DOES ESG DISCLOSURE ENHANCE PROFITABILITY? EVIDENCE FROM NON-FINANCIAL FIRMS ON THE SAUDI STOCK EXCHANGE

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ABSTRACT

This study investigates the impact of environmental, social, and governance (ESG) disclosure on the financial performance of firms in an emerging market, specifically Saudi Arabia. It aims to understand whether ESG transparency contributes to improved firm performance and how this relationship varies across sectors. The research utilizes a panel dataset of 150 non-financial companies listed on the Saudi Stock Exchange (Tadawul) from 2019 to 2024. A comprehensive ESG disclosure index is constructed using principal component analysis. The relationship between ESG disclosure and financial performance—measured by return on assets (ROA) and return on equity (ROE) is analyzed using fixed effects, random effects, and generalized method of moments (GMM) models to address potential endogeneity. The results reveal a significant positive association between ESG disclosure and firm performance. This effect is stronger in non-manufacturing sectors compared to manufacturing. Additionally, firm size, age, and liquidity act as significant moderate factors. These findings align with stakeholder and signaling theories, suggesting that robust ESG practices enhance financial performance by fostering stakeholder trust and signaling positive market behavior. This study contributes to the limited literature on ESG disclosure in emerging markets, particularly within the Gulf region. By employing a comprehensive ESG index and advanced econometric techniques, it provides novel insights into the strategic value of ESG transparency for firms operating in Saudi Arabia. The study focuses on non-financial firms in Saudi Arabia, which may limit generalizability to other sectors or regions. Future research could explore cross-country comparisons or incorporate additional performance metrics. Corporate managers can leverage ESG disclosure as a strategic tool to enhance financial performance, while policymakers can use these findings to promote sustainable finance initiatives in the Gulf region. Improved ESG practices contribute to broader societal goals, including sustainability and ethical governance, fostering trust among stakeholders and communities.

1. INTRODUCTION

The integration of environmental, social, and governance (ESG) factors into corporate strategy has transitioned from a niche concern to a mainstream imperative in global capital markets. Stakeholders, including investors, regulators, and consumers, increasingly demand greater transparency and accountability, positioning ESG disclosure as a critical mechanism for communicating corporate sustainability performance [1, 2]. While a substantial body of literature has examined the relationship between ESG disclosure and corporate financial performance (CFP), the evidence remains mixed, with studies reporting positive, neutral, or even negative associations [3, 4]. This ambiguity underscores the context-dependent nature of this relationship, suggesting that institutional, regulatory, and market-specific factors play a crucial moderating role [5]. Despite the proliferation of ESG research, emerging markets particularly those in the Gulf Cooperation Council (GCC)---remain significantly underexplored. This study seeks to address this gap by investigating the impact of ESG disclosure on the profitability of non-financial firms listed on the Saudi Stock Exchange (Tadawul).

The global track towards sustainable finance is unmistakable. The widespread adoption of reporting frameworks, such as those from the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB), alongside the rise of mandatory ESG reporting in many jurisdictions, reflects a fundamental shift in how corporate value is assessed [6, 7]. This trend is driven by a growing consensus that robust ESG practices can mitigate risk, enhance operational efficiency, and foster long-term resilience [8, 9]. Furthermore, the launch of global initiatives like the UN Principles for Responsible Investment (PRI) and the EU's Sustainable Finance Disclosure Regulation (SFDR) has cemented ESG's role in shaping investment flows and corporate strategy [10]. The Kingdom of Saudi Arabia (KSA) presents a compelling and unique context for this inquiry. Spearheaded by its Vision 2030 blueprint, the Kingdom is undertaking a profound socio-economic transformation aimed at diversifying its economy away from hydrocarbon dependence [11]. A key pillar of this vision is fostering a sustainable and responsible private sector. In alignment with this, the Saudi Capital Market Authority (CMA) has introduced governance regulations and has begun mandating sustainability reporting for listed firms, signaling a strong regulatory commitment to ESG principles [12]. This evolving landscape makes the Saudi market an ideal laboratory to study the financial implications of ESG disclosure in a rapidly reforming, resource-based economy.

This research is grounded in two pivotal theoretical frameworks. Stakeholder theory posits that firms that actively manage their relationships with all stakeholders, not just shareholders can build capital and social legitimacy, which ultimately translates into superior financial performance [13, 14]. Comprehensive ESG disclosure is a primary means of demonstrating this commitment. Complementing this, signaling theory suggests that in markets characterized by information asymmetry, high-quality ESG reporting acts as a positive signal to the market, distinguishing a firm as well-managed, forward-looking, and lower risk [15, 16]. By reducing information gaps, ESG disclosure can lower the cost of capital and attract long-term investment [17].

However, the empirical link within the Saudi context is not yet firmly established. The country's distinctive economic structure, dominated by petrochemicals and manufacturing, raises the question of whether the global ESG-performance paradigm holds true. It is plausible that in such a context, the costs of ESG compliance might initially outweigh the benefits for certain firms, or conversely, that the signaling value of strong ESG performance is even greater in a market undergoing a public transition towards sustainability.

This study aims to provide robust, empirical evidence to clarify this relationship. By analyzing a recent panel dataset of Saudi non-financial listed firms and employing rigorous econometric methodologies to control for endogeneity, we directly address the following research question: What is the relationship between the level of ESG disclosure and the profitability of non-financial firms in Saudi Arabia?

The contributions of this research are threefold. First, it provides timely and localized evidence from a critically important emerging market, enriching the global ESG literature. Second, the findings offer practical insights for Saudi policymakers in refining ESG regulations, for corporate managers in developing value-creating sustainability strategies, and for investors allocating capital within the Tadawul. Finally, by testing established theoretical frameworks in a novel setting, the study helps to delineate the boundary conditions of stakeholder and signaling theories. The remainder of this paper is structured as follows. Section 2 provides a focused review of literature. Section 3 details the research design, data, and methodology. Section 4 presents empirical results, Section 5 discusses the findings, their implications, and sections 6 discuss the conclusion, limitations and avenues for future research.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. The Contested Link Between ESG Disclosure and Corporate Performance

The relationship between Environmental, Social, and Governance (ESG) disclosure and corporate performance remains a central yet unresolved question in corporate finance and sustainability literature. Empirical evidence presents a heterogeneous picture, leading to two predominant theoretical perspectives. On one hand, stakeholder theory and signaling theory posit that high-quality ESG disclosure mitigates information asymmetry, builds reputational capital, and fosters stakeholder trust, thereby reducing capital costs and enhancing financial performance [1, 2]. Conversely, neo-classical economic arguments suggest that ESG activities represent a significant cost that diverts resources from core profit-maximizing objectives, potentially impairing financial performance and shareholder value [18, 19].

This empirical ambiguity is reflected in the global body of research. A comprehensive meta-study by Friede, Busch, & Bassen (2015) found that the majority of over 2,000 studies show a non-negative ESG-performance relationship, with a large proportion reporting positive findings [3]. Supporting this, more recent research from Alsayegh, Rahman, & Homayoun (2020) in the context of Malaysian firms substantiated that robust ESG practices, particularly strong social and governance performance, are associated with enhanced firm value and more prudent investment decisions [20].

However, a significant stream of literature reports inconclusive or negative outcomes. Studies by Arayssi, Jizi, & Tabaja (2020) in the GCC context found that while governance disclosure was impactful, the environmental and social dimensions had a less pronounced effect [21]. Furthermore, research in specific emerging markets, such as Brazil by Crisóstomo & de Souza Freire (2021), has documented a statistically insignificant or even negative relationship, attributing this to the high initial costs of implementation in certain institutional environments [22]. This divergence in findings underscores the context-dependent nature of the ESG-performance nexus, highlighting a critical research gap in rapidly transforming economies like Saudi Arabia.

2.2. Hypothesis Development: The Saudi Context

The unique socio-economic landscape of Saudi Arabia, shaped by Vision 2030 and recent mandates from the Capital Market Authority (CMA) on sustainability reporting, provides a compelling setting to re-examine this relationship [12]. The Kingdom's strategic pivot towards economic diversification and a sustainable private sector suggests that ESG disclosure may carry a heightened signaling value. This study focuses on two core indicators of profitability to test the financial materiality of ESG disclosure in the Tadawul market.

2.2.1. ESG Disclosure and Operational Efficiency (ROA)

Return on Assets (ROA) is a key metric of operational efficiency, reflecting management's ability to generate profits from the firm's asset base. Strong ESG disclosure can be theorized to enhance ROA through several channels. Effective environmental management often leads to resource optimization, waste reduction, and improved energy efficiency, directly lowering operational costs [23]. Furthermore, high social performance, evidenced by fair labor practices and strong community relations, can boost employee productivity, reduce turnover, and attract talent, thereby increasing operational output [24]. Governance disclosures related to robust risk management and ethical practices can prevent value-destroying scandals and operational disruptions.

Recent studies lend credence to this view. For instance, Gerged, Al-Haddad, & Al-Hajri (2023) found that environmental disclosure in GCC firms is positively associated with operational performance, noting that these practices lead to tangible cost savings and process innovations [25]. Similarly, Alotaibi and Hussainey (2022) argued that integrated reporting, which often encompasses ESG metrics, provides a more holistic view of value creation, which is linked to superior operational outcomes [26]. Based on this rationale, we posit that firms with superior ESG disclosures will demonstrate greater operational efficiency.

H1: There is a positive relationship between the level of ESG disclosure and a firm's operational performance, as measured by Return on Assets (ROA).

2.2.2. ESG Disclosure and Shareholder Value (ROE)

Return on Equity (ROE) measures a firm's profitability relative to shareholder equity, directly speaking to value creation for providers of capital. From a financial perspective, comprehensive ESG disclosure can positively influence ROE by enhancing a firm's reputation, thereby attracting a broader investor base and potentially lowering its cost of equity [17, 27]. It also signals superior long-term risk management, making the firm more

resilient to environmental, social, and governance-related shocks that could erode profitability [28].

Empirical support for this channel is growing. In a study relevant to emerging markets, Naqvi, Uroos, & Aziz (2023) demonstrated that ESG performance acts as a significant predictor of financial returns for investors in Asian markets [29]. Moreover, the global trend of capital flowing into ESG-focused funds means that firms with strong disclosure are better positioned to access this patient, long-term capital, which can be deployed for profitable growth initiatives [30]. In the Saudi context, as the market aligns with global sustainable finance norms, we expect firms with transparent ESG practices to be rewarded with higher profitability from an equity perspective.

H2: There is a positive relationship between the level of ESG disclosure and a firm's financial performance, as measured by Return on Equity (ROE).

3. MATERIALS AND METHODS

3.1. Sample Selection and Data Sources

The empirical analysis is based on a balanced panel dataset of non-financial companies listed on the Saudi Stock Exchange (Tadawul) over the five-year period from 2019 to 2024. The sample period begins in 2019 to align with the increased regulatory focus on corporate governance and sustainability reporting by the Saudi Capital Market Authority (CMA), thereby ensuring data availability and relevance [12]. The initial sample comprised the 150 companies by market capitalization. Following established practices in corporate finance research [31, 32], financial institutions (e.g., banks, insurance companies) were excluded due to their dissimilar operational nature, unique regulatory frameworks, and distinct financial statement structures, which could confound the analysis [33]. The final sample consisted of 150 non-financial firms, resulting in 750 firm-year observations.

Data collection was conducted from multiple sources to ensure robustness and triangulation. Financial data (ROA, ROE, and control variables) were systematically extracted from the Refinitiv Eikon and Bloomberg terminals, which are widely recognized for their comprehensive and standardized financial information [34]. Data on ESG disclosure scores and their individual pillars (Environmental, Social, Governance) were also sourced from Refinitiv Eikon. This database provides a holistic ESG score based on publicly reported information, ensuring objectivity and comparability across firms [35, 36]. To validate this data, a manual cross-check was performed against companies' annual reports, sustainability reports, and corporate governance reports published on the Tadawul website.

3.2. Variable Measurement

3.2.1. Dependent Variables: Corporate Performance

To capture multifaceted aspects of corporate performance, we employed two key accounting-based metrics:

Return on Assets (ROA): Measured as net income divided by total assets. ROA is a primary indicator of a company's operational efficiency and its management's ability to generate profits from its asset base [25].

Return on Equity (ROE): Measured as net income divided by shareholders' equity. ROE reflects the profitability generated for equity investors and is a crucial measure of financial performance from a shareholder's perspective [29].

3.2.2. Independent Variables: ESG Disclosure

The key independent variable is the level of ESG disclosure. We utilized the comprehensive ESG Score provided by Refinitiv Eikon, which ranges from 0 (poor) to 100 (excellent). This score is based on a systematic assessment of over 750 company-level ESG metrics derived from public reports [35]. To dissect the aggregate effect and following the approach of prior studies [21, 37], we also decomposed the overall score into its three core pillars:

1) Environmental (ENV) Score: Reflects a company's commitment to environmental stewardship, including resource reduction, innovation, and emission control.

2) Social (SOC) Score: Measures the company's capacity to generate trust and loyalty with its workforce, customers, and society through sound labor practices, human rights, and community engagement.

3) Governance (GOV) Score: Assesses the company's systems and processes for ensuring that it is managed in the best interests of its shareholders, with a focus on board structure, compensation, and shareholder rights.

3.2.3. Control Variables

Consistent with the extant literature on ESG and performance [31, 3, 30], we included several firm-specific variables to control for heterogeneity and mitigate omitted variable bias:

- **Firm Size (SIZE):** Measured as the natural logarithm of total assets. Larger firms may have more resources for ESG activities and benefit from economies of scale [38].

• Leverage (LEV): Calculated as total debt divided by total assets. Leverage influences a firm's risk profile and cost of capital, which can affect profitability [39].

• Asset Efficiency (AT): Measured as total revenue divided by total assets. This controls the firm's operational efficiency in generating sales from its assets [27].

• Growth (GROWTH): Measured as the annual percentage change in total revenue. Growth opportunities can influence both current profitability and investment in ESG initiatives [40].

3.3. Empirical Model

To test the hypotheses (H1 and H2) and account for unobserved firm-specific heterogeneity, we employed a panel data regression model. The baseline model is specified as follows:

Performance$\_{i,t}$ = β_0 + β_1ESG$\_{i,t-1}$ + β_2SIZE$\_{i,t}$ + β_3LEV$\_{i,t}$ + β_4AT$\_{i,t}$ + β_5GROWTH$\_{i,t}$ + μ_i + λ_t + $\varepsilon\_{i,t}$

Where:

• Performance$\_{i,t}$ is the dependent variable (ROA or ROE) for firm $*i*$ in year $*t*$.

• ESG$\_{i,t-1}$ is the ESG disclosure score (or one of its pillar scores) for firm $*i*$ in year $*t-1*$. We use a one-year lag to mitigate reverse causality concerns, as the financial impact of ESG disclosure likely manifests with a time lag [41].

• SIZE, LEV, AT, GROWTH are the control variables for firm $*i*$ in year $*t*$.

• μ_i represents firm-fixed effects, which control for time-invariant unobserved firm characteristics.

• λ_t represents year-fixed effects, which control macroeconomic shocks common to all firms in a given year.

• $\varepsilon\_{i,t}$ is the idiosyncratic error term.

The analysis was conducted using both fixed effects (FE) and random effects (RE) models, with the Hausman test used to select the most appropriate specification. To further address endogeneity, we also employed the Generalized Method of Moments (GMM) estimator, which controls dynamic endogeneity and unobserved firm-specific effects [42]. All analyses were performed using Stata 18. The operationalization of the variables as described in full in Table 1 above.

Table 1: Operationalization of the Variables.

Variable	Measuring Items	Description
Dependent Variable	(ROA)Return on Assets	Return on assets is the calculation of the profitability as a percentage of the net earnings in proportion to all the assets owned by the company.
	(ROE)Return on Equity	Return on equity determines the benefit as a proportion of the net income to the shareholder equity
Independent Variable	ESG INDEX	The ESG index, which was created through principal component analysis (PCA), is a single measure that combines environmental, social, and governance metrics so that firms can be effectively assessed in terms of their compliance with sustainability- and governance-related issues. It determines the ESG compliance of firm i during a period.
Control Variable	(Size)Firm Size	Firm size = natural log of total assets of firm (i) in period (t), which reflects the firm's capital and resources during that period
	(Age)Firm Age	Firm age = the duration from the establishment of firm (i) to period (t), which shows the market experience.
	(Tan)Tangibility	The amount of assets that are physical in nature as compared to the overall assets of a company
	LEV(Financial Leverage)	Financial leverage = the proportion of the total liabilities to the total assets of firm (i) during period (t), which is a control variable.
	LIQ(Financial Liquidity)	The capacity of a company to fulfil its short-term obligations with relative ease.

4. REGRESSION MODEL

To empirically test the hypothesized relationships between ESG disclosure and corporate performance, a robust econometric framework is essential. This study employs a panel data regression model, which is particularly suited for analyzing data that tracks the same entities (firms) over multiple time periods. The panel approach allows for control of unobserved, time-invariant firm-specific characteristics that could otherwise bias the results (e.g., corporate culture, long-term strategy) [43].

The foundational functional form of the

relationship is expressed as:

ROA = f(ESG disclosures, X_i)
ROE = f(ESG disclosures, X_i)

Where the vector X_i represents a set of firm-specific control variables known to influence corporate performance.

To operationalize this, we specify the following baseline econometric model for each performance metric:

$ROA_{it} = \beta_0 + \beta_1 ESG_{it} + \delta_0 X_{it} + \mu_{it}$
$ROE_{it} = \beta_0 + \beta_1 ESG_{it} + \delta_0 X_{it} + \mu_{it}$

In these equations:

- ROA_{it} and ROE_{it} are the dependent variables, representing the Return on Assets and Return on Equity for firm *i* in year \t\, respectively.
- ESG_{it} is the key independent variable, representing the ESG disclosure index for firm \i in year t.
- X_{it} is the vector of control variables for firm \i\ in year \t
- β_0 is the constant term. β_1 is the coefficient of primary interest, capturing the marginal effect of ESG disclosure on firm performance.
- δ_0 is a vector of coefficients for the control variables.
- μ_{it} is the idiosyncratic error term.

The vector of control variables (**X_{it}**) is defined to include several critical firm-level factors, specified as:

$$X_{it} = \gamma_0 + \gamma_1 SIZE_{it} + \gamma_2 LEV_{it} + \gamma_3 AGE_{it} + \gamma_4 Z_{it} + \varepsilon_{it}$$

Where:
- $SIZE_{it}$ controls for firm size.
- LEV_{it} controls for financial leverage.
- AGE_{it} controls for firm age.
- Z_{it} represents a placeholder for other variables that may be included for sensitivity analyses (e.g., growth, asset tangibility).
- ε_{it} is the error term for this specification.

By incorporating the control variable vector directly into the main equation, we derive the final estimable models for our analysis:

$$CP_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 AGE_{it} + \beta_5 Z_{it} + \mu_{it}$$

In the context of our study, this general model is applied to our two specific performance measures:

$$ROA_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 AGE_{it} + \beta_5 Z_{it} + \mu_{it}$$

$$ROE_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 AGE_{it} + \beta_5 Z_{it} + \mu_{it}$$

Variable Operationalization:
- Dependent Variables (CP_{it}): Firm performance is proxied by ROA (Net Income / Total Assets) and ROE (Net Income / Shareholders' Equity).
- Independent Variable (ESG_{it}): The core explanatory variable is the ESG Disclosure Index, constructed using Principal Component Analysis (PCA) to aggregate the individual environmental, social, and governance disclosure scores into a single, robust measure.
- Control Variables: These are time-variant, firm-specific factors:
- $SIZE_{it}$: Firm size, measured as the natural logarithm of total assets.
- LEV_{it}: Financial leverage, measured as the ratio of total debt to total assets.
- AGE_{it}: Firm age, measured as the number of

years since the company's incorporation.

4.1 Estimation Technique

Panel data methodology offers distinct advantages over pure cross-sectional or time-series analyses, including greater degrees of freedom, increased sample variability, and reduced collinearity among explanatory variables. Crucially, it allows for the control of unobserved, time-invariant heterogeneity across firms, which, if omitted, could lead to biased estimates [43].

To address potential endogeneity arising from such unobserved heterogeneity, we estimated both Fixed Effects (FE) and Random Effects (RE) models. The FE estimator controls all time-invariant firm-specific characteristics, while the RE estimator assumes these characteristics are uncorrelated with the regressors. The choice between these two models was guided by the Hausman test [44]. A statistically significant test statistic indicates that the FE model is the consistent and preferred estimator. To further mitigate endogeneity concerns, particularly those related to dynamic endogeneity and reverse causality where current performance may influence future ESG disclosure, we employed the Generalized Method of Moments (GMM) estimator [42]. The GMM approach uses internal instruments, typically lagged values of the explanatory variables, which are correlated with the endogenous regressors but uncorrelated with the contemporary error term. This provides consistent and unbiased parameter estimates.

The validity of the GMM estimation hinges on the exogeneity of the instrument set. This was formally tested using the Hansen J-test for over-identifying restrictions [45]. A null hypothesis of valid instruments is supported by a high p-value (conventionally above 0.05), indicating that the instruments are uncorrelated with the error term and the model is correctly specified. By applying this suite of robust econometric techniques FE/RE models validated by the Hausman test and dynamic GMM with diagnostic checks we ensure the reliability and credibility of our inferences regarding the relationship between ESG disclosure and corporate performance in Saudi Arabia.

4.2. ESG Index Construction via Principal Component Analysis (PCA)

To create a parsimonious and robust measure of overall ESG disclosure, we constructed a composite index using Principal Component Analysis (PCA). PCA is a dimensionality-reduction technique that transforms a set of potentially correlated variables (individual ESG indicators) into a new set of uncorrelated linear

combinations, known as principal components [46]. This method is preferred as it mitigates multicollinearity and assigns weights objectively based on the variance explained by each component.

The construction process followed these steps:

Variable Selection: The relevant environmental (E), social (S), and governance (G) disclosure indicators were selected from the dataset for all sample firms.

Data Standardization: Given the differing scales of the individual ESG metrics, the data were standardized to a mean of zero and a standard deviation of one to prevent variables with larger scales from disproportionately influencing the principal components.

PCA Application: PCA was applied to the standardized dataset to extract the principal components. The first principal component, which captures the largest possible variance in the original data, was retained for the construction of the index.

Variance Explanation: The explained variance ratio was examined to determine the proportion of total variance accounted for by the selected principal component, ensuring it provided a representative summary of the underlying ESG disclosure data.

Index Formation and Normalization: The resulting component scores were used to construct the initial ESG index. These scores were then normalized to a consistent scale (e.g., 0 to 100) to facilitate a clear interpretation and comparison across firms and overtime.

The final output of this procedure is a single, continuous ESG Disclosure Index for each firm-year observation. This index serves as our core independent variable, providing a standardized and graded measure of the overall comprehensiveness of a company's sustainability reporting.

4.3 Validation and Robustness Tests

This study conducted the following validation and robustness tests:
Validation Tests

1. **Hausman Test:** This test was employed to identify the most suitable model specification between fixed effects and random effects.

2. **Multiple Regression Models:** The analysis incorporated fixed effects, random effects, and generalized method of moments (GMM) estimators to examine the relationships. This multi-model approach facilitates comparison and enhances the validity of the findings across different specifications.
Robustness Tests

1. **Alternative Performance Measures:** Firm performance was assessed using three distinct indicators, namely return on assets (ROA) and return on equity (ROE), to ensure robustness across different performance metrics.

2. **Control Variables:** The models controlled several firm-specific characteristics, including size, financial leverage, age, liquidity, and asset tangibility, to mitigate potential confounding effects on performance.

5. RESULTS AND DISCUSSION

This section presents the empirical analysis and interprets the findings in light of the hypotheses developed earlier, grounded in stakeholder theory and signaling theory. The results reveal a significant relationship between ESG disclosure and the performance of the top 150 Saudi companies under consideration [15,35]. Specifically, the regression analyses and associated statistical tests confirm that ESG disclosure positively influences firm performance, as measured by return on assets (ROA) and return on equity (ROE). These findings suggest that companies adopting transparent ESG practices tend to achieve superior operational and financial outcomes.

The discussion also considers the role of control variables—such as firm size, financial leverage, and firm age—in shaping these relationships. Larger firms, for instance, may have greater resources to implement ESG initiatives, while highly leveraged firms might face constraints that limit sustainability investments. Firm age could influence ESG adoption through accumulated experience and stakeholder expectations. Understanding these moderating effects provides nuanced insights into how ESG disclosure interacts with firm-specific characteristics to impact performance.

Beyond financial metrics, the implications of these findings are salient for market valuation and strategic positioning. ESG disclosure appears to serve as a credible signal of corporate quality and long-term viability, consistent with signaling theory. At the same time, the positive association between ESG practices and profitability aligns with stakeholder theory, reinforcing the argument that addressing diverse stakeholder interests can enhance firm value.

The results of descriptive statistics and normality tests, summarized in Table 2, offer additional context. The mean ESG disclosure score of 29.152 indicates a moderate level of transparency among the sampled firms, while the standard deviation of 11.341 reflects considerable variation in ESG practices. The skewness value of 0.607 suggests a slightly right-skewed distribution, and the kurtosis value of 2.162 points to a moderately peaked distribution. These patterns imply that while ESG adoption is gaining

traction, disparities remain across firms, highlighting opportunities for regulatory intervention and best-practice dissemination.

Ultimately, this analysis provides actionable insights for policymakers, investors, and corporate practitioners. For policymakers, the findings underscore the need for robust ESG disclosure frameworks to promote transparency and accountability. For investors, ESG metrics can serve as valuable tools for assessing long-term risk and return profiles. For corporate managers, integrating ESG considerations into strategic decision-making can enhance competitiveness and reputation in an increasingly sustainability-driven market.

Table 2: Descriptive Statistics and Normality Test

VARIABLE	MEAN	S.DEV	MAX	MIN	SKEWNESS	KURTOSIS
ESG Disclosure	29.152	11.341	73.612	12.142	0.607	2.162
Environmental (E)	26.512	11.521	72.112	12.156	0.312	2.151
Social (S)	31.256	11.661	72.192	10.513	0.414	2.315
Governance (G)	29.371	8.813	71.361	11.701	0.328	2.471
Dependent Variable						
ROA (Return on Assets)	6.323	6.361	46.541	−4.323	−0.064	9.972
ROE (Return on Equity)	17.816	26.13	522.435	9.431	7.241	97.534
Control Variables						
Firm Size (Net)	72,787	231,103	2,461,274	1111	6.781	55.005
Financial Leverage	2.394	3.47	75.412	1.045	6.533	83.75
Firm Age	0.653	0.557	3.752	0.029	2	8.262
Tangibility	0.714	0.706	0.002	11.714	3.841	47.012
Liquidity	2.617	2.371	0.112	27.443	4.436	54.73

The correlation matrix presented in Table 3 reveals several noteworthy relationships between financial performance measures and ESG disclosure components—environmental, social, and governance—as well as the overall ESG index. Notably, ROA exhibits a modest positive correlation with both overall ESG disclosure and environmental disclosure, indicating that firms with stronger environmental reporting practices tend to achieve higher operational efficiency and asset utilization. This suggests that environmentally responsible practices—such as energy efficiency, waste reduction, and resource optimization—can translate into tangible cost savings and operational benefits.

Similarly, the weaker yet positive correlation between ROE and ESG disclosure implies that firms with comprehensive ESG strategies are more likely to deliver improved returns to shareholders. While the correlation is not as strong as with ROA, it still underscores the role of ESG in enhancing financial resilience and investor confidence.

The regression analysis, a cornerstone of this study, provides deeper insights into these relationships. The results confirm a positive and statistically significant association between ESG disclosure and ROA ($\beta = 0.002$, $p < 0.01$) in the fixed-effect model, validating our first hypothesis. This finding aligns with stakeholder theory, which posits that addressing stakeholder interests fosters long-term profitability, and signaling theory, which suggests that ESG transparency signals corporate quality and sustainability commitment. Companies with higher ESG scores are not only perceived as more trustworthy but also tend to realize operational

efficiencies that contribute to profitability.

From a practical standpoint, these results highlight several mechanisms through which ESG practices can drive performance:

1) Cost Reduction: ESG-oriented firms often achieve savings through improved resource efficiency, waste management, and energy optimization.

2) Risk Mitigation: Strong ESG governance reduces exposure to regulatory, reputational, and environmental risks, safeguarding long-term value.

3) Market Differentiation: Transparent ESG reporting enhances brand reputation and investor confidence, leading to better market valuation.

The analysis also supports our second hypothesis, showing a positive and significant relationship between ESG disclosure and ROE in the fixed-effect model. This reinforces the argument that ESG integration is not merely a compliance exercise but a strategic lever for financial performance. Firms that embed ESG principles into their core operations can attract responsible investors, secure favorable financing terms, and strengthen shareholder returns.

In summary, these findings provide compelling evidence that "ESG makes good business sense." For Saudi companies, particularly under the framework of Vision 2030, ESG adoption is not only aligned with global sustainability trends but also offers a clear pathway to improved profitability and competitiveness. Managers should view ESG disclosure as a strategic investment rather than a regulatory burden, while policymakers and investors should leverage these insights to promote sustainable business practices across sectors.

Table 3: Matrix of (Linear) Correlations

Variables	ENV	SOC	SOC	GOV	ROA	ROE	Firm Age	Firm Size	Financial Leverage
ENV (Environmental)	1								
SOC (Social)	0.241	1							
GOV (Governance)	−0.142	0.328	1						
ESG Index	0.651	0.727	0.487	1					
ROA	0.048	0.051	0.035	0.036	1				
ROA	0.043	0.147	0.026	0.064	0.83	1			
Firm Age	0.032	−0.076	0.008	0.037	0.058	0.019	1		
Firm Size	0.007	−0.139	0.079	0.131	0.156	0.089	0.174	1	
Financial Leverage	−0.024	−0.196	−0.019	−0.089	−0.031	−0.038	−0.025	−0.032	1

6. CONCLUSION

This research explored how ESG disclosure relates to companies' performance. The study surveyed the top 150 largest publicly listed companies on the Saudi Arabian stock market—all of them on the main board—from 2019 to 2024. After checking them with regression models, the interrelationships between ESG disclosure practices and selected key financial indicators, namely, the ROA and ROE were examined. Our research confirmed that robust ESG disclosure and companies' performance are tightly linked. Companies with better ESG disclosure performed significantly better in terms of the ROA and ROE, a measure of market value.

This is consistent with theories that hold that profitability and shareholder value can be improved by integrating sustainable principles into a business's core strategy [52,53]. This research adds to the ever-growing knowledge base of ESG disclosure and its economic effects. By illustrating the profit potential of ESG disclosure practices in Saudi Arabia, our study can provide an impetus for their wider uptake and be valuable for many different groups. The findings should benefit regulators in advocating for rigorous rule making on ESG disclosure. They might also increase investor education programs that focus on profits and doing well [39]. Furthermore, this will have several important theoretical implications for stakeholder theory. The positive relationship between ESG disclosure and companies' performance supports the perspective of stakeholder theory that addressing the interests of various stakeholders can lead to improved financial outcomes [22–24].

For businesses, this study underlines the strategic importance of the social aspect, meaning that considerations concerning ESG disclosure are included within decision-making structures. By acting on ESG disclosure issues, companies can improve their financial performance and gain a more favorable reputation. They can improve the skills of responsible investors and manage risks associated with environmental and social problems more effectively [14,47]. While our study presents valuable insights, there are still some substantial barriers. **First**, our focus was on listed companies within Saudi Arabia, and, as such, it may be necessary to go into greater depth and provide an entirely accurate reflection of ESG disclosure throughout all business operations. **Secondly,** an area ripe for future exploration is the identification of precisely which ESG disclosure factors underpin performance disparities across industries. Further studies might also examine the impact of ESG disclosure practices on Saudi Arabia in social and environmental terms. Comparing the effectiveness of various regulatory approaches against the returns sought through different investor education strategies would be valuable in promoting sustainable business practices. Our findings have several practical implications for managers, investors, and policymakers.

For managers, the positive relationship between ESG disclosure and firm performance suggests that investing in ESG practices and transparently disclosing them can lead to improved financial and market outcomes. However, managers should be aware of potential sector-specific differences and tailor their ESG strategies accordingly. For investors, the positive associations between ESG disclosure and various performance measures indicate that ESG information can be valuable for investment decision-making. Investors may benefit from incorporating ESG factors into their analyses, particularly when considering long-term investments. For policymakers, the overall positive impact of ESG disclosure on firm performance supports the case for promoting ESG disclosure practices through regulation and incentives. However, policymakers should consider sector-specific differences when designing such policies. Despite providing valuable insights into the relationship between ESG disclosure

and firm performance among the top 150 publicly listed companies in Saudi Arabia from 2019 to 2024, this study has several limitations that future research should address:

6.1. Sample Scope and Diversity

The current analysis focuses exclusively on large, publicly listed firms, which may not fully represent the broader corporate landscape. Non-listed firms, small and medium-sized enterprises (SMEs), and family-owned businesses often exhibit different governance structures and disclosure practices. Expanding the sample to include these entities would provide a more comprehensive understanding of ESG adoption across the economy and reveal whether similar performance benefits apply beyond the listed sector.

6.2. Longitudinal Perspective

While this study covers a five-year period, ESG initiatives typically yield benefits over extended horizons. Short- to medium-term analyses may not capture the full impact of sustainability strategies on financial and market outcomes. Future research should employ longitudinal designs spanning a decade or more to assess the persistence and evolution of ESG effects, including potential lagged impacts on profitability, valuation, and risk mitigation.

6.3. Industry-Specific ESG Drivers

ESG factors are not uniform across industries; for example, environmental disclosures may be more critical in energy and manufacturing, while social and governance aspects may dominate in service sectors. Future studies should identify which ESG dimensions—environmental, social, or governance— drive performance differences within and across industries. This would enable sector-specific policy recommendations and strategic guidance for managers.

6.4. Non-Financial Performance Outcomes

This study concentrates on financial metrics (ROA and ROE), but ESG practices also influence intangible outcomes such as employee engagement, talent retention, customer loyalty, and brand reputation. These non-financial indicators often serve as precursors to long-term financial success. Future research should incorporate these dimensions to provide a holistic view of ESG's impact on organizational sustainability and competitiveness. The key conclusions of this study can be summarized as follows. First, ESG disclosure shows a positive association with operational performance, as measured by return on assets (ROA) and financial performance as reflected in return on equity (ROE), Second, the strength and nature of the relationship between ESG disclosure and firm performance differ across manufacturing and non-manufacturing sectors, emphasizing the importance of considering industry-specific contexts. Third, the impact of ESG disclosure on firm performance remains significant even after controlling for various firm-level characteristics. These findings contribute to the growing body of literature on ESG and its economic implications, particularly within the Saudi Arabian context. They provide empirical evidence supporting the strategic importance of integrating ESG considerations into corporate practices and decision-making processes.

Based on these results, several policy actions are recommended. Regulators should continue to encourage and, where appropriate, mandate comprehensive ESG disclosure among listed companies. Industry-specific guidelines should be developed to address sector-specific challenges and opportunities related to ESG reporting. Investor education programs should be implemented to enhance understanding of ESG information and its role in investment decisions. Incentive structures should be introduced to reward companies that demonstrate strong ESG performance and transparency. Finally, corporate governance and investment practices should adopt a long-term perspective, aligning with the inherently long-term benefits of ESG initiatives.

In conclusion, this study underscores the critical role of ESG disclosure in promoting sustainable and responsible business practices in Saudi Arabia. By fostering transparency and accountability, ESG reporting can position Saudi Arabia as a regional leader in sustainable development. Achieving this vision will require collaboration among policymakers, investors, and businesses to create long-term value for all stakeholders.

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