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Statistical Analysis to Measure the Impact of ESG Disclosure on Firm Value and Stock Performance: Evidence from Saudi Arabia

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Abstract: Current study seeks to further analyze ESG disclosure effects on Saudi corporate value and stock performance. Especially in developing markets like Saudi Arabia. This research can also help investors and policymakers understand how ESG scores, when combined with financial criteria, can accurately assess a company's performance, especially in developing economies. The final sample 36 companies (180 company-year observations) by eliminating outlier values and companies that lacked sufficient data on the variables of our study. The results indicate that ESG disclosure has a favourable effect on Tobin's Q, with significant and positive independent factors (EVN, SCO, GOV, ESG score) ($\beta = 0.383$; 0.064; 0.382; 0.301; Sig. < 0.05). So, findings indicate that ESG ratings influence firm value. Furthermore, ESG disclosure positively impacts ROA (EVN, SCO, GOV, and ESG score) ($\beta = 0.118$, 0.074, 0.124, and 0.119; Sig. < 0.05),so, ESG disclosure has a positive significant impact on stock performance.

Key words: *Environmental, Social, and Governance disclosure (ESG)-Firm value- Sock Performance*

1. Introduction

In the business world, competition can have an impact on the operations of organizations that prioritize profits over the detrimental effects of their operations. Companies must publish an Environmental, Social, and Governance (ESG) Disclosure report detailing their operations and how they are accountable for the effects they have as a way of taking responsibility for these effects (Propheta et al., 2025). Accordingly, governments and scholars worldwide are paying more and more attention to ESG disclosure (Krueger et al., 2024; Luo, 2022). It closes the information gap between businesses and capital market players (such as stakeholders, investors, and the government) by giving the market access to more non-financial data.

Additionally, according to resource dependence theory, a company's brand reputation, customer loyalty, and investor backing are only a few of the vital resources that may be obtained by a high ESG performance(Bai et al., 2025). Stakeholder theory suggests that understanding the various facets of ESG is critical to corporate value(Zhang et al., 2020) . According to earlier research(Ahmed & Khalaf, 2025; Shaikh, 2021),ESG components are interdependent. To be socially responsible, for example, a business must have the proper governance in place to carry out environmental initiatives that benefit society. (Social) scores place greater emphasis on a company's influence on social concerns. A well-designed governance system will maximize a company's performance. The (Governance) grade takes into account the board of directors' efficacy and structure, reporting transparency, etc. Governance data is more widely acknowledged than environmental data since it has been recognized for a longer period of time.

Recent years have seen ESG performance become a major determinant of business value(Wang et al., 2024) . Most companies' market value is the present value of their future cash inflows. Investors now include ESG as part of their SDGs response. Other studies, such as(Putri & Paramita, 2025) ,indicated that ESG disclosure reflects a firm's environmental care. As investors receive encouraging signs about this, the company's value will rise. By releasing positive ESG information, businesses can effectively control their reputation and public image(Koh et al., 2022) .According to earlier studies, stock and firm worth have an impact on ESG disclosure (Negara et al., 2024).However, whether ESG/CSR

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disclosure might impact stock performance is a contentious issue in the ESG/CSR literature(Meng-tao et al., 2023) .On the value side, ESG disclosure requirements can lessen information asymmetry about how ESG practices impact financial fundamentals. For instance, they can give information about how investments in socially or environmentally conscious projects impact stock prices by influencing cash flows and discount rates (risks). Similarly, investors can more accurately evaluate the risk and cash flow impacts of present and future ESG-related policies by learning about the externalities of the company's operations, such as the carbon or biodiversity footprint (Krueger et al., 2024). According to empirical research, ESG momentum techniques have the potential to provide significant short-term gains as well as long-term reversals(Chen & Yang, 2020).

The company's value itself is a reflection of many factors pertaining to its financial stability and prospects for expansion. Company value is a crucial metric for businesses since it indicates how well they are able to manage their operations, which in turn boosts investor trust in the company's caliber. Investors' opinions of the firm's performance, which is frequently linked to stock prices, are reflected in corporate value. The greater a firm's stock price, the greater its corporate value (Propheta et al., 2025).A national strategy to diversify the Saudi economy away from its over-reliance on oil exports is crucial, according to the Saudi program 2030 program ,Sustainability concerns are actually given a lot of weight in Vision 2030(Vinodkumar & Alarifi, 2022). The ESG disclosure criteria were released at the end of 2021, and the Saudi Exchange was encouraged to enhance ESG practices and openness in the Saudi capital market(Fayad et al., 2024). For the reasons mentioned above, the Saudi market is attractive to scholars, particularly in regards to sustainability and corporate governance issues(Chebbi & Ammer, 2022).

Our research aims to perform a more thorough analysis of ESG's impact on firm value and stock performance inside the Saudi market, even though the study's findings highlight the strategic importance of ESG participation. Investors and policymakers can also benefit from this research by learning how ESG scores, when paired with important financial criteria, can be a trustworthy way to gauge a company's success, especially in developing economies. Understanding how ESG issues affect firm value will be essential for influencing future corporate value and regulatory frameworks as businesses and regulators place a greater emphasis on them. By offering concrete proof of how ESG scores, when combined with important stock performance, can increase a company's worth, especially in developing markets like Saudi Arabia, our study adds to this developing conversation. In the remaining portion of this investigation, the presentation of existing material and the formulation of research hypotheses serve to organize the findings. The methodology of the applied study and the testing of the statistical hypotheses are the topics that will be covered in the next section. Discussion and conclusions presented as the final part of the study.

2. Literature review

2.1 ESG disclosure and Firm Value

Many research show that ESG boosts corporate value. Few multi-country research show value firms and ESG scores are positively correlated. (Li et al., 2018)found that ESG disclosure increases company value by increasing transparency, accountability, and stakeholder confidence.(Aboud & Diab, 2018) also examine how company value and ESG practice disclosure connect in Egypt. ESG index firms are linked to higher business values, according to the authors. Tobin's Q values companies.

(Bhaskaran et al., 2020)Examining the effect of ESG on the financial performance of 4887 companies from 2014 to 2018, by use firm value (Tobin’s Q) and operational performance (ROE and ROA) to understand the relationship. They prove that companies with good social and environmental performance, as well as good governance, are more attractive to investors. After looking at 1038 publicly listed companies from 22 European countries in 2018 and 2019, (De Lucia et al., 2020) discovered a significant link between ESG traits and financial performance (ROE and ROA). According to (Whelan et al., 2021) , the NYU Stern Center for Sustainable Business and Rockefeller Asset Management analyzed over a thousand publications that discussed ESG-financial performance from 2015 to 2020. Findings indicate that ESG contributes to financial performance in 58% of the publications analyzed. In their study, (Aydoğmuş et al., 2022) look into how ESG performance, profitability, and firm value are related. A high ESG composite score is positively correlated with business value. This research suggests that companies which put money into ESG performance can expect a return on their investment in the form of increased value and profits.

(Bamahros et al., 2022) explore Saudi corporate governance and ESG disclosures, the study indicated that Saudi corporate governance law is likely the main reason ESG disclosure has improved. Another study (Hussain et al., 2024) examined Saudi Arabian firms' performance and ESG disclosure. The results demonstrate that Saudi corporate governance changes positively affect ESG and board independence and size. (Bamahros et al., 2022; Hussain et al., 2024) found that better company governance reveals more ESG information. (An et al., 2025) studied how capital constraints and ESG disclosure affected business value in a panel of Chinese A-listed companies from 2013 to 2020. The relationship between ESG ratings

and firm market value is investigated by (Huang et al., 2025) in relation to information asymmetry and the readability of ESG reports.

From a different perspective, studies reveal that ESG disagreements affect finance restrictions, green innovation, and overall factor productivity, all of which have a negative direct and indirect effect on business value (Ma & Ma, 2025). According to (Truong, 2025) firm valuation and ESG performance were negatively correlated from 2010 to 2022. In the medium and long term, ownership concentration has a negative moderating effect on the link between business value and the governance pillar. Additionally, the COVID-19 ESG composite score and business valuation are negatively moderated by ownership concentration.

Numerous studies suggest companies should improve risk management, governance, and ESG risk assessment (An et al., 2025; Aydoğmuş et al., 2022; Bai et al., 2025; Broadstock et al., 2021; Ma & Ma, 2025) Businesses should create a board-level sustainability committee to oversee and resolve ESG disputes and align operations with stakeholder expectations and long-term goals. ESG practices also offer a new accountability metric that considers non-financial and voluntary goals, claim (Umar et al., 2024). Nearly all of a company's stakeholders, including shareholders, lenders, managers, customers, and institutions in Saudi Arabia, view ESG measurements as performance indicators, therefore there is an increasing global concern about them.

2.2 ESG disclosure and stock performance

Academics from all over the globe are curious about the correlation between ESG factors and stock returns,(La Torre et al., 2020) investigated the impact of (ESG) characteristics on the stock returns of companies included in the Eurostoxx50 index. According to their study's findings, the ESG pledges of the companies under investigation had no bearing on their stock returns. Additionally,(Li et al., 2022) proposed that ESG performance had asymmetric effects during the Chinese pandemic and greatly increased companies' cumulative abnormal returns. According to empirical findings, ESG performance has asymmetric effects during the pandemic and considerably raises enterprises' cumulative abnormal returns. According to a study by (Carnini Pulino et al., 2022), corporate performance and disclosure about governance, social issues, and the environment are positively correlated. Examine the impact of the ESG score on UK stock returns in this line (Luo, 2022).

In light of this,(Suresha et al., 2022) examined the stock returns of companies that were listed on US stock exchanges during a number of noteworthy ESG news events that occurred between 2000 and 2018. The authors discovered that because the ESG news announcements had negative effects on investor behavior and market efficiency, the markets overreacted to them. According to (Naeem et al., 2023), only European exchanges that had regional ESG markets that worked well were able to stay competent throughout the COVID-19 epidemic. The study examines the relationship between ESG performance and stock liquidity in the capital market(Meng-tao et al., 2023). Using industry categories for cross-sectional research, we find that for the majority of service industries, ESG disclosure does not significantly impact the stock liquidity of companies. Based on additional studies, it is clear that non-SOEs and Midwest companies benefit the most from ESG disclosure.

On the other hand, there was compelling evidence from (Demers et al., 2021; Zhang et al., 2024) that stocks were safeguarded during the COVID-19 pandemic by investments in intangible assets rather than ESG. Furthermore, there is no appreciable difference between the stock market performance of companies with strong ESG compliance and those with low ESG compliance in times of crisis, according to empirical research. According to (Bodhanwala & Bodhanwala, 2023),this could also be a sign that investors don't care how much ESG performance there is. The current study concurs with(Ahmed & Khalaf, 2025) presentation of several points of view, which holds that higher ESG ratings are linked to better financial performance, risk management, and a faster recovery from setbacks. This is essential for businesses dealing with sustainability issues and fast economic growth. ESG practices are strategic assets that help mitigate risk and ensure long-term sustainability in addition to meeting regulatory requirements.

2.3 Hypotheses Development

Studies analyze how ESG/CSR choices affect a company's value or performance using various methods. Tobin's q, operating performance, and short- or long-term stock returns measure value and performance(Gillan et al., 2021). ESG qualities may affect business value positively or negatively. Several theoretical research, like(Albuquerque et al., 2019) , have found that higher ESG/CSR performance increases corporate value. Researchers have proposed many ways to describe how ESG/CSR projects might benefit firms, but they all fall into two categories. First, ESG activities may boost shareholder wealth. Increase cash flows or lower the discount rate to create value. Second, ESG actions may boost shareholder utility and corporate value. Even if irresponsible and responsible organizations have the same cash flows, shareholders benefit more from responsibility (Gillan et al., 2021).

Stakeholder theory proponents contend that by incorporating social and economic values as well as moral and ethical factors when determining a firm's value, their theory taints the corporate image. ESG disclosures can be used as instruments to reduce possible disputes with stakeholders and improve their opinions about how acceptable their company's

actions are. According to stakeholder theory(Fuadah et al., 2022; Olsen et al., 2021) , ESG disclosure has an impact on the value of this company. A company's market value is affected by ESG performance in several ways, either directly or indirectly, according to recent studies on the connection between corporate value and ESG performance(Seok et al., 2024) . Environmental conservation is one way that corporate responsibility may be applied to sustainability; in order to boost their company's worth, businesses must invest in initiatives that promote environmental conservation. According to (Propheta et al., 2025), ESG considerations have a major beneficial effect on raising the value of a company. This demonstrates that businesses that do better in terms of ESG typically have greater company values than those that perform poorly. One of the things influencing investors' investment decisions is the use of ESG principles. Investors think that by using ESG, risk can be decreased while sustainability is taken into consideration.

The initial response of the company price upon index inclusion is critical for investors. Stock inclusion is also associated with more investor visibility and awareness, which in turn encourages them to buy and hold the index stock so they may reap the diversification benefits. More than that, it brings about a permanent shift in pricing by reducing their shadow cost (Suresha et al., 2022). (Pedersen et al., 2021) found that companies with lower ESG scores had higher profitability than those with higher ESG scores. The ESG premium isn't as noticeable as the social and environmental premiums. We explain the premium by demonstrating that low-liquidity assets have a substantial ESG premium whereas high-liquidity ones do not. This points to a probable relationship between ESG and stock liquidity.

(Wang et al., 2023)analyze how the proposed ESG disclosure mandate could impact changes in the stock market. In the time leading up to the Act's implementation, we find negative changes in the share prices of US corporations using an event-study technique. This could be because investors believe that the costs of compliance will outweigh the benefits of increased transparency. Furthermore, the effect of ESG disclosure on the stock performance of European corporations is shown by (Bermejo Climent et al., 2021). Environmental and governance criteria significantly reduce portfolio volatility and increase return growth, according to the findings. The global ESG measure mirrors the social score's negative influence on returns and its substantial positive effect on volatility. Firm value and stock performance may be positively affected by outstanding performance on ESG scores, in light of the aforementioned literature studies, the increased attention from investors, and the company's public image. The following theories are put to the test:

H1: ESG disclosure has positive significant impact on firm value

H2: ESG disclosure has positive significant impact on stock performance

3. Research design

3.1 Sample construction

To evaluate the impact of ESG disclosure on firm value and stock performance, a sample of Saudi companies listed on the Saudi Stock Exchange's primary market (Tadawul) was employed(Chebbi & Ammer, 2022) .The duration of our sample encompassed the years 2019 to 2023. The interval from 2019 to 2023 signifies a pivotal stage in the execution of Saudi Vision 2030, initiated in 2016(Moshashai et al., 2020; Umar et al., 2024) . By 2019, preliminary reforms and policies had been instituted, facilitating a more substantive evaluation of their impacts. As of the conclusion of 2023, there were 231 businesses registered on the Saudi Stock Exchange. The MSCI ESG index comprises approximately 40 Saudi firms. We have reduced the final sample to 36 companies (180 company-year observations) by eliminating outlier values and companies that lacked sufficient data on the variables of our study.

3.2 Variables measurements

3.2.1 Independent variables

ESG can be evaluated by the DJSI, Fortune Survey, and KLD database(Gillan et al., 2021) , to gauge a company's ESG disclosure, we use Bloomberg ESG rating scores and the developing market ESG literature (An et al., 2025; Chen & Yang, 2020; Li et al., 2022) . In contrast to other indices, Bloomberg clearly assesses the quantity and quality of ESG disclosure, which is why it is our proxy variable for ESG disclosure. The Bloomberg ESG3 score is a number between 0 and 100, where 100 denotes perfect compliance and 0 means no ESG information disclosure(Buchanan et al., 2018; Yoo & Managi, 2022), Environmental, social, and governance are all included in Bloomberg's ESG ratings.

3.2.2 Dependent Variables

Stock performance and company value are additional dependent variables. Tobin's Q is frequently used in studies to gauge firm value (Bhaskaran et al., 2020). In related studies, (An et al., 2025; Bhaskaran et al., 2020) estimated firm value the ratio of market value to intrinsic value using the Tobin's Q index. The market value of the business divided by the cost of replacing its assets. It aids in assessing if a business is overpriced or undervalued (Aydoğmuş et al., 2022). Market experts and analysts use ROA as a profitability metric for stock performance, the second dependent variable (An et al., 2025) , To turn a profit, the company makes effective use of its resources .ROA is a great indicator of how well a company manages its balance sheet, ROA is computed by dividing net income by total assets.

3.2.3 Control Variables

To learn more about how ESG disclosure affects stock performance and corporate value, we also take into consideration business characteristics as mentioned in previous research (Bhaskaran et al., 2020; Meng-tao et al., 2023).Debt divided by equity is the enterprise leverage ratio. The size is the natural logarithm of the asset for the year. The default risk assessment Z-Score was influenced by Altman's 1968 model. ROE, which calculates the company's profitability in relation to shareholders' capital, is calculated by dividing net profit by equity. Preferred dividends are subtracted from net income, and the resulting amount is divided by common shares to determine EPS.

Table (1): *Study Variables*

Type	Variable	Explanation
Dependent Variables	Firm value	utilizing Tobin's Q
	Stock performance	Net income divided by total assets is the return on assets (ROA) formula.
Independent Variable	Environment, Social, and Governance(ESG)	ESG3 scores range from 0 to 100
Control Variables	Firm size (SIZE)	Natural log of the asset
	Financial leverage (LEV)	The ratio of the book value of the debt to the book value of the equity
	Return on Equity (ROE)	Dividing net profit by equity.
	Earnings per share (EPS)	Profit after deducting preferred dividends divided by total shares outstanding
	Z-score	Measure of default risk based on Altman's

3.3 Empirical Model:

We employ two models to analyze study objectives: Tobin's Q and ROA. This study uses Size, Leverage, Z. score, ROE, and EPS as dependent variables and a different model for each independent variable (ESG_CS, ENV, SOC, and GOV) due to correlation (Aydoğmuş et al., 2022). We run the following four models to estimate relation between ESG and firm value to test H1

$TQ_{it} = \beta_0 + \beta_1 ENV + +\beta_2 Size + \beta_3 ROE + \beta_4 Lev + \beta_5 EPS + \beta_6 Z\text{-score} + \varepsilon$ (1)

$TQ_{it} = \beta_0 + \beta_1 SOC + +\beta_2 Size + \beta_3 ROE + \beta_4 Lev\ \beta_5 EPS + \beta_6 Z\text{-score} + \varepsilon$ (2)

$TQ_{it} = \beta_0 + \beta_1 GOV + +\beta_2 Size + \beta_3 ROE + \beta_4 Lev + \beta_5 EPS + \beta_6 Z\text{-score} + \varepsilon$ (3)

$TQ_{it} = \beta_0 + \beta_1 ESG + +\beta_2 Size + \beta_3 ROE + \beta_4 Lev + \beta_5 EPS + \beta_6 Z\text{-score} + \varepsilon$ (4)

Then, We run the following four models to estimate relation ESG and stock performance to test H2.

$ROA = \beta_0 + \beta_1 ENV + +\beta_2 Size + \beta_3 ROE + \beta_4 Lev + \beta_5 EPS + \beta_6 Z\text{-score} + \varepsilon$ (5)

$ROA = \beta_0 + \beta_1 SOC + +\beta_2 Size + \beta_3 ROE + \beta_4 Lev\ \beta_5 EPS + \beta_6 Z\text{-score} + \varepsilon$ (6)

$ROA = \beta_0 + \beta_1 GOV + +\beta_2 Size + \beta_3 ROE + \beta_4 Lev + \beta_5 EPS + \beta_6 Z\text{-score} + \varepsilon$ (7)

$ROA = \beta_0 + \beta_1 ESG + +\beta_2 Size + \beta_3 ROE + \beta_4 Lev + \beta_5 EPS + \beta_6 Z\text{-score} + \varepsilon$ (8)

4. Results and discussion

4.1. Descriptive statistics and correlation analysis

Table (2) presents the descriptive statistics for all variables. The means of ESG disclosure, measured by ENV, SOC, GOV, and ESG score, are 46.389, 49.908, 46.34, and 46.544, respectively. which are mediating the values of minimum and maximum . Moreover, the mean of dependent variables firm value and firm stock are1.001,1327, so its mediating the values of min and max . Additionally, it clear that the mean value of (ROE,SIZE, LEV , Z-score, EPS)and equal .190615, 14.6511, .319653, 10.4795, 4.12326.

Table (2): Descriptive statistic

	N	Mini	Max	Mean	Std. Deviation	Variance
ENV	180	30.0	70.0	46.389	4.6646	21.759
SOC	180	42.0	63.0	49.908	5.5369	30.658
GOV	180	31	53	46.34	4.158	17.287

ESG	180	28.0	70.0	46.544	4.9402	24.406
Tobin's Q	180	1.00	1.0060	1.001	.001019	.000
ROA	180	-,0830	,38583	,132718	,08639	,74645
ROE	180	-.4452	.5707	.190615	.11645	.014
SIZE	180	11.819	17.31	14.6511	.9933	.987
LEV	180	.01200	2.3420	.319653	.2540	.065
Z-score	180	.0944	307.438	10.4795	24.9766	623.832
EPS	180	-3.6073	17.6041	4.12326	2.8657	8.212
Valid N	180					

Additionally, the correlation matrix between the independent components and the dependent variable in the study is shown in Table 3. Table (3) shows a significant and positive relationship between independent factors (ENV, SOC, GOV, and ESG score) and dependent variables (Tobin's Q), with coefficients equal to (0.466,0.168,0.467,0.371). H1 predicts the relationship between ESG disclosure and company value. (An et al., 2025; Aydoğmuş et al., 2022; Bai et al., 2025; Bermejo Climent et al., 2021; Broadstock et al., 2021; Ma & Ma, 2025; Suresha et al., 2022; Wang et al., 2023) are among the numerous other earlier research that concur with this result. A table (3) shows a substantial and positive relationship between independent variables (ENV, SOC, GOV, and ESG score) and dependent variables (ROA), with coefficients equal to 0.273, 0.214, 0.262, and 0.211, in addition to H2 predicting the relationship between ESG disclosure and stock performance. This outcome is consistent with other earlier investigations. Additionally, table (3) demonstrates that ROE and LEV have a substantial and positive association.

Table (3) : Correlations matrix

	ENV	SOC	GOV	(ESG)	Tobin's Q	ROA	ROE	SIZE	LEV	Z-score	EPS
ENV	1										
SOC	.293**	1									
GOV	.922**	.315**	1								
ESG	.789**	.251**	.857**	1							
Tobin's Q	.466**	.168*	.467**	.371**	1						
ROA	.273**	.214**	.262**	.211**	.435**	1					
ROE	.170*	.281**	.168*	.118	.358**	.779**	1				
SIZE	.034	.141-	.015-	.023	.064	.083-	.045	1			
LEV	.183*	.173*	.171*	.160*	.177-*	.416-**	.109-	.284**	1		
Z-score	.110-	.073-	.113-	.097-	.213**	.035	.079-	.185-*	.138-	1	
EPS	.040-	.180-*	.009-	.048	.237**	.723**	.740**	.079	.138-	086-	1
**. 0.01											
*. 0.05											

4.2 Data validity test

The null hypothesis is rejected since Table (4) indicates that the p-value (Prob > z) is 0.000, which is below the conventional significance level of 0.05 for Tobin's Q. This signifies that the Tobin's Q variable significantly diverges from a normal distribution. The integrity of the study models will remain intact despite the existence of non-normally distributed data, as the sample size of 180 observations exceeds the necessary threshold of 50 observations. However, for Return on Assets (ROA), the p-value is 0.172, which above the conventional significance threshold of 0.05. This signifies that the ROA variable adheres to a normal distribution.

Table(4): Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Tobin's Q	.276	180	.000	.816	180	.000
ROA	.069	180	.034	.989	180	.172
a. Lilliefors Significance Correction						

Table (5) shows that the variance inflation factor (VIF) confirmed the absence of multicollinearity. The results show that multicollinearity does not affect H1 variables. The tables show that all model variables have a variance (tolerance) of less

than one, ranging from 0.424 to 0.943 for models 1, 2, 3, and 4. All model variables have Variance Inflation Factors (VIFs) below 10, ranging from 1.061 to 2.356, indicating no multicollinearity (O'brien, 2007).

Model		**Table (5)** : *Collinearity Statistics*							
		(1)		(2)		(3)		(4)	
		Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
1	ENV	.914	1.094						
	SOC			.854	1.171				
	GOV					.897	1.115		
	ESG							.910	1.099
	ROE	.431	2.318	.427	2.344	.424	2.356	.427	2.340
	SIZE	.885	1.130	.877	1.140	.879	1.138	.884	1.132
	LEV	.858	1.165	.850	1.177	.856	1.168	.859	1.164
	Z-score	.940	1.064	.929	1.077	.937	1.067	.943	1.061
	EPS	.435	2.298	.444	2.252	.428	2.338	.423	2.364
a. Dependent Variable: Tobin's Q									

Table (6) illustrates the data, indicating that the variables related to H2 are not influenced by multicollinearity. The allowable variance (tolerance) for all model variables, as specified in the tables, is below one, ranging from 0.421 to 0.947 for models 5, 6, 7, and 8. VIF for all model variables is below 10, ranging from 1.064 to 2.355, signifying the lack of multicollinearity in these models.

Model		**Table (6) :**Collinearity Statistics							
		(5)		(6)		(7)		(8)	
		Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
2	ENV	.911	1.094						
	SOC			.814	1.170				
	GOV					.897	1.105		
	ESG							.911	1.091
	ROE	.421	2.317	.427	2.344	.424	2.355	.426	2.330
	SIZE	.875	1.110	.777	1.140	.779	1.136	.883	1.131
	LEV	.858	1.165	.850	1.177	.816	1.158	.857	1.163
	Z-score	.940	1.064	.929	1.077	.947	1.057	.942	1.051
	EPS	.435	2.298	.444	2.252	.438	2.328	.422	2.363
a. Dependent Variable: ROA									

4.3 Path analysis

To assess model fit, the study employed the most common indices using Smart PLS, as detailed in Table 7: The CFI number, as presented in table (3), is 0.973, which is deemed acceptable as it exceeds 0.95. The RMSEA is 0.066, which is less than the (Byrne, 2013) recommended cutoff of 0.08. Because it is higher than 0.8, the GFI value of 0.973 is considered acceptable. The current study examines how ESG disclosure affects stock performance and business value. ESG has a substantial impact on business value and stock performance, according to numerous research (An et al., 2025; Aydoğmuş et al., 2022; Bai et al., 2025; Broadstock et al., 2021; Ma & Ma, 2025).

Table (7): Model Fit		
	Estimated model	**Null model**
P value	0.080	0.000
ChiSqr/df	0.000	24.924
RMSEA	0.066	0.285
GFI	0.973	n/a

NFI	0.964	n/a
TLI	0.965	n/a
CFI	0.973	n/a

The Sequential Equation Model (SEM) utilizes Path Analysis to assess the impact of ESG disclosure as an independent variable on firm value and stock performance, as presented in Table (8), employing Smart PLS software, which demonstrates the relevance of the regression model. Table (8) presents the path coefficients illustrating the relationships and effects between the independent and dependent variables. The path coefficients between ESG, EVN, SOC, GOV, and Tobin's Q are (0.107; 0.240; 0.021; 0.330), showing that ESG disclosure ratings improve corporate value. Table (8) shows a significant and positive association between (ESG; EVN; SOC; GOV) and ROA, with values of (0.037; 0.210; 0.054; 0.145), showing that ESG disclosure scores increase ROA. The path coefficients for the model variables, shown in Figure 1, show that the study variables are highly correlated.

Table (8) :Path coefficients

	Path coefficients
(ESG) > ROA	0.037
(ESG) > Tobin's Q	0.107
ENV > ROA	0.210
ENV > Tobin's Q	0.240
GOV > ROA	0.054
GOV > Tobin's Q	0.330
SOC > ROA	0.145
SOC > Tobin's Q	0.021

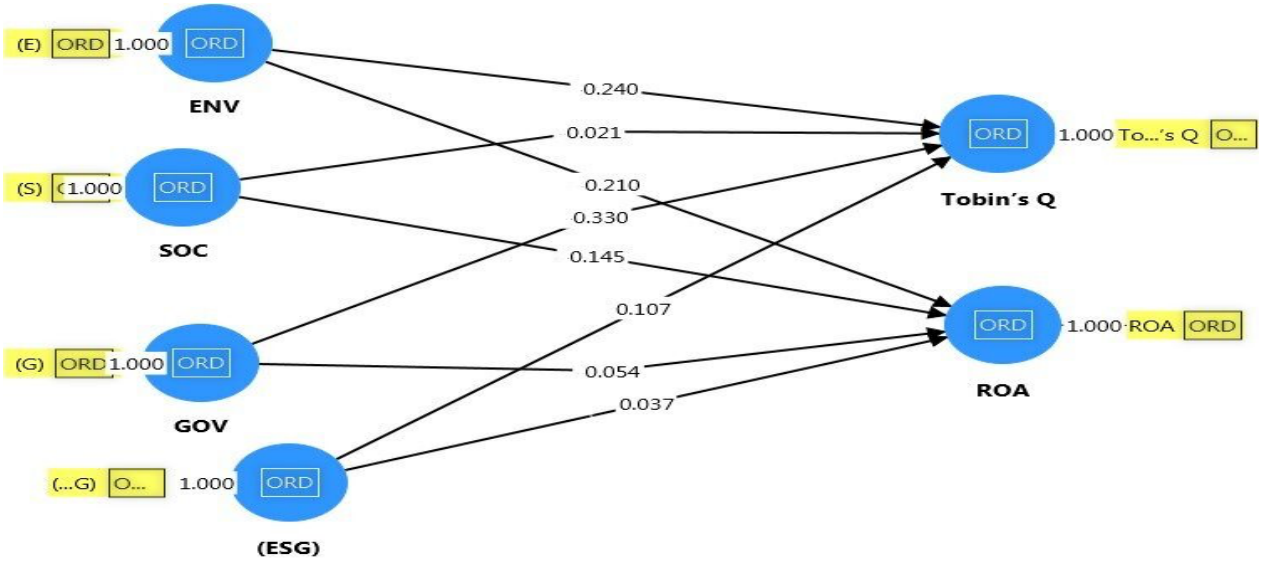

Fig (1): Path Coefficients

4.4 Regression results and discussion

To investigate the effect of ESG disclosure on firm value, the regression used according to this equations:

$TQ_{it} = \beta_0 + \beta_1 ENV + +\beta_2 Size + \beta_3 ROE + \beta_4 Lev + \beta_5 EPS + \beta_6 Z\text{-score} + \varepsilon$ (1)

$TQ_{it} = \beta_0 + \beta_1 SOC + +\beta_2 Size + \beta_3 ROE + \beta_4 Lev\ \beta_5 EPS + \beta_6 Z\text{-score} + \varepsilon$ (2)

$TQ_{it} = \beta_0 + \beta_1 GOV + +\beta_2 Size + \beta_3 ROE + \beta_4 Lev + \beta_5 EPS + \beta_6 Z\text{-score} + \varepsilon$ (3)

$TQ_{it} = \beta_0 + \beta_1 ESG + +\beta_2 Size + \beta_3 ROE + \beta_4 Lev + \beta_5 EPS + \beta_6 Z\text{-score} + \varepsilon$ (4)

Then, we examine whether (EVN, SCO, GOV, ESG score) affect firm value and estimate equations (1) to (4) using regression to determine the effect of ESG disclosure. Table (9), Columns (1) to (4), shows EVG, SCO, GOV, and ESG score results. Table 9 shows that R for the models is (0.350; 0.220; 0.347; 0.299), meaning that ESG disclosure and the other control variables could explain (35%; 22%; 35%;30%) of Saudi firm value. So, in models (1, 2, 3, 4), ESG disclosure

positively impacts Tobin's Q, with significant and positive independent variables (EVN, SCO, GOV, ESG score) (β =0.383;0.064; 0.382;0.301; Sig. < 0.05). Also, table (10) indicated that the Durbin-Watson value for each of the H1 models to measure the effect of ESG disclosure on firm values (1.780;1.599;1.842;1.810) which are greater than 1.5 which means that these models do not suffer from autocorrelation problem in the residuals.

So, statistics support various studies (Bhaskaran et al., 2020) that show enterprises with good environmental, governance, and social performance create more market value. In addition, (An et al., 2025) discovered a substantial positive association between ESG disclosure scores and business value. The results show that ESG ratings affect market value differently depending on knowledge asymmetry. Furthermore, strong ESG scores considerably improve company resilience amid financial difficulty(Yadav & Asongu, 2025) , demonstrating the twin benefits of sustainable practices on corporate stability and environmental effect.

In summary, there is effect to ESG disclosure on firm value in Saudi market, so we can accept the first hypothesis as following; *ESG disclosure has positive significant impact on firm value.*

Table (9) : The effect of ESG disclosure on firm value (H1)

Model	(1).			(2)			(3)			(4)		
	Beta	t	Sig	Beta	t	Sig	Beta	t	Sig	Beta	t	Sig
(Constant)		847.256	.000		742.402	.000		789.326	.000		825.568	.000
ENV	.383	5.973	.000									
SOC				.064	.881	.380						
GOV							.382	5.891	.000			
ESG										.301	4.509	.000
ROE	.294	3.148	.002	.392	3.809	.000	.382-	5.891-	.000	.310	3.186	.002
SIZE	.125	1.923	.056	.133	1.857	.065	.275	2.921	.004	.124	1.834	.068
LEV	.082-	1.244-	.215	.162-	2.218-	.028	.104	1.589	.114	.098-	1.425-	.156
Z-score	.206	3.260	.001	.235	3.376	.001	.080-	1.202-	.231	.220	3.350	.001
EPS	.001	.013	.989	.076-	.758-	.450	.202	3.189	.002	.018	.184	.854
N	180											
F-value	15.557			8.132			15.348			12.292		
R	.592[a]			.469[a]			.589[a]			.547[a]		
R^2	.350			.220			.347			.299		

a. Dependent Variable: Tobin's Q

Table (10) :Model Summary (H1)

Model	Durbin-Watson
1	1.780[a]
2	1.599[a]
3	1.842[a]
4	1.810[a]

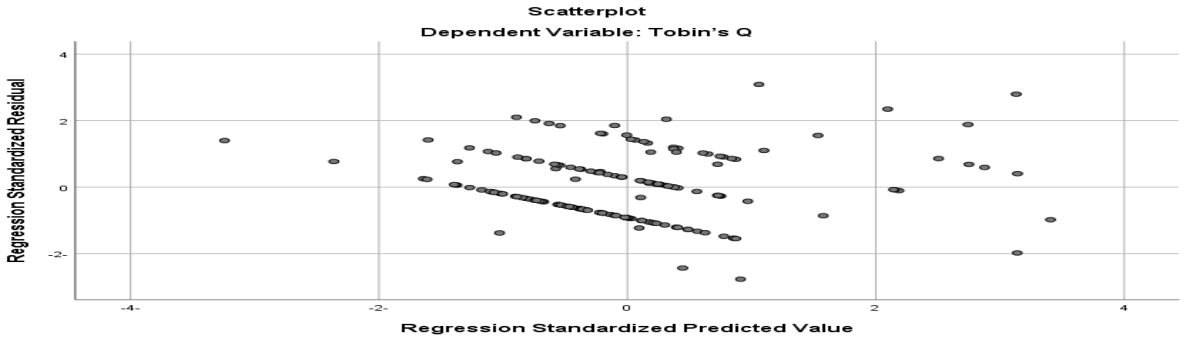

Figure (2). Scatterplot of Standardized Residuals versus Standardized Predicted Values (Tobin's Q)

The figure (2) shows a random dispersion of standardized residuals around zero with no discernible pattern. This indicates that the assumptions of linearity and homoscedasticity are satisfied for the regression model.

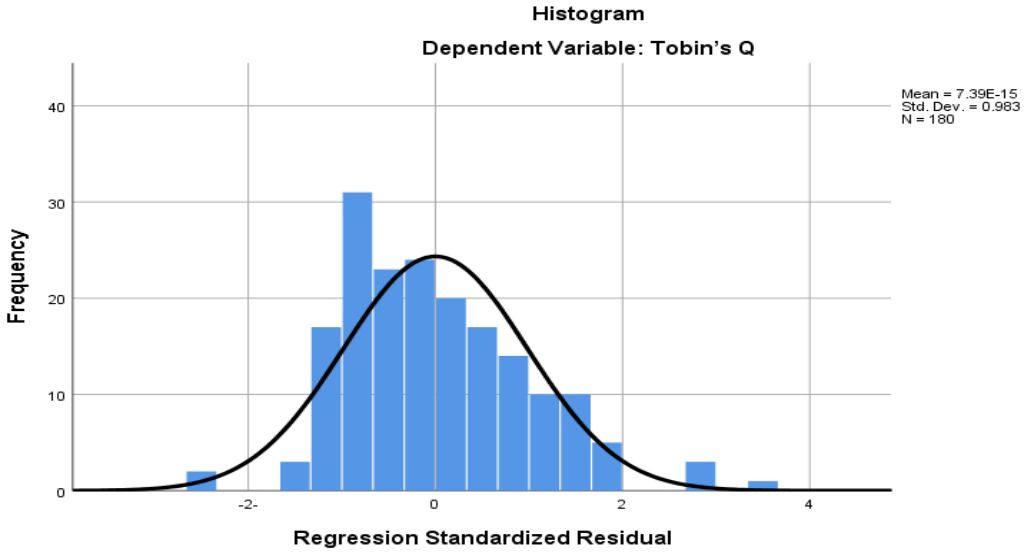

Figure (3). Histogram of Standardized Residuals (Tobin's Q)

Figure (3) shows that the standardized regression residuals are symmetrically distributed around zero and closely aligned with the normal distribution curve. This provides strong evidence that the normality assumption is satisfied, supporting the robustness and validity of the regression model's statistical results.

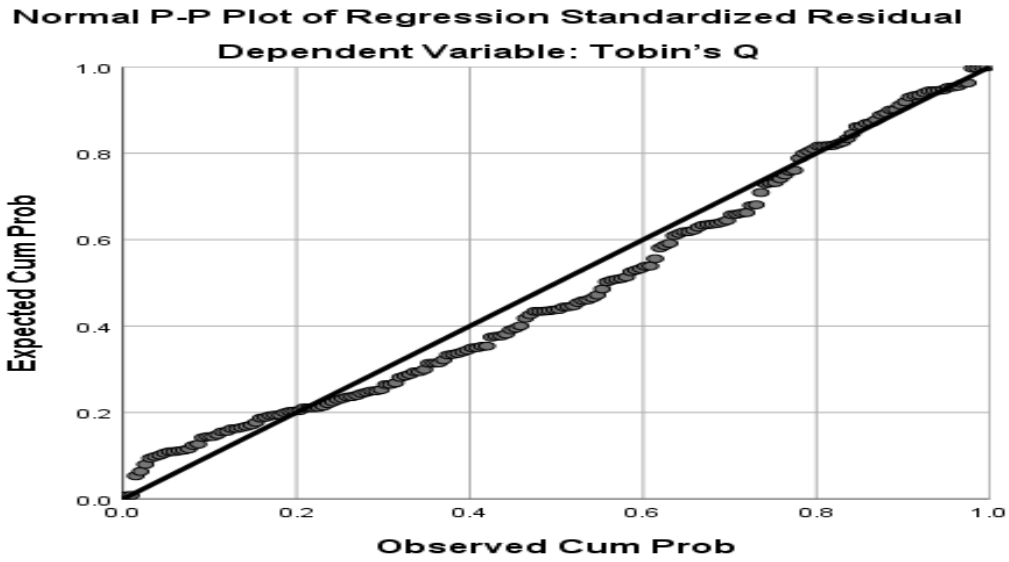

Figure (4): Normal P–P Plot of Regression Standardized Residuals

Figure (4) illustrates the Normal P–P Plot of the regression standardized residuals for the model with **Tobin's Q** as the dependent variable. The points lie close to the diagonal reference line, indicating that the residuals are approximately normally distributed. This confirms the normality assumption of the regression model and supports the validity and reliability of the estimated statistical results.

Additional, to investigate the effect of ESG disclosure on stock performance, the regression used according to these equations:

$ROA = \beta_0 + \beta_1 ENV + +\beta_2 Size + \beta_3 ROE + \beta_4 Lev + \beta_5 EPS + \beta_6 Z\text{-score} + \varepsilon$ (5)

$ROA = \beta_0 + \beta_1 SOC + +\beta_2 Size + \beta_3 ROE + \beta_4 Lev \beta_5 EPS + \beta_6 Z\text{-score} + \varepsilon$ (6)

$ROA = \beta_0 + \beta_1 GOV + +\beta_2 Size + \beta_3 ROE + \beta_4 Lev + \beta_5 EPS + \beta_6 Z\text{-score} + \varepsilon$ (7)

$ROA = \beta_0 + \beta_1 ESG + +\beta_2 Size + \beta_3 ROE + \beta_4 Lev + \beta_5 EPS + \beta_6 Z\text{-score} + \varepsilon$ (8)

Then, we measure the impact of ESG disclosure on stock performance by estimating equations (5) to (8) using regression. In Table 11, Columns 5 to 8 show EVG, SCO, GOV, and ESG score results. According to table (11), R for the models is (0.717; 0.763; 0.773; 0.772), which suggests that ESG disclosure and other control variables could contribute to (72%; 76%; 77%; 77%) in Saudi firm stock performance. So, according to models (5, 6, 7, 8), ESG disclosure positively impacts ROA, with substantial and favourable effects on independent variables (EVN, SCO, GOV, and ESG score) (β = 0.118, 0.074, 0.124, and 0.119; Sig. < 0.05). Also, the findings in table (12) indicated that the Durbin-Watson value for each of the H2 models to measure the effect of ESG disclosure on stock performance (1.736; 1.647; 1.857; 1.676) are greater than 1.5, which means that these models do not suffer from an autocorrelation problem in the residuals.

Therefore, statistical analysis findings indicate that, in line with (Pedersen et al., 2021), ESG may affect stock liquidity. Also, Governance and environmental parameters positively and significantly influence portfolio return growth while negatively impacting portfolio volatility (Bermejo Climent et al., 2021). So, The current study supports the findings of (Ahmed & Khalaf, 2025) that high ESG scores enhance financial performance, risk management, and recovery from setbacks. In summary, there is an effect of ESG disclosure on stock performance in Saudi companies; *therefore, we can accept the second hypothesis: ESG disclosure has a positive significant impact on stock performance.*

Table (11) : The effect of ESG disclosure on stock performance (H2)

Model	(5).			(6)			(7)			(8)		
	Beta	t	Sig	Beta	t	Sig	Beta	t	Sig	Beta	t	Sig
(Constant)		3.394	.001		2.659	.009		3.599	.000		3.371	.001
ENV	.118	3.108	.002									
SOC				.074	1.860	.065						
GOV							.124	3.248	.001			
ESG										.119	3.113	.002
ROE	.500	9.034	.000	.512	9.038	.000	.492	8.839	.000	.496	8.927	.000
SIZE	.038-	.994-	.321	.041-	1.049-	.295	.046-	1.177-	.241	.040-	1.036-	.301
LEV	.280-	7.136-	.000	.315-	7.856-	.000	.278-	7.093-	.000	.280-	7.152-	.000
Z-score	.043	1.154	.250	.045	1.160	.248	.041	1.105	.271	.045	1.211	.227
EPS	.316	5.740	.000	.294	5.305	.000	.326	5.888	.000	.330	5.901	.000
N	180											
F-value	97.342			93.061			97.958			97.365		
R	.878[a]			.874[a]			.879[a]			.878[a]		
R^2	.771			.763			.773			.772		

a. Dependent Variable: ROA

Table (12) : Model Summary (H2)

Model	Durbin-Watson
5	1.736[a]
6	1.647[a]
7	1.857[a]
8	1.676[a]

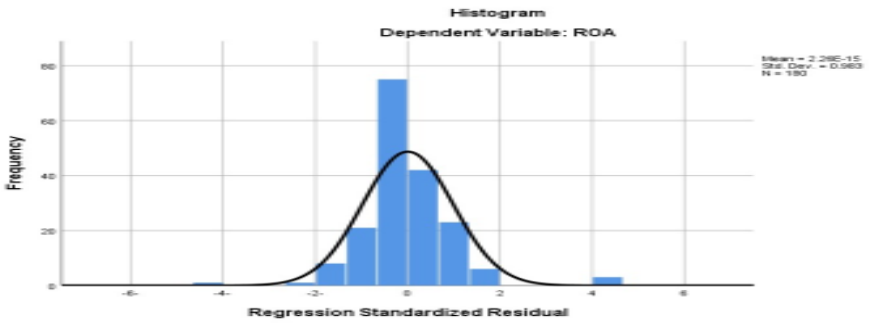

Figure (5): Histogram of Regression Standardized Residuals (ROA)

Figure (5) presents the histogram of the regression standardized residuals for the model with **Return on Assets (ROA)** as the dependent variable. The residuals display an approximately symmetric, bell-shaped distribution centered on zero, and closely follow the overlaid normal curve. This indicates that the residuals are reasonably normally distributed, confirming the normality assumption of the regression model and supporting the validity of the statistical inferences drawn from the analysis.

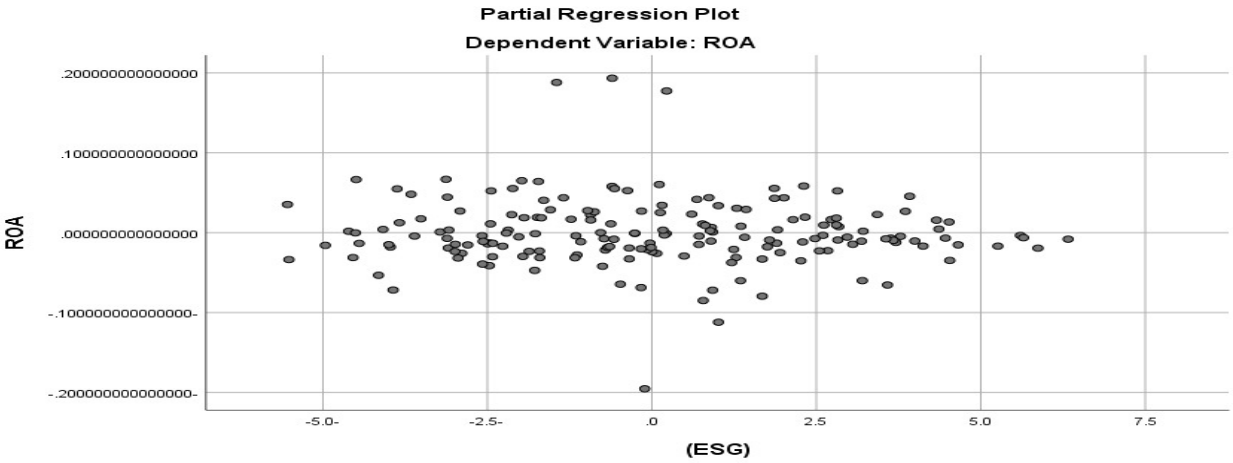

Figure (6): Partial Regression Plot between ESG and ROA

Figure (6) shows an approximately linear relationship between ESG and ROA in the partial regression plot, with data points dispersed around the fitted line, which supports the linearity assumption of the regression model.

5. Results & Recommendations

Despite the study's conclusions emphasizing ESG's strategic importance, our research seeks to further analyze its effects on Saudi corporate value and stock performance. This research can also help investors and policymakers understand how ESG scores, when combined with financial criteria, can accurately assess a company's performance, especially in developing economies. As businesses and authorities emphasize ESG problems, understanding how they affect firm value will influence future corporate value and regulatory frameworks. Our study adds to this discourse by showing how ESG scores can boost stock performance and a firm value, especially in developing markets like Saudi Arabia.

The results indicate that ESG disclosure has a favourable effect on Tobin's Q, with significant and positive independent factors (EVN, SCO, GOV, ESG score) (β = 0.383; 0.064; 0.382; 0.301; Sig. > 0.05). Statistics corroborate other research (Bhaskaran et al., 2020) indicating that companies exhibiting strong environmental, governance, and social performance generate greater market value. The findings indicate that ESG ratings influence market value. Furthermore, ESG disclosure positively impacts ROA, with substantial and favourable effects on independent variables (EVN, SCO, GOV, and ESG score) (β = 0.118, 0.074, 0.124, and 0.119; Sig. > 0.05).Statistical analysis findings indicate that, in line with(Pedersen et al., 2021) , ESG may affect stock liquidity. Also, Governance and environmental parameters positively and significantly influence portfolio return growth while negatively impacting portfolio volatility(Bermejo Climent et al., 2021) . So, the current study supports the findings of (Ahmed & Khalaf, 2025) that high ESG scores enhance financial performance, risk management, and recovery from setbacks.

5.1 The Research Contributions

These were contributed by the current study. (1) An understanding of how environmental, social, and governance (ESG) disclosure influences company performance both overall and by pillar will be provided to stakeholders, legislators, decision-makers, and academics by our research. CSR should be an investment for managers because there is a favourable correlation between ESG disclosure and the performance of a company. (2) The majority of studies indicate that environmental, social, and governance (ESG) factors and business value are positively associated; however, Saudi Arabian ESG-listed companies do not exhibit this association. Through the results of this study, our comprehension of ESG and business value will be enhanced. (3) This study advances the theoretical framework that links environmental, social, and governance (ESG), firm value and stock performance by considering ESG conflicts and company value. It does this by filling a gap in the existing literature.

5.2 Limitations and future research

Investing on ESG factors is still in its infancy. When it comes to influencing (ESG) investment practices, confronting firms on their ESG performance and promoting ESG performance within their managed portfolios, institutional investors play a significant role in developed markets. There are still a relatively small number of institutional investors operating within Saudi Arabia, with retail investors being the primary providers of investing activity. As a consequence, there is still a low demand for environmental, social, and governance (ESG) products, and investors have only lately begun to include ESG into their thought processes. When it comes to the three aspects that make up ESG, Governance is the most significant. Although the risks associated with governance are comparable and significant for all businesses, the significance of environmental and social hazards varies depending on the industry. Due to the widespread interest in climate finance and the development of laws by governments, regulators, securities exchanges, and associations concerning pollution and waste management as well as criteria for environmental disclosures, environment variables are the ones that are being debated the most. Future study may utilize alternative metrics for business value, such as return on assets (ROA). Moreover, the specificity of our study's environment may constrain the generalizability of our findings. Subsequent study may broaden the findings by expanding the analytical sample to encompass several countries.

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References

1. Aboud, A., & Diab, A. (2018). The impact of social, environmental and corporate governance disclosures on firm value: Evidence from Egypt. *Journal of Accounting in Emerging Economies, 8*(4), 442-458 .
2. Ahmed, O., & Khalaf, B. A. (2025). The impact of ESG on firm value: The moderating role of cash holdings. *Heliyon, 11*(2 .(
3. Albuquerque, R., Koskinen, Y., & Zhang, C. (2019). Corporate social responsibility and firm risk: Theory and empirical evidence. *Management science, 65*(10), 4451-4469 .
4. An, H., Ran, C & ,.Gao, Y. (2025). Does ESG information disclosure increase firm value? The mediation role of financing constraints in China. *Research in International Business and Finance, 73*, 102584 .
5. Aydoğmuş, M., Gülay, G., & Ergun, K. (2022). Impact of ESG performance on firm value and profitability. *Borsa Istanbul Review, 22*, S119-S127 .
6. Bai, Y., Wang, Z., Huang, Q., & Ding, H. (2025). The impact of ESG performance on corporate value in listed sports companies: The mediating role of intangible assets and moderating role of policy environment. *Sustainability, 17*(6), 2523 .
7. Bamahros, H. M., Alquhaif, A., Qasem, A., Wan-Hussin, W. N., Thomran, M., Al-Duais, S. D., Shukeri, S. N., & Khojally, H. M. (2022). Corporate governance mechanisms and ESG reporting: Evidence from the Saudi Stock Market. *Sustainability, 14*(10), 6202 .
8. Bermejo Climent, R., Garrigues, I. F.-F., Paraskevopoulos, I., & Santos, A. (2021). ESG disclosure and portfolio performance. *Risks, 9*(10), 172 .
9. Bhaskaran, R. K., Ting, I. W. K., Sukumaran, S .K., & Sumod, S. D. (2020). Environmental, social and governance initiatives and wealth creation for firms: An empirical examination. *Managerial and Decision Economics, 41*(5), 710-729 .
10. Bodhanwala, S., & Bodhanwala, R. (2023). Environmental, social and governance performance: influence on market value in the COVID-19 crisis. *Management Decision, 61*(8), 2442-2466 .
11. Broadstock, D. C., Chan, K., Cheng, L. T., & Wang, X. (2021). The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. *Finance research letters, 38*, 101716 .
12. Buchanan, B., Cao, C. X., & Chen, C. (2018). Corporate social responsibility, firm value, and influential institutional ownership. *Journal of Corporate Finance, 52*, 73-95 .
13. Byrne, B. M. (2013). *Structural equation modeling with Mplus: Basic concepts, applications, and programming*. routledge .
14. Carnini Pulino, S., Ciaburri, M., Magnanelli, B. S., & Nasta, L. (2022). Does ESG disclosure influence firm performance? *Sustainability, 14*(13), 7595 .
15. Chebbi, K., & Ammer, M. A. (2022). Board composition and ESG disclosure in Saudi Arabia: The moderating role of corporate governance reforms. *Sustainability, 14*(19), 12173 .

16. Chen, H.-Y., & Yang, S. S. (2020). Do investors exaggerate corporate ESG information ?Evidence of the ESG momentum effect in the Taiwanese market. *Pacific-Basin Finance Journal, 63*, 101407 .
17. De Lucia, C., Pazienza, P., & Bartlett, M. (2020). Does good ESG lead to better financial performances by firms? Machine learning and logistic regression models of public enterprises in Europe. *Sustainability, 12*(13), 5317 .
18. Demers, E., Hendrikse, J., Joos, P., & Lev, B. (2021). ESG did not immunize stocks during the COVID-19 crisis, but investments in intangible assets did. *Journal of business finance & accounting, 48*(3-4), 433-462 .
19. Fayad, A. A., Khatib, S. F., Alomair, A., & Al Naim, A. S. (2024). Audit Chair Characteristics and ESG Disclosure: Evidence from the Saudi Stock Market. *Sustainability, 16*(24), 11011 .
20. Fuadah, L. L., Mukhtaruddin, M ,.Andriana, I., & Arisman, A. (2022). The ownership structure, and the environmental, social, and governance (ESG) disclosure, firm value and firm performance: the audit committee as moderating variable. *Economies, 10*(12), 314 .
21. Gillan, S. L., Koch, A & ,.Starks, L. T. (2021). Firms and social responsibility: A review of ESG and CSR research in corporate finance. *Journal of Corporate Finance, 66*, 101889 .
22. Huang, J., Hu, P., Wang, D. D., & Wang, Y. (2025). The Double Signal of ESG Reports: Readability , Growth, and Institutional Influence on Firm Value. *Sustainability, 17*(6), 2514 .
23. Hussain, M. A., Alsayegh, M. F., & Boshnak, H. A. (2024). The impact of environmental, social, and governance disclosure on the performance of saudi arabian companies: Evidence from the Top 100 Non-Financial Companies Listed on Tadawul. *Sustainability, 16*(17), 7660 .
24. Koh, H.-K., Burnasheva, R., & Suh, Y. G. (2022). Perceived ESG (environmental, social, governance) and consumers' responses: The mediating role of brand credibility, Brand Image, and perceived quality. *Sustainability, 14*(8), 4515 .
25. Krueger, P., Sautner, Z., Tang, D. Y., & Zhong, R. (2024). The effects of mandatory ESG disclosure around the world. *Journal of Accounting Research, 62*(5), 1795-1847 .
26. La Torre, M ,.Mango, F., Cafaro, A., & Leo, S. (2020). Does the ESG index affect stock return? Evidence from the Eurostoxx50. *Sustainability, 12*(16), 6387 .
27. Li, Y., Gong, M., Zhang, X.-Y., & Koh, L. (2018). The impact of environmental, social, and governance disclosure on firm value: The role of CEO power. *The British accounting review, 50*(1), 60-75 .
28. Li, Z., Feng, L., Pan, Z., & Sohail, H. M. (2022). ESG performance and stock prices: evidence from the COVID-19 outbreak in China. *Humanities and Social Sciences Communications, 9*(1), 1-10 .
29. Luo, D. (2022). ESG, liquidity, and stock returns. *Journal of International Financial Markets, Institutions and Money, 78*, 101526 .
30. Ma, S., & Ma, T. (2025). ESG Controversies and Firm Value: Evidence from A-Share Companies in China. *Sustainability, 17*(6), 2750 .
31. Meng-tao, C., Da-peng, Y., Wei-qi, Z., & Qi-jun, W. (2023). How does ESG disclosure improve stock liquidity for enterprises—empirical evidence from China. *Environmental Impact Assessment Review, 98*, 106926 .
32. Moshashai ,D., Leber, A. M., & Savage, J. D. (2020). Saudi Arabia plans for its economic future: Vision 2030, the National Transformation Plan and Saudi fiscal reform. *British journal of Middle Eastern studies, 47*(3), 381-401 .
33. Naeem, M. A., Yousaf, I., Karim, S ,.Tiwari, A. K., & Farid, S. (2023). Comparing asymmetric price efficiency in regional ESG markets before and during COVID-19. *Economic Modelling, 118*, 106095 .
34. Negara, N. G. P., Ishak, G., & Priambodo, R. E. A. (2024). Impact of ESG disclosure score on firm value: empirical evidence from ESG listed company in Indonesia Stock Exchange. *European Journal of Business and Management Research, 9*(2), 114-118 .
35. O'brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & quantity, 41*(5), 673-690 .
36. Olsen, B. C., Awuah-Offei, K., & Bumblauskas, D. (2021). Setting materiality thresholds for ESG disclosures: A case study of US mine safety disclosures. *Resources Policy, 70*, 101914 .

37. Pedersen, L. H., Fitzgibbons, S., & Pomorski, L. (2021). Responsible investing: The ESG-efficient frontier. *Journal of financial economics, 142*(2), 572-597 .
38. Propheta, M., Irmadariyani, R., & Kustono, A. S. (2025). The Effect of ESG Disclosure and Financial Performance on Company Value with Company Size as a Control Variable on Companies Listed on the ESG Leaders Index. *Asian Journal of Economics, Business and Accounting, 25*(2), 49-63 .
39. Putri, A. A., & Paramita, V. S. (2025). The Effect of ESG Disclosure, Green Investment, and Carbon Emission Disclosure on the Value of Energy Companies in Indonesia: Analysis for the 2019-2023 Period. *Sinergi International Journal of Accounting and Taxation, 3*(1), 16-33 .
40. Seok, J., Kim, Y., & Oh, Y. K. (2024). How ESG shapes firm value: The mediating role of customer satisfaction. *Technological Forecasting and Social Change, 208*, 123714 .
41. Shaikh, I. (2021). On the relation between purchasing manager's index and trade policy uncertainty: evidence from China, Japan and the USA. *Journal of Chinese Economic and Foreign Trade Studies, 14*(2), 202-223 .
42. Suresha, B., Srinidhi, V., Verma, D., Manu, K., & Krishna, T. (2022). The impact of ESG inclusion on price, liquidity and financial performance of Indian stocks: Evidence from stocks listed in BSE and NSE ESG indices .*Investment Management & Financial Innovations, 19*(4), 40 .
43. Truong, T. H. D. (2025). Environmental, social and governance performance and firm value: does ownership concentration matter? *Management Decision, 63*(2), 488-511 .
44. Umar, U. H., Firmansyah, E .A., Danlami, M. R., & Al-Faryan, M. A. S. (2024). Revisiting the relationship between corporate governance mechanisms and ESG disclosures in Saudi Arabia. *Journal of Accounting & Organizational Change, 20*(4), 724-747 .
45. Vinodkumar, N., & Alarifi, G. (2022 .(Environmental social governance: A core value to responsible stakeholders and stock market sustainability in the Kingdom of Saudi Arabia. *Journal of Sustainable Finance & Investment, 12*(4), 1085-1101 .
46. Wang, J., Hu, X., & Zhong, A. (2023). Stock market reaction to mandatory ESG disclosure. *Finance Research Letters, 53*, 103402 .
47. Wang, N., Pan, H., Feng, Y., & Du, S. (2024). How do ESG practices create value for businesses? Research review and prospects. *Sustainability Accounting, Management and Policy Journal, 15*(5), 1155-1177 .
48. Whelan, T., Atz, U., Van Holt, T., & Clark, C. (2021). ESG and financial performance: Uncovering the relationship by aggregating evidence from 1,000 plus studies published between 2015–2020. *New York: NYU STERN Center for sustainable business*, 520-536 .
49. Yadav, A., & Asongu, S. A. (2025). The role of ESG performance in moderating the impact of financial distress on company value: Evidence of wavelet-enhanced quantile regression with Indian companies. *Business Strategy and the Environment, 34*(3), 2782-2798 .
50. Yoo, S., & Managi, S. (2022). Disclosure or action: Evaluating ESG behavior towards financial performance. *Finance research letters, 44*, 102108 .
51. Zhang, F., Qin, X., & Liu, L. (2020). The interaction effect between ESG and green innovation and its impact on firm value from the perspective of information disclosure. *Sustainability, 12*(5), 1866 .
52. Zhang, J., Zheng, C., & Shan, Y. G. (2024). What accounts for the effect of sustainability engagement on stock price crash risk during the COVID-19 pandemic—Agency theory or legitimacy theory? *International Review of Financial Analysis, 93*, 103167 .