marketing capability strengthens this relationship. Firms integrating sustainability into branding strategies are better positioned to attract and retain customers, leading to improved financial outcomes.

The results demonstrate that customer engagement plays a key mediating role, confirming that sustainability branding influences performance not only directly but also indirectly through consumer interaction and loyalty. Moreover, marketing capability acts as a boundary condition, determining whether sustainability investments successfully translate into performance improvements.

From a managerial perspective, firms should embed sustainability commitments within brand strategies and invest in marketing capabilities to convert sustainability positioning into economic benefits. Policymakers can support these developments by encouraging sustainability transparency and promoting responsible consumption awareness.

Overall, the findings highlight that sustainability initiatives become economically valuable when supported by effective marketing strategies and customer engagement processes. As sustainability continues to shape market competition, firms capable of aligning sustainability commitments

with marketing capabilities and customer engagement are more likely to achieve sustainable performance growth.

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