

Research Article

Corporate sustainability and brand value: Evidence from Türkiye

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ABSTRACT

Sustainability-oriented business practices are increasingly recognized as vital in the corporate landscape. These practices, grounded in Environmental, Social, and Governance (ESG) criteria, aim to address not only the financial performance of companies but also their societal and environmental impacts. This study examines the influence of ESG practices on brand value, utilizing data from companies listed on Borsa Istanbul, Türkiye. Employing the Driscoll-Kraay robust standard errors panel data method on a sample spanning the years 2011-2021, the findings indicate that enhanced ESG performance significantly elevates brand value. Social categories, particularly those related to labor management, human rights protection, community involvement, and product responsibility, demonstrate a strong positive influence on brand value. Environmental categories, such as efficient resource management and emission reduction, also contribute positively to brand value, though their impact is comparatively less substantial. Governance categories present mixed results; while management performance has a positive effect on brand value, shareholder-centric practices exhibit a negative impact. Additionally, the study also reveals that the impact of ESG practices on brand value is more pronounced in companies that are less profitable, smaller, more leveraged, less liquid, and younger. The results suggest that companies should adapt their ESG strategies based on their particular attributes to optimize the impact on brand value. Further, the study once again underlines the importance of a comprehensive approach towards ESG that maintains a balance between short-term gains and long-term sustainability. Such insights can also provide useful guidance to companies, investors, and policymakers by using ESG practices as an effective tool to enhance brand value and achieve success in the long term.

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INTRODUCTION

Firms are actively seeking various strategies to differentiate themselves from competitors and capture consumer attention [1]. Companies recognize that in order to not only survive but also thrive in the marketplace, the branding process is of critical importance [2]. While the concept of a brand has numerous definitions in the literature, it fundamentally refers to a name, symbol, design, or a combination thereof that gives identity to goods and services [3]. A brand informs consumers about the origin of the products they purchase,

thereby protecting both buyers and sellers from potential market abuses [4]. Branding enables firms to distinguish their offerings from those of competitors and to establish a unique position in the consumer's mind. Consequently, in an intensely competitive market environment, branding serves as a crucial tool for creating a lasting presence among target audiences and maintaining a preferred status over other market participant [5].

Brand value refers to the collective value derived from the positive impressions a brand creates among consumers,

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while also reflecting the strength of the relationship between the brand and its customers [6]. Additionally, brand value encompasses a brand's overall perception, financial performance, product and service quality, customer loyalty, satisfaction, and the general respect the brand commands. Therefore, when considering brand value, both the tangible and measurable aspects of the brand, as well as the composite values associated with the brand name, come to mind [7]. In recent years, the concept of brand value has gained increasing importance, driven by the fact that companies are now ranked based on their brand value, with those possessing higher brand value being regarded as more successful [8].

Likewise, gained global prominence with the Brundtland Report by the United Nations in 1987, and further accelerated after the millennium, corporate sustainability has increasingly attracted significant interest among large and medium-sized firms globally. This concept is fundamentally grounded in the dimensions of Environmental, Social, and Governance (ESG). This trend is primarily driven by the established and growing demand for products and services that minimize environmental impact [9, 10] and the increasing need for firms to comply with progressively stringent environmental regulations [11]. Beyond consumer preferences and legal requirements, the adoption of ESG practices has notable social and governance implications [12]. Socially, firms that prioritize ESG considerations tend to contribute positively to communities by fostering inclusive workplaces, supporting local development initiatives, and promoting diversity and equity within their organizations [13]. Moreover, strong corporate governance frameworks embedded within ESG strategies enhance transparency, accountability, and risk management in firms, thereby increasing investor confidence and supporting long-term sustainability goals [14, 15].

In recent years, access to and availability of ESG data have significantly improved [16], leading to enhancements in the methodologies employed in related studies. These developments have proved critical in developing strong theoretical bases within which the production of related findings and future estimations can be built. Now that companies worldwide are gearing up with more sensitivity for aligning their bottom-line profitability in a sustainable and responsible manner, evaluating how ESG practices impact brand value becomes paramount. Previous studies have found that businesses with high ESG performance tend to exhibit superior financial performance [17] and lower risk of financial failure [18]. Consequently, companies with high ESG scores are more likely to be perceived by society, customers, and investors as reliable, reputable, and low-risk, which may lead to higher brand value and long-term success compared to other firms.

This article addresses a critical issue by investigating the potential relationships between ESG performance and brand value among firms listed on Borsa Istanbul, Turkey between 2011 and 2021. The research, conducted using the fixed effects method and Driscoll-Kraay standard error estimator, aims to explore these relationships by analyzing data obtained from the LSEG Eikon database. Environmen-

tal performance is measured through resource use score, emissions score, and environmental innovation score, social performance is measured through workforce score, human rights score, community score, and product responsibility score, and governance performance is measured through management score, shareholder score, and corporate social responsibility (CSR) strategy score. The impact of each of these subcategories on brand value is tested individually. Furthermore, the study provides an in-depth analysis of the influence of ESG on brand value across various contexts, including different levels of profitability, firm size, asset structure, leverage, liquidity, and firm age.

This paper addresses a gap in the literature by examining the impact of ESG practices on brand value within the context of Türkiye, focusing on companies listed on Borsa Istanbul. It provides a unique contribution by exploring this relationship in a developing country setting, where such research remains limited. Unlike prior studies, this paper evaluates the effects of 10 distinct ESG subcategories on brand value individually, offering a nuanced understanding of their specific impacts. This detailed approach distinguishes the paper from previous work. Another notable contribution is its demonstration that the influence of ESG performance on brand value varies depending on firm characteristics, highlighting the contextual nature of ESG practices. This perspective underscores the need to consider company-specific factors when assessing the implications of ESG initiatives.

The study proceeds with a conceptual framework section that examines the theoretical foundation of the relationship between ESG and brand value, along with the hypotheses developed accordingly. The data, sample, variables, and model are summarized in Chapter 3, while Chapter 4 presents the empirical findings. The final section includes the conclusion, discussion, future research directions, and practical recommendations.

THEORETICAL FRAMEWORK AND HYPOTHESES

The term ESG gained widespread recognition following the publication of the UN Global Compact Initiative's report, "Who Cares Wins: Connecting Financial Markets to a Changing World," in 2004. This initiative aimed to integrate three key ethical pillars—environmental, social, and corporate governance—into business practices. Each of these pillars has distinct evaluation objectives and addresses a specific set of issues.

Global warming, water and air pollution, deforestation, land overuse, and biodiversity loss are all challenges addressed by the environmental pillar. It assesses how effectively a company manages waste, water, and energy resources, as well as its efforts to reduce greenhouse gas emissions. Human rights, health and safety, ethics, reconciliation with indigenous peoples, diversity, and inclusion all fall under the social pillar. It also emphasizes the connections between businesses and the communities in which they operate. It also highlights the role of firms in driving political, labor, and social trends that can benefit both profitability and corporate responsibility.

ity. The corporate governance element covers issues such as board independence, shareholder rights, executive compensation, control methods, anti-competitive behavior, and legal compliance [19].

The ESG approach requires the assessment of factors that influence a company's long-term value and sustainability, rather than relying solely on financial metrics like performance or profit, as was common in the past [20]. It is widely acknowledged that non-financial ESG factors are significant determinants of a firm's investment value and sustainability. The importance of these factors is the subject of extensive discussion in both businesses and academics [19]. This ongoing debate underscores the growing recognition of these elements in influencing corporate outcomes. For example, previous research has highlighted the benefits of ESG on firm performance [17, 21, 22, 23].

The impact of ESG practices on brand value is becoming increasingly significant, especially as consumers place greater importance on sustainability and ethics [24]. Well-executed ESG strategies can enhance a brand's reputation and foster consumer loyalty, which, in turn, can positively influence brand value in the long term [25]. Therefore, ESG practices are not only crucial for fulfilling environmental and social responsibilities but also serve as a key strategy for creating and preserving brand value. In this context, it is essential for firms to understand how to leverage ESG practices to strengthen their reputation, build consumer trust, and positively influence consumer perceptions and purchasing behaviors through effective ESG management strategies [20].

Based on the swift actions taken by companies to combat climate change and implement efficiency projects related to carbon emissions, energy, waste, and material usage, it is evident that such measures can significantly enhance brand value [26]. Customers increasingly prefer companies with strong brand reputations that operate sustainably [27]. Consequently, these firms are likely to gain not only a competitive advantage but also see improvements in both their environmental and financial performance [28].

Firms that effectively integrate social elements such as ethical behavior, commitment to human rights, and fair labor practices into their business strategies tend to cultivate a positive public image [29, 30, 31]. Ethical conduct plays a crucial role in fostering stakeholder trust, which is vital for maintaining a strong corporate reputation [32]. Research indicates that companies with robust ethical commitments achieve higher reputation scores compared to those lacking such commitments [33, 34]. Additionally, consumers are more likely to support firms engaged in socially responsible practices [27, 35]. When companies focus on societal initiatives, health and safety, and inclusivity, they build a loyal customer base that values these efforts. For instance, 86% of consumers are more likely to support companies that contribute to making the world a safer place [36]. Moreover, corporate social performance, achieved through significantly reducing child labor and other forms of violence against children, can influence a firm's financial market valuation, thereby enhancing its financial performance and brand value [28].

Corporate governance plays a critical role in shaping a firm's success, revenue, and profit strategies, and the personal values of top management can facilitate the adoption of sustainable and environmental practices [37]. When corporate governance integrates sustainable development initiatives into strategic planning and operations, the firm is better positioned for future success. Moreover, this integrated approach allows the firm to make more informed and long-term decisions regarding dividend distribution, thereby enhancing shareholder confidence and meeting investor expectations [38]. Additionally, strong corporate governance practices can reduce the firm's borrowing costs by enabling access to financing at lower interest rates, as well-managed firms are typically perceived to have a lower risk profile [39].

Financially robust firms can allocate more resources to environmental initiatives, thereby enhancing their sustainability efforts, which in turn bolsters their reputation and brand value as sustainability leaders [40]. By employing green appeal strategies, managers can influence consumer attitudes, leading to increased customer loyalty and brand preference [41]. Boards of directors that prioritize sustainability issues tend to achieve better financial returns, and active board involvement can foster strong corporate governance, further enhancing the firm's reputation and brand value [42]. The commitment of top management to environmental management contributes to a positive corporate image and increased brand value through robust internal environmental practices [43]. By playing a pivotal role in creating business opportunities through sustainability, managers can help integrate sustainability into corporate culture, thereby improving the firm's performance and competitive advantage [44]. The adoption and implementation of sustainable products and services assist firms in establishing sustainable competitive advantages, which strengthen their market position and brand value [45].

Recent studies have examined the effects of ESG performance on brand and firm value from different perspectives. Li and Wang [46] state that the positive effect of ESG performance on brand value is strengthened by R&D innovations, while Zou et al. [24] emphasize that media coverage further strengthens this relationship. Choi and Kim [47] found that the impact of ESG on brand value is realized through environmental and corporate governance factors, while the social factor has a less significant effect. Similarly, Bae et al. [48] find that environmental and social factors have positive effects on brand trust, but corporate governance does not have a direct effect. Lee et al. [49] stated that social and corporate governance activities have positive effects on brand image, attitude and loyalty, but environmental activities do not have a significant effect on these criteria. Wang et al. [50] show that the impact of ESG performance on brand value exhibits a U-shaped relationship; while it provides positive effects at low and high levels, this effect weakens at medium levels. On the other hand, it is seen that the majority of the studies focus on the effects of ESG performance on firm value. Guangyou Zhou et al. [51] argue that ESG performance positively affects firm value and financial performance acts as a mediating fac-

tor in this relationship. In addition, it is also stated that this relationship remains valid under various market conditions such as financial crises and the COVID-19 pandemic. In addition, studies have found that the environmental and social dimensions of ESG have positive effects on firm value, but the effects of the corporate governance dimension vary and in some cases are not significant [52, 53, 54].

Based on these arguments, the following hypotheses have been formulated:

H1: ESG performance has a positive impact on brand value.

H1a: Environmental performance has a positive impact on brand value.

H1b: Social responsibility performance has a positive impact on brand value.

H1c: Corporate governance performance has a positive impact on brand value.

METHODOLOGY

Data and Method

This study focuses on firms listed on Borsa Istanbul, Türkiye that operate outside the financial sector. Companies within the financial sector were excluded from the analysis due to the distinct nature of their financial structures and the challenges associated with comparing results across different sectors. The study covers the period from 2011 to 2021.

Financial statement data and ESG information for the firms were sourced from the LSEG Eikon database, while brand value data was obtained from Brand Finance's annual report on Türkiye's top 100 most valuable and strongest brands. Bagna et al. [55] analyzed reports published by various consulting firms and identified Brand Finance values as the most appropriate, in comparison to Interbrand and BrandZ values, due to the differing evaluation methods employed by each provider. Among the 100 firms, only 35 had available ESG scores, resulting in a total of 210 observations. To mitigate the impact of outliers in the dataset, the extreme values in the control variables were winsorized to match the 1st and 99th percentiles.

Measurement of Variables

The dependent variable is represented by brand value data sourced from Brand Finance. Brand Finance calculates brand values in US dollars. Following the approach of Günay [56], these dollar-denominated brand values were converted into Turkish lira by multiplying them with the year-end forex buying rate, as published annually by the Central Bank of Türkiye. Subsequently, as per the method used by Bagna et al. [55], the natural logarithms of these converted values were computed.

The independent variables encompass ESG scores. These ESG scores, which measure firms' overall ESG, environmental, social, and corporate governance performance, are sourced from the LSEG Eikon database. LSEG Eikon publishes these scores based on data reported by firms, provid-

ing an objective assessment of their ESG performance. These scores are widely used in academic research [57, 58].

Environmental performance is assessed through three sub-components: resource use score, emissions score, and environmental innovation score. These scores reflect a firm's efficiency in using natural resources, efforts to reduce emissions, and innovation in environmental practices, respectively. Social performance is measured using four sub-components: labor score, human rights score, community score, and product responsibility score. These scores evaluate a firm's treatment of its workforce, respect for human rights, relationship with the community, and accountability for the impacts of its products. Corporate governance performance is assessed using three sub-components: corporate governance score, shareholder score, and CSR strategy score. These scores represent the quality of a firm's governance practices, its relationship with shareholders, and its strategic approach to CSR. Each of these sub-categories is considered as an independent variable to test its impact on brand value. This comprehensive approach allows for a detailed analysis of how different aspects of ESG performance influence brand value.

Control variables play a crucial role in ensuring the accuracy and reliability of analyses related to brand value. In this context, four key control variables are considered: firm size, profitability, asset structure, and leverage. Firm size, measured as the natural logarithm of total assets, reflects the scale of the company. Natural logarithm is commonly used because it normalizes data, reduces the influence of outliers, and provides a clearer picture of the firm's relative size [59]. Larger firms generally possess more resources and capabilities [60, 61], which can significantly influence brand value. Firm profitability, another important control variable, is calculated as the ratio of earnings before interest and taxes (EBIT) to total assets. Known as return on assets (ROA), this ratio reflects the firm's financial efficiency and its effectiveness in utilizing assets to generate earnings [62]. Higher profitability can enhance brand value by signaling financial health and stability to stakeholders [63]. The firm's asset structure, defined as the ratio of tangible fixed assets to total assets, indicates the extent to which a company is invested in physical assets, affecting its operational flexibility and risk profile [64]. Firms with a higher proportion of tangible assets may have different strategic priorities and risk assessments compared to those with more intangible assets [65], potentially influencing brand value. Leverage, measured as the ratio of total debt to total assets, reflects the firm's financial risk profile. High leverage indicates greater financial risk due to the reliance on debt to finance operations [66]. Because high leverage is perceived negatively by investors and stakeholders [67], potentially impacting the firm's brand reputation/brand strength as a consequence, it might lead to an impact on that value. The inclusion of these control variables in the model enhances the analysis by accounting for factors that could significantly impact brand value, thereby allowing for a more accurate and reliable assessment of the primary variables under investigation. Information on all these variables is shown in Table 1.

Table 1. Definitions and explanations of variables

VARIABLES	DESCRIPTION
BRAND	Brand Value = The natural logarithm of brand values in Turkish Lira, as obtained from the Brand Finance 100 Report.
ESG	ESG Score from LSEG Eikon Database
ENV	Environmental Score from LSEG Eikon Database
SOC	Social Score from LSEG Eikon Database
GOV	Governance Score from LSEG Eikon Database
RESOURCE	Resource Use Score from LSEG Eikon Database: This score evaluates a company's efficiency in minimizing the consumption of materials, energy, or water, and its ability to implement eco-efficient solutions by optimizing supply chain management.
EMISSION	Emissions Reduction Score from LSEG Eikon Database: This score assesses the commitment and effectiveness of a company in reducing environmental emissions within its production and operational processes.
INNOV	Innovation Score from LSEG Eikon Database: The innovation score gauges a company's capability to minimize environmental impacts for its customers, thereby opening new market opportunities through the development of new environmental technologies, processes, or eco-friendly products.
WORK	Workforce Score from LSEG Eikon Database: This score measures a company's effectiveness in fostering job satisfaction, ensuring a healthy and safe work environment, promoting diversity and equal opportunities, and providing development opportunities for its employees.
HUMAN	Human Rights Score from LSEG Eikon Database: This score evaluates a company's adherence to fundamental human rights conventions and its effectiveness in upholding these standards.
COMMUN	Community Score from LSEG Eikon Database: The community score reflects a company's commitment to being a responsible corporate citizen, protecting public health, and upholding ethical business practices.
PRODUCT	Product Responsibility Score from LSEG Eikon Database: This score assesses a company's ability to produce high-quality goods and services while ensuring customer health and safety, integrity, and data privacy.
MGMT	Management Score from LSEG Eikon Database: The management score measures a company's dedication and effectiveness in adhering to best practices in corporate governance.
SHRHOLD	Shareholders Score from LSEG Eikon Database: This score evaluates a company's effectiveness in ensuring the fair treatment of shareholders and its use of anti-takeover measures.
CSR	CSR Strategy Score from LSEG Eikon Database: The CSR strategy score reflects how effectively a company integrates economic, social, and environmental considerations into its daily decision-making processes and communicates these practices.
PROFIT	The ratio of earnings before interest and taxes (EBIT) to total assets
SIZE	The natural logarithm of total assets
TANGIBIL	The ratio of tangible fixed assets to total assets
LEVERAGE	The ratio of total debt to total assets

Table 2 presents descriptive statistics, including the mean and standard deviation for the variables, along with correlation analyses highlighting the relationships between these variables. The average brand value, calculated using the natural logarithm of brand values in Turkish Lira, is 21.065. The mean ESG score is 57.052 out of 100, reflecting moderate to high levels of ESG performance. Firms demonstrate a profitability ratio of 6.2% based on total assets. The average firm size variable is 21.69. Additionally, firms have a fixed asset ratio of 26.69%, indicating that more than a quarter of their assets are invested in long-term projects, and a debt ratio of 32.80%, showing a moderate reliance on debt financing.

Research Model

In econometric analysis, researchers typically utilize three types of data: time series, cross-sectional, and panel data [68]. Among these, panel data is particularly valuable because it tracks the same entities, such as countries or firms, over a specific period, considering various relevant variables [69]. This method provides greater sample diversity and more degrees of freedom compared to using only cross-sectional or time series data, leading to more robust and precise parameter estimates [70]. Consequently, as highlighted by Korkmaz et al. [71], employing panel data analysis for datasets with a panel structure results in statistically superior outcomes. The core model developed for this study is presented below.

$$BRAND_{i,t} = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 Controls_{i,t} + \varepsilon_{i,t}$$

Information on all variables included in the model can be found in Table 1. In this context, " β " represents the beta coefficient, "i" denotes firms, "t" refers to time, and ε signifies the error term.

Classical panel data analysis involves selecting the most appropriate estimator for estimating model parameters by employing various tests such as the Breusch-Pagan LM test, the F Chow test, and the Hausman test. The F-test is utilized to decide between the pooled ordinary least squares (OLS) model and the fixed effects model. In contrast, the Breusch-Pagan LM test aids in determining whether

to use the POLS or random effects model. When the F-test indicates fixed effects and the LM test suggests random effects, the Hausman test is employed. This test is crucial for deciding between fixed and random effects models by examining whether unit effects are correlated with the regressors in the model. A significant result from the Hausman test indicates that unit effects are correlated with the dependent variable, making the random effects model inappropriate, and thus, the fixed effects model should be preferred. This ensures that the selected model provides the most consistent and unbiased estimates for the given panel data. Table 3 presents the results of these tests. As in Table 3, the Hausman test results indicate that the fixed effects model should be employed as the final model in the analysis.

Table 2. Descriptive statistics and correlation analysis

Variables	Mean	Std. Deviation	(1)	(2)	(3)	(4)	(5)	(6)
(1) BRAND	21.06	1.151	1					
(2) ESG	57.05	19.58	0.167**	1				
(3) PROFIT	0.062	0.055	0.128*	0.008	1			
(4) SIZE	21.69	1.165	0.591***	-0.118*	-0.046	1		
(5) TANGI-BIL	0.267	0.176	0.433***	-0.176**	-0.140**	0.289***	1	
(6) LEVER-AGE	0.328	0.168	0.156**	0.267***	-0.357***	0.031	0.234***	1

Definitions of variables are in Table 1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 3. Model specification tests

Test	F-Value	χ^2	χ^2	Decision
F (Chow) Test	11.25***			Fixed Effect
Breusch-Pagan LM Test		290.8***		Random Effect
Hausman Test			27.55***	Fixed Effect

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 4. Test of assumptions of fixed effects panel data estimation model

Test	F-Value	χ^2	CD Value
Wooldridge Panel Data Autocorrelation Test	5.285**		
Modified Wald Test for Heteroscedasticity		2.3e+29***	
Pesaran Cross-Sectional Dependence Test			15.836***

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

To ensure the accuracy and unbiasedness of the results obtained from the fixed effects model, it is crucial to conduct specific diagnostic tests. These tests include the Wooldridge panel data autocorrelation test, the Wald test for heteroskedasticity, and the Pesaran test for cross-sectional dependence. The Wooldridge test examines the presence of autocorrelation in the error terms, the Wald test assesses whether the variance of the error terms is constant, and the Pesaran test checks for cross-sectional dependence among the error terms. The relevant tests conducted for the model and their corresponding results are presented in Table 4.

As in Table 4, it becomes evident that significant issues related to autocorrelation, heteroskedasticity, and cross-sectional dependence have emerged at the 1% significance level, suggesting po-

tential violations of the model assumptions. To address these common problems in panel data models, the Driscoll-Kraay standard errors method was employed in the paper. This method is used to tackle prevalent econometric issues such as heteroskedasticity, autocorrelation, and cross-sectional dependence [72]. According to Driscoll and Kraay [73], this approach provides robust standard errors that remain consistent even when panel data are unbalanced—meaning the data may exhibit different variances over time and across units. This makes the method particularly suitable for empirical research, ensuring accurate and reliable results while enhancing the robustness of parameter estimates and the overall validity of statistical inferences drawn from the data.

FINDINGS

Table 5 presents the results of the panel data analysis, which focuses on the impact of ESG practices and their subcomponents on brand value, using the Driscoll-Kraay robust standard errors estimator. The analysis also includes various control variables. Column 1 specifically shows the results regarding whether ESG alone has an effect on brand value. In this model, ESG is found to have a significant positive impact on brand value ($\beta = 0.014$; $t = 3.75$), indicating that higher ESG performance is associated with an increase in brand value. Column 2 presents the analysis results on the impact of ESG on brand value when control variables are included. Results continue to highlight the positive effect of ESG on brand value ($\beta = 0.011$; $t = 2.99$). Additionally, among the control variables, firm profitability ($\beta = 2.473$; $t = 3.34$) and leverage ($\beta = 1.424$; $t = 5.29$) show a positive impact on brand value, whereas asset structure negatively affects brand value ($\beta = -1.854$; $t = -1.99$). Firm size, however, does not have a significant effect on brand value. In Column 3, the environmental pillar of ESG is found to have a positive and significant impact on brand value ($\beta = 0.007$; $t = 2.80$). This finding suggests that improvements in environmental practices are associated with an increase in brand value, reflecting the growing importance of environmental responsibility in shaping a firm's reputation and consumer perception. Similarly, Column 4 reveals that the social pillar significantly enhances brand value ($\beta = 0.010$; $t = 3.32$). This effect underscores the critical role of social initiatives, such as community engagement, employee welfare, and diversity efforts, in strengthening a brand's value. These findings highlight the importance of social responsibility in building a positive brand image and increasing consumer trust and loyalty. Finally, in Column 5, it is observed that the corporate governance pillar does not have a significant impact on brand value ($\beta = 0.004$, $t = 1.16$). This suggests that, within this sample, corporate governance practices alone do not drive changes in brand value. While good corporate governance is essential for overall corporate health and sustainability, it appears to be less effective in directly increasing brand value. This finding is in

line with the study of Wang et al. (2024) on 126 firms among the 500 Most Valuable Chinese Brands [50]. In the study, it was found that the effect of ESG performance on brand value is largely concentrated in the environmental and social responsibility pillars, but there is no significant effect under the corporate governance pillar. However, this finding should not lead to the complete disregard of the importance of corporate governance.

Overall, the results indicate that higher ESG scores, particularly in the environmental and social dimensions, are associated with increased brand value. The control variables consistently show that firm profitability and leverage positively influence brand value, while asset structure has a negative impact. Firm size does not affect brand value across all models.

Table 6 presents the results of an analysis examining the impact of various subcategories of environmental, social, and governance pillars on brand value. Within the environmental pillar, both the resource use score and the emissions reduction score have positive and significant effects on brand value, with coefficients of 0.006 and 0.008 and t-values of 2.60 and 3.81, respectively. This indicates that effective resource management and emissions reduction practices are crucial in enhancing a firm's brand value. However, the environmental innovation score does not have a significant impact, suggesting that innovation efforts in environmental practices alone do not substantially influence brand value. This finding is partially consistent with the study of Rahman et al. [74] on industrial firms in the Interbrand ranking. In Rahman et al.'s study, it is stated that firms that are successful in environmental innovation have higher brand value, which contradicts the findings in Table 6 that environmental innovation does not have a significant effect. However, both studies are consistent in concluding that efficient use of natural resources and emission reduction increase brand value. Similarly, Lee et al. [75], in their study on automotive firms, found that consumers value automotive brands that produce vehicles that minimize their 'carbon footprint' by reducing emissions and argued that this situation contributes to the brand value of firms.

Table 5. Analysis results

Variables	(1)	(2)	(3)	(4)	(5)
ESG	0.014*** (3.75)	0.011** (2.99)			
ENV			0.007** (2.80)		
SOC				0.010*** (3.32)	
GOV					0.004 (1.16)
PROFIT		2.473*** (3.34)	2.296** (2.99)	3.023*** (3.79)	2.761*** (3.33)
SIZE		-0.008 (-0.08)	0.034 (0.33)	-0.002 (-0.02)	0.117 (0.87)
TANGIBIL		-1.854* (-1.99)	-2.178** (-2.52)	-1.742 (-1.76)	-2.744** (-3.14)
LEVERAGE		1.424*** (5.29)	1.453*** (5.51)	1.421*** (5.16)	1.843*** (9.53)
Intercept	20.283*** (96.29)	20.489*** (9.33)	19.898*** (8.36)	20.325*** (8.61)	18.258*** (5.98)
Number of Obs.	210	210	210	210	210
Number of Firms	35	35	35	35	35
R ² Value	0.168	0.228	0.199	0.255	0.147
F-Value	14.04***	58.32***	40.09***	72.43***	39.62***

Definitions of variables are in Table 1. The values in parentheses are t-statistics. *** p<0.01, ** p<0.05, * p<0.1

Table 6. Results based on ESG sub-components

Variables	ENVIRONMENTAL				SOCIAL			GOVERNANCE		
	RESOURCE	EMISSION	INNOV	WORK	HUMAN	COMMUN	PRODUCT	MGMT	SHRHOLD	CSR
ESG	0.006** (2.60)	0.008*** (3.81)	0.003 (1.63)	0.006** (2.43)	0.007*** (3.54)	0.008** (2.55)	0.006** (3.00)	0.004** (2.25)	-0.003* (-2.11)	0.003 (1.73)
PROFIT	2.547*** (3.26)	2.793*** (3.51)	2.576** (2.92)	3.057*** (3.24)	2.642*** (3.25)	3.316*** (3.71)	3.259*** (3.62)	3.074*** (3.37)	3.419*** (3.42)	2.644*** (3.24)
SIZE	0.023 (0.20)	-0.010 (-0.10)	0.128 (0.92)	0.027 (0.18)	0.043 (0.31)	0.045 (0.30)	0.070 (0.94)	0.100 (0.72)	0.130 (0.77)	0.103 (0.73)
TANGIBIL	-2.644*** (-3.32)	-1.702* (-2.07)	-2.643** (-3.02)	-2.325** (-2.58)	-1.949* (-2.10)	-2.046* (-2.21)	-2.227** (-2.47)	-2.691*** (-3.17)	-3.068*** (-3.52)	-2.878*** (-3.26)
LEVERAGE	1.520*** (6.33)	1.456*** (6.82)	1.803*** (8.12)	1.864*** (12.46)	1.316*** (3.40)	1.423*** (6.68)	1.823*** (7.47)	2.027*** (9.49)	2.173*** (12.95)	1.804*** (9.10)
Intercept	20.242*** (7.84)	20.642*** (8.60)	18.132*** (5.78)	19.844*** (6.21)	19.778*** (6.30)	19.484*** (5.90)	18.989*** (11.19)	18.518*** (5.88)	18.287*** (4.83)	18.676*** (5.90)
Number of Obs.	210	210	210	210	210	210	210	210	210	210
Number of Firms	35	35	35	35	35	35	35	35	35	35
R ² Value	0.193	0.222	0.152	0.175	0.260	0.211	0.214	0.157	0.145	0.153
F-Value	61.57***	67.81***	33.65***	74.59***	21.98***	86.68***	54.37***	46.19***	106.9***	39.69***

Definitions of variables are in Table 1. The values in parentheses are t-statistics. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

For the social pillar, results are as follows: workforce, human rights, community involvement, and product responsibility have a positive and significant impact on brand value. The coefficients lie between 0.006 and 0.008, with t-values between 2.43 and 3.54. All subcomponents of social pillar appear to have a causally consistent and strong positive influence on brand value which highlights the relevance of such type initiatives. Companies that do well at managing people, enabling human rights, getting involved with the community, and taking responsibility for their products are far more likely to increase brand value. The workforce plays a critical role in brand management. Employees are key brand builders who contribute significantly to the brand's identity and reputation. Chernetony [76] emphasizes that aligning employees' values and behaviors with the brand's aspirational values is vital to building a strong and consistent brand identity. Research also suggests that human rights practices have a positive impact on brand value and reputation [77]. Transparent disclosure of human rights information can increase brand value by creating a positive image with investors and creditors [78]. In addition, human rights due diligence can reduce the risks of businesses and strengthen brand reputation [79]. However, multinational companies operating in countries with low human rights standards may be forced to lower their standards due to competitive pressures, suggesting the need for collective efforts to protect brand reputation in the long run [80]. Firms that integrate human rights into global governance can increase brand value by acquiring intangible assets such as reputational capital [81]. On the other hand, civil society organizations play an important role in ensuring firm accountability through information dissemination. Research shows that negative human rights news, such as activist assassinations, can reduce the market value of the firms involved and hence brand value [82]. Community engagement as part of corporate sustainability (ESG) has been found to have a strong and positive impact on brand value. ESG activities, such as

community engagement, can strengthen companies' brand value by focusing specifically on environmental and social impacts; this effect is particularly pronounced in slow-growth industries that offer standardized products [83]. In competitive industries, community engagement indirectly contributes to firm value by improving brand perception [83]. Moreover, online brand communities on social media platforms enhance brand value by increasing brand popularity and customer loyalty, especially in highly competitive business-to-consumer sectors [84]. Product responsibility also has a significant and positive impact on brand value. Investments in this area strengthen brand value by increasing consumer trust and improving inventory turnover [85]. This effect is further enhanced when combined with visible aspects of ESG such as environmental and community involvement, thus indirectly supporting brand value by improving product market perception [83]. In particular, ESG activities aligned with product differentiation strategies can further enhance brand value, while cost leadership strategies can weaken this effect [86]. Furthermore, building a solid brand image necessary to achieve sustainability is just heavily relying on these types of social practices. Results also show that among the ESG pillars, social performance is the most influential factor in determining brand value. Firms that proactively adopt social responsibility can position themselves as industry leaders by avoiding negative impacts. Especially in some sectors, social responsibility is now becoming a regulatory obligation. Companies that do not comply with these requirements risk facing legal and financial sanctions [87]. As a result, companies need to invest more in social responsibility projects and strategically allocate their investments accordingly to maximize brand value. Beyond just supporting the company brand, this strategic focus fosters a more sustainable and equitable business environment.

Subcategories of corporate governance pillar present a mixed picture. The management score positively and significantly impacts

brand value, with a coefficient of 0.004 and a t-value of 2.25, indicating that strong management practices are beneficial for enhancing brand value. In contrast, the shareholder score has a negative and slightly significant effect, with a coefficient of -0.003 and a t-value of -2.11. This suggests that certain shareholder-focused practices may negatively impact brand value, potentially due to the prioritization of insiders over outsiders. Finally, the CSR score does not significantly affect brand value, as indicated by its insignificant coefficient and t-value. These findings support the study of Chiang et al. [88] on family firms. The study indicated that companies with strong

corporate governance practices, robust stakeholder relationships, and higher levels of environmental transparency tend to achieve greater brand value. Indeed, Amoako et al. [89] stress the importance of engaging stakeholders in the design and execution of social responsibility initiatives.

Table 7 provides a comprehensive analysis of the impact of ESG on brand value across various contexts, including different levels of profitability, firm size, asset structure, leverage, liquidity, and firm age.

Table 7. The impact of ESG on brand value in the framework of firm characteristics

Variables	Low LEVERAGE	High LEVERAGE	Low LIQUIDITY	High LIQUIDITY	Low AGE	High AGE
ESG	0.017** (2.72)	0.007 (1.73)	0.019*** (6.71)	0.003 (0.85)	0.008* (1.90)	0.008** (2.78)
PROFIT	1.743 (1.54)	7.084*** (6.00)	2.423*** (3.76)	3.374* (1.94)	1.257 (0.79)	2.408** (2.48)
SIZE	0.271** (2.88)	-0.101 (-0.68)	-0.654** (-2.52)	0.712*** (4.80)	-0.530* (-2.05)	0.241*** (3.71)
TANGIBIL	1.304** (2.64)	-3.481*** (-3.34)	-1.563 (-1.26)	-0.820 (-0.65)	-5.237** (-2.41)	-1.432 (-1.63)
LEVERAGE	-0.126 (-0.19)	2.796*** (7.08)	1.919*** (4.08)	3.677*** (6.89)	0.010 (0.02)	2.452*** (13.46)
Intercept	13.84*** (7.03)	22.28*** (7.04)	32.66*** (6.09)	4.092 (1.26)	32.15*** (5.54)	15.38*** (14.21)
N. of Obs.	105	105	105	105	105	105
N. of Firms	29	29	29	14	23	19
R ² Value	0.294	0.362	0.400	0.302	0.207	0.464
F-Value	14.18***	90.12***	52.15***	217.6***	19.74***	81.69***
Variables	Low LEVERAGE	High LEVERAGE	Low LIQUIDITY	High LIQUIDITY	Low AGE	High AGE
ESG	0.001 (0.22)	0.018*** (5.23)	0.017*** (4.59)	0.005* (1.93)	0.011*** (3.32)	0.010* (2.17)
PROFIT	4.305** (2.93)	1.258 (1.69)	1.665* (1.92)	3.899*** (3.75)	0.690 (0.60)	4.470*** (3.19)
SIZE	0.037 (0.38)	0.530*** (4.71)	0.050 (0.22)	0.260** (2.32)	-0.177 (-1.05)	-0.184 (-1.68)
TANGIBIL	-1.449 (-1.38)	-3.828** (-3.17)	-2.162 (-1.10)	-0.644 (-0.74)	0.318 (0.23)	-3.265** (-2.81)
LEVERAGE	3.544*** (6.37)	-0.658 (-0.95)	0.922 (1.35)	2.873*** (7.90)	0.617 (1.38)	2.815*** (3.90)
Intercept	19.40*** (8.73)	9.93*** (4.19)	19.33*** (4.19)	14.06*** (5.47)	23.95*** (6.88)	24.16*** (8.65)
N. of Obs.	105	105	105	105	105	105
N. of Firms	28	24	25	22	21	19
R ² Value	0.309	0.348	0.229	0.343	0.202	0.272
F-Value	15.59***	26.11***	17.42***	143.2***	25***	74.98***

Liquidity is calculated by the ratio of current assets to short-term liabilities. The age variable is calculated by taking the natural logarithm of (Current Year – Year of Establishment + 1). For definitions of other variables, please refer to Table 1. The values in parentheses are t-statistics. *** p<0.01, ** p<0.05, * p<0.1.

As in Table 7, it is evident that ESG practices generally have a positive effect on brand value, but the significance and strength of this effect vary depending on the specific context. Specifically, the impact of ESG practices on brand value is more pronounced in companies that are less profitable, smaller, more leveraged, less liquid, and younger. The influence of ESG on brand value, however, does not vary according to tangibility. Cheng et al. [90] argue that firms with high ESG scores face fewer capital constraints. Similarly, Eccles et al. [91] show that firms that adopt sustainability-oriented strategies outperform their competitors in the long run. High ESG performance can facilitate access to capital, especially for firms with low profitability, which can help them sustain and grow their operations. In addition, such sustainability-focused approaches contribute positively to long-term brand value by enhancing brand credibility. Zou et al. [24] assert in their study on Chinese A-share listed companies that firm size moderates the relationship between ESG practices and brand value. Larger firms tend to experience a more significant effect due to their greater resources and ability to disclose ESG information. However, since these firms often already enjoy high levels of brand awareness and a solid reputation, the potential impact of further ESG improvements on brand value may be limited. With an already established reputation and extensive customer base, enhanced ESG performance might not significantly shift consumer perceptions. This suggests that the influence of ESG initiatives may vary based on firm size, and these differences could also depend on factors such as country or industry context. This underscores the fact that firms should adjust or customize their ESG strategies to be consistent with their unique identity, in order for it to effectively increase brand value. High leverage implies increased financial risk [66]. However, strong ESG performance can mitigate this risk through sound risk management and ethical governance practices. This can increase brand value by gaining the trust of investors and creditors [92]. Therefore, ESG commitment may be more effective in increasing brand value in highly leveraged firms. Lins et al. [93] reported that firms that adhere to ESGs during financial crisis periods show higher performance and maintain stakeholder trust. Similarly, El Ghoul et al. [94] found that high ESG performance reduces the cost of capital and eases financial constraints. These findings suggest that ESG practices strengthen brand value by increasing financial flexibility, especially for firms with liquidity constraints. Moreover, young firms can use ESG practices as a strategic tool to establish their brand identity and differentiate themselves in the market [95]. Early ESG adoption can have a positive impact on socially conscious consumers by embedding these values in the corporate culture [96]. Younger firms may attract attention because they are more agile and open to innovative ESG strategies, which may contribute to increasing their brand value [97]. The overall and diversified effects of ESG in different settings have a solid internal customization perspective. By understanding their specific attributes by considering their unique needs and circumstances, firms can more effectively leverage ESG practices to enhance brand value. This shows that the impact of ESG on brand value can be very different depending on the context and company, suggesting a thought also supporting an approach not one-size-fits-all but compliments business-specific conditions.

CONCLUSIONS

Grounding signaling theory, Lee et al. [75] argue that consumers are increasingly attracted to brands that are innovative, financially successful, and positively engaged in ESG initiatives, and they highlight that consumers' perceptions of a company's products, workforce, and financial performance are key factors in brand value creation. The impact of ESG activities on brand value is crucial as consumers prioritize sustainability and ethics [24]. Effective ESG strategies can enhance a brand's reputation, foster consumer loyalty, and positively influence long-term brand value [25]. Chiang et al. [88] argue that implementing sustainability initiatives enables an enterprise to maintain its brand reputation, enhance its brand image among consumers, and increase product value. Based on the above theoretical argument, this paper conducts an in-depth analysis of how ESG activities impact corporate brand value over the period between 2011–2021 using data from the stocks traded in Borsa Istanbul. By providing both conceptual and empirical insights about how sustainability strategies contribute to brand value, the research underscores its relevance in the business world for building strategic management decisions. The findings confirm that high ESG performance enhances brand value. Even after controlling for variables such as profitability, size, leverage, and asset structure, the positive impact of ESG remains valid.

Among the pillars of ESG, the environmental pillar and its sub-components, i.e. the resource use and emissions scores, have been found to positively impact brand value. This indicates that efficient resource management and effective emissions reduction practices are crucial for enhancing a firm's brand value. However, environmental innovation efforts do not significantly affect brand value on their own, suggesting that while innovation is important, its impact may be more indirect or longer-term.

The social sustainability pillar appears to have a more significant impact on brand value compared to the environmental and corporate governance pillars. This is evidenced by the higher beta coefficients associated with the social subcomponents, as well as their consistently significant and positive effects. These findings highlight that initiatives in the social pillar are crucial for building a strong and positive brand value. Therefore, it is emphasized that social initiatives have much greater power in increasing brand value and that businesses should prioritize effective social responsibility programs and allocate strong resources in order to achieve very real gains in their brand value. As a matter of fact, this situation is also supported in the study of Fatma et al. [98]. The study suggests that consumers perceive companies prioritizing social responsibility as more trustworthy and evaluate them more favorably, which in turn contributes to enhancing brand value.

In contrast, corporate governance practices exhibit varied effects on brand value. While management score positively impacts brand value, shareholder-focused practices negatively affect it due to potential conflicts between short-term gains and long-term sustainability. CSR strategies within the corporate governance pillar do not show a significant impact, suggesting that other governance practices might play a more crucial role in determining brand value. Fi-

nally, the findings reveal that the ESG activities of firms with certain characteristics have a more significant impact on brand value.

Another important finding of the study is that ESG performance generally has a positive effect on brand value, but this effect varies according to firm characteristics. In particular, the impact of ESG practices on brand value is more pronounced for low-profitability, small, highly leveraged, low liquidity and young firms. Low-profit firms can offset the negative effects of profitability by gaining stakeholder trust and building a positive brand perception through ESG commitments ([99]; [63]). Highly leveraged firms can reduce financial risk and increase investor and creditor confidence through strong ESG performance ([66]; [92]). Firms with liquidity constraints can strengthen their brand value by facilitating their access to financing through ESG activities ([90], [93]). Young firms, on the other hand, can build their brand identity and differentiate themselves in the market by adopting ESG practices ([95] [96]). These findings suggest that ESG performance should be considered not only in terms of environmental and social responsibility but also as a financial and strategic tool. In particular, given that firm characteristics significantly shape the impact of ESG on brand value, it is crucial for companies to customize ESG strategies in line with their structural needs and objectives. In this context, firms that are not yet able to fully realize their advantages, such as low-profitability or young firms, can adopt ESG as a competitive advantage and thus achieve their long-term sustainability and brand value enhancement goals. Early and effective ESG adoption can create multifaceted value for firms, both by creating efficiencies in internal processes and by increasing external stakeholder trust. The implications are quite significant. Firms should design their core strategies to correspond to which society they serve and what environments they operate in, ideally targeting the greatest uplift potential for their brand value. Understanding these needs and contexts for businesses makes ESG activities more effective for the company as a whole. The significant positive effects of the environmental and social pillars underscore the necessity of adopting a holistic approach to ESG, integrating strong practices across all dimensions rather than focusing solely on corporate governance. Additionally, the downside of shareholder-focused corporate governance practices on brand value also implies a balance considering the interests of both shareholders and stakeholders. This balance, in turn, can prevent a company's strategies from suffocating shareholder value while nurturing an environment for innovation and customer loyalty that is essential to good brand experiences. To be more precise, the primary goal of corporate finance is to increase shareholder value. From this perspective, companies that focus heavily on shareholder relations may be perceived by the market as solely "financially driven." However, building brand value typically requires the balanced management of factors such as customer loyalty, innovation, and a positive public image. Disrupting this balance can lead to lower brand value. Moreover, a high shareholder score may suggest that the company takes minimal risks to safeguard its shareholders. This risk aversion could result in the business becoming less innovative and less willing to develop bold strategies, ultimately weakening its competitive edge.

The investors can identify those firms that have better aligned their ESG actions with the likelihood of creating brand value in the future to make more rational investment decisions. Policymakers can

favorably impact the development of a more sustainable and socially conscious business environment. They achieve this by helping to create frameworks and incentives that encourage businesses to adopt and adapt their ESG practices.

In future studies, researchers could broaden the analysis to include additional markets and geographical regions. This might provide a more comprehensive understanding of the relationships between brand value and ESG by allowing for an examination of the effects of culture, as well as institutional and legal environments, on this relationship.

DATA AVAILABILITY STATEMENT

The authors confirm that the data that supports the findings of this study are available within the article. Raw data that support the finding of this study are available from the corresponding author, upon reasonable request.

CONFLICT OF INTEREST

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

USE OF AI FOR WRITING ASSISTANCE

Not declared.

ETHICS

There are no ethical issues with the publication of this manuscript.

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