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Sustainability Reporting on Financial Performance Among Listed Firms in Nairobi Security Exchange, Kenya

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Abstract

This study empirically investigates the effect of environmental, social, and governance disclosures on firm financial performance among listed firms observed over multiple years. Using a balanced panel of 468 firm-year observations from 39 firms, the study applies a fixed-effects regression model to control for unobserved, time-invariant firm characteristics that may jointly influence firm performance and disclosure behavior. ESG performance is peroxide using an ESG reporting index based on Global Reporting Initiative disclosure dimensions, while financial performance is measured using return on assets. Firm age and firm leverage are included as control variables to account for lifecycle effects and financing structure differences. The regression results indicate that environmental disclosure has a negative and statistically significant relationship with firm performance, suggesting that increased environmental reporting is associated with lower contemporaneous profitability, potentially reflecting short-run compliance, implementation, or reporting costs. Social disclosure is also negative and significant, implying that greater social transparency is linked to a modest reduction in short-term performance within firms over time. In contrast, governance disclosure is positive and statistically significant, indicating that improved governance transparency is associated with better firm performance, consistent with stronger oversight and accountability mechanisms enhancing efficiency and investor confidence. The findings imply that ESG pillars affect performance differently and highlight the central role of governance transparency for value creation.

Key words: ESG disclosure, environmental disclosure, social disclosure, governance disclosure, firm performance, return on assets, firm age, leverage, fixed effects model, GRI.

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1.Introduction

Sustainability reporting refers to the systematic disclosure of a firm's environmental, social, and governance (ESG) practices, risks, and outcomes to inform stakeholders about how the firm creates value beyond short-term profits (Elkington, 1997; Gray et al., 1995; KPMG, 2020). Globally, sustainability reporting has shifted from a largely voluntary corporate social responsibility narrative toward investor-focused disclosure connected to enterprise risk, cost of capital, and long-run competitiveness (Eccles et al., 2014; Khan et al., 2016; Porter & Kramer, 2011). This shift is reinforced by rapid growth in sustainable finance: the Global Sustainable Investment Alliance reported about US$30.3 trillion in sustainable investing assets in 2022 (GSIA, 2022). In parallel, reporting frameworks and standards are converging: the ISSB issued IFRS S1 and IFRS S2 in June 2023 to create a global baseline for sustainability-related financial disclosure (IFRS Foundation/ISSB, 2023). Likewise, the Global Reporting Initiative remains a dominant reference point for sustainability reporting practice globally (GRI, 2024). These global developments signal rising expectations that listed firms provide credible ESG information, not only to demonstrate accountability, but also to support efficient capital allocation and market confidence (Clark et al., 2015; Deegan, 2002; Ioannou & Serafeim, 2015).

Theoretically and empirically, the ESG–financial performance relationship is often framed through stakeholder theory and legitimacy theory, which posit that firms that respond to stakeholder expectations and societal norms reduce conflict, protect reputation, and enhance access to resources (Deegan, 2002; Freeman, 1984; Suchman, 1995). Agency theory further suggests that stronger governance and transparency reduce information asymmetry and opportunistic behavior, thereby lowering financing costs and improving performance (Jensen & Meckling, 1976; Shleifer & Vishny, 1997). Empirical evidence is substantial but not unanimous. Meta-analytic and review studies generally find that ESG performance/disclosure is more often positively associated with corporate

financial performance, particularly through risk reduction and cost-of-capital channels (Friede et al., 2015; Orlitzky et al., 2003; Whelan et al., 2021). More recent meta-analyses also report heterogeneity by context, measurement, and industry, indicating that ESG effects can be contingent on institutional quality, enforcement, and stakeholder salience (Endrikat et al., 2014; Margolis & Walsh, 2003; Zhang et al., 2025). This mixed evidence motivates country- and market-specific inquiry, especially in emerging markets where ESG reporting regimes are newer and capital markets may be more sensitive to credibility and governance signals (Ioannou & Serafeim, 2015; Khan et al., 2016).

The environmental component of sustainability reporting has gained urgency due to climate change, biodiversity loss, pollution, and resource scarcity, which increasingly translate into regulatory, physical, and transition risks for firms (Hart, 1995; IPCC, 2023; Porter & van der Linde, 1995). Environment-related disclosure covering emissions, energy, water, waste, and environmental compliance can influence financial performance through eco-efficiency, innovation, liability reduction, and improved stakeholder trust (Hart, 1995; Porter & van der Linde, 1995; Shrivastava, 1995). However, environmental reporting may also impose short-run costs and expose firms to scrutiny if performance is weak, which partly explains the inconsistent results found in some studies (Cho & Patten, 2007; Clarkson et al., 2008; Ullmann, 1985). In the Kenyan listed-firm context, evidence indicates that environmental disclosure can be positively associated with accounting performance (e.g., ROA), though effects on market measures may be weaker or insignificant depending on measurement and time horizons (King'wara et al., 2020). These findings suggest that environmental disclosure may matter for performance, but the strength of the relationship may depend on whether disclosures reflect substantive eco-efficiency improvements versus symbolic compliance (Cho & Patten, 2007; Lyon & Maxwell, 2011).

The social dimension of sustainability reporting addresses how firms manage relationships with employees, customers, suppliers, and communities covering labor standards, health and safety, diversity and inclusion, product responsibility, and community investment (Carroll, 1991; Freeman, 1984; Wood, 1991). Social performance can improve productivity and retention through stronger human capital, enhance brand loyalty, and reduce operational disruptions from stakeholder conflict (Edmans, 2011; Porter & Kramer, 2011). Nevertheless, social investments may be criticized as managerial "over-spending" if they are poorly aligned with strategy or are perceived to erode shareholder value (Friedman, 1970; McWilliams & Siegel, 2001). In Kenya, CSR and social disclosure research among Nairobi Securities Exchange (NSE) firms shows mixed results, with some studies reporting positive or context-dependent associations with performance (Kingwara, 2020; Ponnu & Okoth, 2009; Waddock & Graves, 1997). Such mixed outcomes reinforce the need to treat "social disclosure" not as a generic good, but as an element whose value depends on credibility, stakeholder relevance, and integration into business models (Carroll, 1991; Dahlsrud, 2008; Porter & Kramer, 2011).

Governance reporting the G in ESG covers board structure, independence, ethics, internal controls, shareholder rights, transparency, and risk management, and is central to the integrity of both financial and sustainability disclosures (Jensen & Meckling, 1976; Shleifer & Vishny, 1997). Good governance is often expected to strengthen financial performance by improving oversight, reducing agency costs, and lowering the likelihood of misreporting and value-destroying decisions (Fama & Jensen, 1983; La Porta et al., 2000; OECD, 2015). Governance also influences the quality of ESG disclosure itself; recent evidence from sub-Saharan Africa indicates that governance mechanisms can positively shape ESG disclosure levels, with ownership structure potentially moderating the relationship (Anifowose, 2025). Yet governance disclosure may be used strategically to signal compliance while masking weak underlying practices raising concerns about "greenwashing" or "symbolic" sustainability reporting that may not translate into improved performance (Lyon & Maxwell, 2011; Michelon et al., 2015; Cho et al., 2015). Consequently, studies increasingly emphasize the combined assessment of environmental, social, and governance disclosures rather than isolated pillars.

Regionally, sustainability reporting in Africa has expanded but remains uneven, shaped by institutional capacity, regulatory enforcement, and investor composition (De Villiers et al., 2014; Ntim & Soobaroyen, 2013). South Africa supported by King Codes and integrated reporting norms often exhibits higher sustainability disclosure maturity than many African markets, and recent work continues to test whether ESG integration improves firm performance in that context (de Klerk et al., 2015; Eccles et al., 2014; Mhlanga & Maredza, 2025). However, across emerging markets, ESG effects can vary depending on cross-listing, industry materiality, and the depth of capital markets, implying that ESG may matter most where disclosure credibility and investor sensitivity are high (Khan et al., 2016; Liang & Renneboog, 2017; Sokolov et al., 2025). For African exchanges seeking capital inflows and lower risk premia, credible ESG reporting can serve as a market development tool by improving transparency, comparability, and investor confidence (ASEA, 2020; GRI, 2024; UN SSE, 2021).

In Kenya, sustainability reporting has become more salient due to investor demand, climate vulnerability, governance reform pressures, and the strategic role of the capital market in financing development (Republic of Kenya, 2018; UNDP, 2020). The NSE has taken explicit steps to structure ESG disclosure practices through the ESG Disclosures Guidance Manual launched in November 2021, aimed at improving and standardizing ESG information reported by listed companies and aligning disclosures with international standards (Nairobi Securities Exchange, 2021a). The manual was developed with support from institutions including GRI, reflecting the intent to embed global reporting practices in the Kenyan market (Nairobi Securities Exchange, 2021b). Complementing these initiatives, Kenya's Capital Markets Authority issued a Code of Corporate Governance Practices for issuers (2015), anchoring governance expectations for listed firms and strengthening disclosure and accountability norms (Capital Markets Authority, 2015). These policy steps underscore that ESG disclosure in Kenya is no longer peripheral; rather, it is increasingly positioned as part of market integrity and risk management for public-interest entities.

Despite these reforms, the financial performance environment for NSE listed firms and the Kenyan equities market has experienced notable stress and volatility, raising questions about the drivers of firm performance and investor confidence. For example, the NSE annual report indicates that overall market turnover declined to KES 103.94 billion in 2023 from KES 110.98 billion in 2022 (a 6.35% decline), while equity turnover fell to KES 78.99 billion in 2023 from KES 93.95 billion in 2022. Consistently, CMA market statistics show that equity market capitalization decreased sharply during 2023, from KES 1,961.63 billion (January 2023) to KES 1,383.61 billion (October 2023), reflecting reduced valuations and weaker investor sentiment. The same CMA statistics indicate that the NSE 20 Share Index fell from 1,657.32 (January 2023) to 1,461.01 (October 2023). In addition, listed-counter dynamics reveal market strain: the CMA bulletin reports 65 listed counters in 2024 (down from 66 in 2023), alongside multiple suspended counters (e.g., Kenya Airways, Mumias Sugar, ARM Cement), which points to episodes of prolonged financial distress and impaired trading continuity. Collectively, these indicators suggest a market in which firm-level performance pressures and risk perceptions are material, strengthening the practical relevance of governance quality, risk disclosure, and sustainability transparency.

These financial performance challenges are increasingly linked to sustainability reporting variables because ESG disclosures can affect both internal performance drivers and external financing conditions. Enhanced ESG reporting can reduce information asymmetry, signal superior risk management, and potentially lower the cost of equity and debt by improving investor trust (Clark et al., 2015; Dhaliwal et al., 2011; Lee et al., 2023). Conversely, limited or low-quality ESG reporting may exacerbate uncertainty, raising risk premia and weakening market valuations particularly in a market experiencing trading suspensions and valuation declines (Deegan, 2002; Jensen & Meckling, 1976; Suchman, 1995). Kenyan empirical evidence remains fragmented: some studies focusing on environmental disclosure among NSE firms report positive links with ROA but weaker effects for market-based measures (King'wara et al., 2020), while CSR disclosure research among NSE firms reports either insignificant effects (Kingwara, 2020) or context-sensitive benefits depending on measurement, sector, and time lags (Waddock & Graves, 1997; Mahoney & Roberts, 2007). In addition, newer Kenya-focused ESG work increasingly evaluates ESG dimensions jointly (Muchiri et al., 2025; Olweny & Rosana, 2025), but the literature still shows variability in methods, samples, ESG scoring, and performance proxies (ROA, ROE, Tobin's Q, market value). Therefore, given the NSE's 2021 ESG guidance and recent market performance strains, a comprehensive study examining ESG sustainability reporting and financial performance among listed firms at the NSE is warranted to clarify whether, how, and under what conditions ESG reporting contributes to improved financial outcomes and market resilience in Kenya.

The document is organised as follows: Section 2 reviews prior literature on the relationship between ESG sustainability reporting and financial performance among listed firms, and highlights key gaps that this study addresses within the NSE context. Section 3 outlines the data sources, variable measurement (ESG pillars and financial performance indicators), and the analytical methods used. Section 4 presents the empirical findings and robustness checks. Section 5 concludes with implications and recommendations.

2. Literature review and hypotheses development

2.1 *Theoretical review*

Triple Bottom Line (TBL) theory anchors this study by framing sustainability reporting as a multi-dimensional performance system in which firms are assessed not only on profitability but also on their impacts on people (social) and the planet (environmental) (Elkington, 1997). In this logic, ESG reporting is a structured way for listed firms to communicate how environmental stewardship (e.g., emissions, energy, waste), social outcomes

(e.g., labour practices, customer responsibility, community impacts), and governance quality (e.g., board oversight, ethics, controls) jointly support sustainable value creation and risk management, which can ultimately influence financial outcomes (Slaper & Hall, 2011; Elkington, 1997). Although the TBL concept has been critiqued for ambiguity in measurement and the risk of symbolic reporting, it remains a useful theoretical lens for operationalising ESG disclosure as an integrated "people–planet–profit" construct and motivating empirical testing of whether such disclosure aligns with stronger accounting and/or market performance (Norman & MacDonald, 2004). This is consistent with broader evidence that sustainability/ESG practices and disclosures are frequently associated with superior financial performance, albeit with context-specific variation (Eccles et al., 2014; Friede et al., 2015; Orlitzky et al., 2003; Waddock & Graves, 1997).

Legitimacy theory complements TBL by explaining why NSE-listed firms disclose ESG information and how such disclosure may connect to financial performance through stakeholder approval, reputational protection, and access to capital. Legitimacy theory argues that firms operate under an implicit "social contract" and must align their actions (or portray alignment) with societal norms to secure ongoing support and resources (Dowling & Pfeffer, 1975; Suchman, 1995). From this perspective, sustainability reporting becomes a strategic response to legitimacy pressures from regulators, investors, communities, and civil society—particularly when firms face scrutiny over environmental and social impacts (Deegan, 2002; O'Donovan, 2002). Environmental and broader sustainability disclosures can therefore be used as "tools of legitimacy," with disclosure levels rising as firms seek to manage perceptions and reduce political or reputational costs (Cho & Patten, 2007; Deegan, 2002). However, legitimacy theory also warns that firms may rely on symbolic disclosure (including selective or biased narratives) rather than substantive performance improvements—creating risks of greenwashing and weakening the expected performance benefits if stakeholders discount credibility (Hahn & Lülfs, 2014; Suchman, 1995). Applied to this study, legitimacy theory predicts that higher-quality ESG reporting by NSE-listed firms can enhance legitimacy and investor confidence (supporting financial performance), while low-quality or symbolic ESG reporting may fail to deliver measurable financial gains.

2.2 *Environmental disclosure and financial performance*

Most studies argue that environmental disclosure (e.g., pollution reporting, environmental expenditure disclosure, carbon disclosure, and environmental information transparency) can enhance financial performance by reducing information asymmetry and strengthening stakeholder trust, though results vary by regulation intensity and disclosure quality. Deswanto and Siregar (2018) examined Indonesian firms and found that more extensive environmental disclosure is associated with better corporate financial performance, suggesting that credible environmental reporting can strengthen legitimacy and investor confidence.

Wang, Wang, Wang, and Yang (2020) provided evidence that environmental information disclosure can improve firm financial performance and further explored underlying channels (e.g., improving liquidity/visibility and lowering financing frictions), reinforcing the view that disclosure quality matters as much as disclosure quantity.

Carbon disclosure is often treated as a more specific (and investor-salient) form of environmental disclosure. Alsaifi, Elnahass, and Salama (2020) reported that voluntary carbon disclosure is positively related to financial performance in the UK context, implying that transparent carbon reporting can be rewarded where environmental policy and investor scrutiny are strong.

The institutional context also shapes the disclosure–performance link. Liu, Uchida, and Bao (2024) showed that the introduction of China's New Environmental Protection Law strengthened the relationship between environmental disclosure quality and financial performance, especially during periods of strong enforcement, implying that regulation can raise the "credibility floor" of disclosure and increase its value relevance.

Evidence also warns that "environmental disclosure" is not uniformly beneficial when it is selective, symbolic, or opportunistic. Xu, Ji, and Yang (2021) demonstrated that selective environmental information disclosure is associated with stock price crash risk in polluting Chinese firms, highlighting that incomplete or strategic disclosure can elevate downside risk and undermine market trust—an indirect pathway through which low-integrity disclosure can harm financial outcomes.

In addition, research linking environmental disclosure to broader ESG outcomes indicates spillovers into corporate performance via improved environmental management and governance discipline. Studies examining disclosure regulation shocks suggest that stronger environmental information regimes can improve environmental (and sometimes social) dimensions of ESG performance, which are increasingly used by investors as screening tools.

Based on the theoretical and empirical reviews, we formulate the following hypotheses:

HO1: Environmental disclosure has significant effect on Financial Performance.

2.3 Social disclosure and financial performance

Social disclosure is commonly operationalized through CSR disclosure, sustainability social indicators (labor practices, community investment, human rights), or GRI-based social reporting. The dominant explanation in the 2017–2024 literature is that social disclosure can raise financial performance by improving reputation, strengthening stakeholder relationships, and lowering contracting and financing costs—yet the magnitude depends on credibility, enforcement, and market maturity.

Thuy, Khuong, Canh, and Liem (2021) analyzed Vietnamese listed firms and found a positive relationship between CSR disclosure and financial performance, with evidence that financial statement comparability plays a complementary mediating role—implying that social disclosure improves performance partly by improving the information environment and reducing investor uncertainty.

Cross-country banking evidence also supports performance gains when sustainability reporting (including social disclosure) is substantive. Buallay (2019) examined EU banks and documented that ESG/sustainability reporting is linked with operational, financial, and market performance measures (e.g., ROA/ROE/Tobin's Q), suggesting that transparent stakeholder-facing reporting can translate into measurable financial outcomes in sectors with high trust sensitivity.

Extending this logic beyond a single region, Buallay et al. (2021) examined sustainability reporting and bank performance after the financial crisis, showing that ESG disclosure can relate to accounting- and market-based performance, while also emphasizing that results can differ across developed versus developing settings—consistent with the idea that investor sophistication, regulatory enforcement, and reporting culture condition how strongly social disclosure is priced.

Firm-level "net benefits" of sustainability reporting (which includes social disclosure) are also contested. Buallay (2019) argued that sustainability reporting can be "between cost and value," with effects varying across financial, operational, and market performance measures, implying that social disclosure may add compliance and production costs unless stakeholders perceive it as credible and decision-useful.

At the firm-value level, ESG pillar evidence often finds that social performance/disclosure is among the most consistently value-relevant. Aydoğmuş, Gülay, and Ergun (2022) found that social and governance scores were positively related to firm value, and that ESG dimensions were positively associated with profitability, implying that social disclosure/performance can be financially accretive when it signals durable stakeholder management capability.

Overall, the 2017–2024 evidence supports a largely positive association between social disclosure and financial performance, but repeatedly stresses that "high-quality, comparable, and decision-useful" disclosure is more likely to be rewarded than generic narrative reporting, and that institutional context (legal enforcement, reporting mandates, and investor attention) shapes the direction and size of effects.

Based on the theoretical and empirical reviews, we formulate the following hypotheses:

HO2: Social disclosure has significant effect on Financial Performance.

2.4 Governance disclosure and financial performance

Governance disclosure typically includes transparency about board structure and independence, ownership and control, risk governance, audit and internal controls, compliance with governance codes (including explanations for non-compliance), and the governance pillar of ESG ratings. The 2017–2024 literature generally supports the view that stronger governance disclosure can improve financial performance by reducing agency costs and improving monitoring, but also shows that boilerplate compliance or weak-quality explanations can limit benefits.

A clear example of governance disclosure quality (rather than mere presence) is provided by Ronoowah and Seetanah (2024), who examined explanations for non-compliance with corporate governance codes in Mauritius and developed an index to assess the informativeness of these explanations; their results indicate that firms often provide low-quality, uninformative explanations, and they link disclosure quality to firm performance—

highlighting that governance disclosure becomes financially meaningful when it provides credible, decision-useful accountability signals.

Governance effects also emerge in studies where governance mechanisms condition how ESG disclosure translates into performance. Albitar, Hussainey, Kolade, and Gerged (2020) examined ESG disclosure and firm performance around the adoption of integrated reporting (IR) and explicitly tested governance mechanisms as moderators, implying that governance structures influence whether disclosure improvements translate into stronger firm performance (e.g., through better oversight, stronger accountability, and more credible reporting).

Large-sample ESG pillar work further clarifies governance's role. Aydoğmuş et al. (2022) found that governance scores have a positive and significant relationship with firm value and profitability, supporting the argument that governance transparency and effectiveness are not just "compliance features" but performance-relevant capabilities.

Research also indicates that the governance environment and regulatory enforcement can amplify the payoff to disclosure. For example, environmental disclosure research in China shows that stronger enforcement environments increase the value relevance of disclosure quality (through credibility and reduced greenwashing incentives), and this logic extends naturally to governance disclosure: where governance rules are enforced and reporting is monitored, governance transparency is more likely to reduce agency costs and strengthen performance outcomes.

Taken together, the governance disclosure literature (2017–2024) suggests that governance transparency can be positively associated with financial performance, but the strength of the association depends on disclosure informativeness, enforcement credibility, and whether governance mechanisms actually constrain managerial opportunism rather than serving as symbolic compliance.

Based on the theoretical and empirical reviews, we formulate the following hypotheses:

HO3: Governance disclosure has significant effect on Financial Performance.

3. Sample size and data

The target population comprises study subjects sharing similar characteristics from whom findings can be generalized (Orodho, 2005). Accordingly, this study targeted 67 firms listed on the Nairobi Securities Exchange (NSE) over 2012–2023. Firms were included only if they operated continuously throughout 2012–2023, had complete data, and did not undergo major restructurings such as mergers or acquisitions that could compromise data consistency. Firms with incomplete data or inconsistent operations were excluded and a final sample of 39 was used for analysis. The study used secondary data collected using a structured data collection schedule. Data collection involved gathering evidence to answer research questions or test hypotheses (Byers, 1995), and it was also described as a standardized process of gathering and analyzing accurate research data (Arun et al., 2022). Secondary data was considered more objective and reliable than primary data (Sekaran & Bougie, 2019; Vartanian, 2010). Audited annual reports was sourced from firms' websites, the Capital Markets Authority, and the African Financials database.

3.1 Measurement of variables

The following section presents the measurement of the variables of the study which are financial performance as the dependent variable and environmental disclosure, social disclosure and governance disclosure as independent variables.

Table 1: Measurement of variables

Variable	Measurement	Source
ESG performance	Environmental, social and governance reporting index	GRI
Financial performance	Return on assets	Umar et al., (2024), Pham et al., (2024)
Firm age	Natural logarithm of number of years since incorporation	Firmansyah and Kartiko (2024).
Firm leverage	Firm leverage is commonly measured using the debt-to-equity ratio, which is calculated by dividing a firm's total debt by its shareholder equity	(Titman & Wessels, 1988; Frank & Goyal, 2009).

Source: Authors computation

3.2 Regression models

Drawing on previous panel-data literature on ESG disclosure and firm performance, this study employed a panel regression framework for the period 2012–2023 to examine the direct effect of ESG disclosure on financial performance. Because the data consist of repeated observations for NSE-listed firms over time, the study was estimated using fixed-effects models.

Model 1. Testing the effect of control variables on financial performance

$$ROA_{it} = \beta_0 + \beta_1 FA_{it} + \beta_2 LEV_{it} + \varepsilon_{it}$$

Model 2. Testing the effect of ESG disclosure on financial performance

$$\mathrm{ROA_{it}} - \beta_0 + \beta_1 \mathrm{FA_{it}} + \beta_2 \mathrm{LEV_{it}} + \beta_3 \mathrm{ENV_{it}} + \beta_4 \mathrm{SOC_{it}} + \beta_5 \mathrm{GOV_{it}} + \varepsilon_{it}$$

4. Descriptive Statistics

The descriptive statistics for the study variables are presented in Table 2. The firm performance variable (n = 468) has a mean of 0.7962, indicating that, on average, firms report slightly positive performance. However, the standard deviation of 4.9491 shows substantial variation across firms, suggesting that performance outcomes differ widely within the sample. The minimum value of −2.4566 indicates the presence of underperforming firms, while the maximum value of 42.3371 implies that a few firms achieve exceptionally high performance (and may be potential outliers). This wide dispersion aligns with evidence that sustainability/ESG-related practices and broader firm characteristics can be associated with markedly different performance outcomes across firms and over time (Eccles et al., 2014; Friede et al., 2015). The firm age variable (n = 468) has a mean of 38.5513 years, suggesting that the typical firm in the dataset is relatively mature. The standard deviation of 18.4133 indicates meaningful heterogeneity in firm lifecycle stages. The minimum value of 1 year shows that newly established firms are included, while the maximum of 74 years indicates the presence of long-established firms. This spread is important because firm age is often linked to learning, survival, and selection dynamics where more efficient firms are more likely to persist while less efficient firms exit over time (Jovanovic, 1982). The leverage variable (n = 468) reports a mean of 3.3905 with a very large standard deviation of 26.0192, indicating extreme variation in financing structure across firms. The minimum value of −11.7789 suggests that some firms may have net cash positions or accounting structures that yield negative leverage values (depending on how leverage is computed). The maximum value of 568.1991 indicates that some firms are highly leveraged, implying potentially elevated financial risk and/or unusual balance sheet structures. This level of dispersion is consistent with capital structure theory, which shows that leverage can vary dramatically due to asymmetric information, agency considerations, and firm-specific financing preferences (Harris & Raviv, 1991; Myers, 1984).

The mean score for environmental disclosure (n = 468) is 0.1073, indicating that, on average, environmental disclosure is relatively low among firms. The standard deviation of 0.1950 reflects notable differences in disclosure practices. With a minimum of 0 and a maximum of 0.85, the results indicate that many firms do not disclose environmental information at all, while a smaller group discloses substantially. This pattern is consistent

with prior evidence that environmental disclosure is uneven and may reflect differences in environmental performance, legitimacy strategies, and voluntary disclosure incentives (Clarkson et al., 2008). The social disclosure variable (n = 468) has a mean of 0.2227, suggesting that firms disclose more social information than environmental information on average, though disclosure remains modest overall. The standard deviation of 0.2366 indicates considerable variation. The minimum value of 0 shows that some firms provide no social disclosures, while the maximum of 0.85 suggests extensive disclosure among a subset of firms. This is consistent with evidence that initiating CSR-type disclosure can be strategic and is often linked to incentives such as capital market benefits (e.g., lower cost of equity) and stakeholder pressures (Dhaliwal et al., 2011). The governance disclosure variable (n = 468) has the highest mean among the disclosure dimensions at 0.3116, indicating that governance-related information is the most widely disclosed category on average. The standard deviation of 0.2590 again signals strong heterogeneity across firms. The minimum of 0 implies that some firms disclose no governance information, while the maximum of 0.9444 shows that others disclose governance practices extensively. This aligns with governance research emphasizing that shareholder rights and governance structures vary substantially across firms and can be reflected in disclosure and transparency practices (Gompers et al., 2003)

Table 2: Descriptive statistics results

Variable	Obs	Mean	Std. Dev.	Min	Max
Firm performance	468	0.796154	4.949137	-2.456647	42.33706
Firm age	468	38.55128	18.41328	1	74
Leverage	468	3.390512	26.01921	-11.77886	568.1991
Environmental disclosure	468	0.1072917	0.194964	0	0.85
Social disclosure	468	0.2227083	0.2365813	0	0.85
Governance disclosure	468	0.3115741	0.2589709	0	0.9444444

Source: Authors computation

4.1 Correlation results

The pairwise correlation coefficients for the study variables are presented in Table 3. Overall, the correlations between firm performance (FP) and the other variables are very weak, suggesting limited bivariate association in this sample. Specifically, firm performance is weakly and negatively related to firm age ($r = -0.0533$), environmental disclosure ($r = -0.0493$), and social disclosure ($r = -0.0323$), while it is weakly and positively related to leverage ($r = 0.0145$) and governance disclosure ($r = 0.0393$). The near-zero magnitudes indicate that, at the correlation stage, ESG disclosure components and core firm characteristics do not appear to move strongly with performance, which is consistent with the broader literature showing that ESG–performance relationships can be context-dependent and mixed across settings (Friede et al., 2015; Tsang et al., 2022).

Table 3: Correlation test results

Variable	FP	FA	FL	ED	SD	GD
Firm performance	1.0000					
Firm age	-0.0533	1.0000				
Leverage	0.0145	0.0264	1.0000			
Environmental disclosure	-0.0493	0.0326	-0.0410	1.0000		
Social disclosure	-0.0323	-0.0207	-0.0484	0.8172*	1.0000	
Governance disclosure	0.0393	-0.0415	-0.0551	0.7446*	0.8452*	1.0000

Source: Authors computation

4.2 Regression analysis results

The fixed-effects regression results in table 4 below examine the effect of environmental (ED), social (SD), and governance disclosure (GD) on firm performance, while treating firm age (FA) and firm leverage (FL) as control variables. The model is estimated using a balanced panel of 468 firm-year observations drawn from 39 firms (12 observations per firm). A fixed-effects specification is appropriate in settings where unobserved, time-invariant firm attributes (e.g., managerial culture, inherited capabilities, industry positioning) may be correlated with the explanatory variables; the within estimator removes these firm-specific effects and relies on within-firm changes over time for identification (Wooldridge, 2010; Baltagi, 2021).

The model exhibits very strong explanatory power, with within $R^2 = 0.9749$, implying that the included regressors explain about 97.5% of the variation in firm performance within firms over time. The overall model is statistically significant ($F(5, 424) = 3290.84$, $p < .001$), indicating that the regressors are jointly important in explaining performance. In addition, the F-test that all $u_i = 0$ is significant ($F(38, 424) = 6.93$, $p < .001$), confirming the presence of firm-specific effects and supporting the use of fixed effects rather than pooled OLS. The reported $\rho = 0.6751$ further indicates that roughly 67.5% of the variance in the dependent variable is attributable to time-invariant firm-level heterogeneity. Finally, the strongly negative $corr(u_i, Xb) = -0.7940$ suggests meaningful correlation between unobserved firm effects and the regressors—precisely the situation where fixed effects is typically preferred to avoid bias from omitted, time-invariant factors (Wooldridge, 2010).

Turning to the coefficients, firm age has a positive and highly significant association with firm performance ($\beta = 0.2857$, $p < .001$). Holding leverage and disclosure variables constant, a one-unit increase in age is associated with a 0.2857 increase in performance within a firm over time. Conceptually, this is consistent with lifecycle and learning/selection arguments: as firms mature, they may accumulate experience, improve routines, and refine strategy, which can translate into stronger performance outcomes (Jovanovic, 1982).

By contrast, firm leverage is negative but statistically insignificant ($\beta = -0.0373$, $p = .132$). This implies that, after controlling for firm fixed effects and the ESG disclosure measures, leverage does not have a reliably detectable within-firm effect on performance in this sample. Such a weak (or unstable) leverage–performance link is consistent with longstanding evidence that capital structure effects can be difficult to pin down empirically and may depend heavily on context, measurement, and endogeneity concerns (Myers, 1984).

Regarding the main variables of interest, environmental disclosure has a negative and significant effect on firm performance ($\beta = -0.3894$, $p < .001$). Practically, a 0.10 increase in the environmental disclosure index is associated with about a 0.0389 decrease in performance (0.10×-0.3894), holding other factors constant. One plausible interpretation is that environmental disclosure may be linked to short-run compliance, reporting, and implementation costs that temporarily depress performance, especially if investments are front-loaded while benefits materialize later. Another interpretation—well documented in the disclosure literature—is that disclosure is not always a clean signal of underlying performance and may reflect strategic or legitimacy-driven

reporting, producing mixed or even negative contemporaneous associations between disclosure and financial outcomes (Doan & Sassen, 2021).

Similarly, social disclosure is negative and significant ($\beta = -0.0254$, $p < .001$), implying that a 0.10 increase in SD corresponds to about a 0.0025 decrease in performance. Although the magnitude is small compared to ED, the result indicates a statistically reliable within-firm trade-off in this dataset. Importantly, prior research has long emphasized that social disclosure–performance relationships are often inconsistent across studies because of differences in theory, measurement, and context (Ullmann, 1985), and later syntheses show that CSR/ESG effects can vary in sign and strength depending on setting (Orlitzky et al., 2003; Friede et al., 2015).

In contrast, governance disclosure is positive and significant ($\beta = 0.2122$, $p < .001$). A 0.10 increase in GD is associated with a 0.0212 increase in performance, suggesting that improved governance transparency (and potentially stronger governance practices) is performance-enhancing within firms over time. This aligns with influential evidence that stronger governance and shareholder rights are associated with better firm outcomes and higher valuation, consistent with reduced agency problems and improved monitoring (Gompers et al., 2003).

Table 4: Regression test results

Fixed-effects (within) regression	Number of obs	=	468
Group variable: COMPANYID	Number of groups	=	39
R-sq: within = 0.9749	Obs per group: min	=	12
between = 0.9983	Avg	=	12.0
overall = 0.9960	Max	=	12
	F(5, 424)	=	3290.84
corr(u_i, Xb) = -0.7940	Prob > F	=	0.0000

Firm Performance	Coef.	Std. Err.	T	P>t	[95% Conf.	Interval]
Firm age	.285746	.0287213	44.77	0.000	.229292	.3422
Firm leverage	-.0373306	.0247041	-1.51	0.132	-.0858883	.0112271
Environmental disclosure	-.3894126	.0176297	-22.09	0.000	-.4240652	-.3547601
Social disclosure	-.0254107	.0065092	-3.90	0.000	-.038205	-.0126163
Governance disclosure	.2122065	.0136351	15.56	0.000	.1854057	.2390073
_cons	-.0060748	.1917158	2.62	0.009	.0015198	.0106298
sigma_u	.07205071					
sigma_e	.04998046					
Rho	.67512912	(fraction of variance due to u_i)				

F test that all u_i=0: F(38, 424) = 6.93 Prob > F = 0.0000

Source: Authors computation

5.0 Conclusion and Recommendations

Analyzing a balanced panel of 48 listed firms observed over 10 years (468 firm-year observations), this study examined how environmental disclosure (ED), social disclosure (SD), and governance disclosure (GD) influence firm performance, while treating firm age and firm leverage as control variables. Using a fixed effects (within) estimator, the analysis controlled for unobserved, time-invariant firm characteristics that could otherwise bias the estimated relationships. The model demonstrated a very strong fit (within $R^2 = 0.9749$), and both the overall model test and the firm-effects test were statistically significant, confirming that firm-specific heterogeneity is important in explaining performance and supporting the use of the fixed-effects approach. The results show that ESG disclosure dimensions affect performance differently. Environmental disclosure had a negative and statistically significant relationship with firm performance, implying that increases in environmental disclosure are associated with lower contemporaneous performance within firms over time. Social disclosure also showed a negative and significant association with performance, although the magnitude was smaller than that of environmental disclosure. A reasonable interpretation is that enhanced environmental and social reporting may be associated with short-run implementation, compliance, and reporting costs, which may reduce near-term financial performance even if long-term benefits exist. These outcomes also suggest that the environmental and social pillars may not immediately translate into improved profitability or returns in the period under study.

In contrast, governance disclosure exhibited a positive and statistically significant association with firm performance. This indicates that improvements in governance transparency are linked to better performance outcomes over time. Governance disclosure may reflect stronger internal controls, improved oversight, and better accountability structures, which can reduce inefficiencies and agency problems and enhance investor confidence. Among the control variables, firm age had a positive and highly significant relationship with performance, suggesting that firms tend to perform better as they mature, possibly due to accumulated experience, refined systems, and stronger market positioning. Firm leverage, however, was negative but statistically insignificant, indicating that leverage does not have a robust within-firm relationship with performance after accounting for firm fixed effects and ESG disclosures. Overall, the findings contribute to understanding ESG reporting by showing that ESG disclosures are not uniformly performance-enhancing. Instead, governance disclosure appears to support performance, while environmental and social disclosures are associated with a short-run performance trade-off in this context. This implies that firms may experience a transitional cost burden when strengthening environmental and social disclosure practices, whereas governance improvements may deliver more immediate operational and financial benefits.

Several recommendations follow from these findings. First, regulators and standard setters should strengthen ESG disclosure guidance to improve comparability, credibility, and consistency across firms. In particular, environmental and social disclosure frameworks should encourage firms to report measurable outcomes and link sustainability activities to clear strategic and operational targets, rather than relying heavily on narrative reporting. Second, firms should prioritize strengthening governance structures and the quality of governance reporting, as governance transparency is associated with stronger performance. This includes improving board oversight, accountability mechanisms, audit quality, and internal controls, and ensuring that governance disclosures meaningfully reflect actual practices. Third, firms should approach environmental and social disclosure as part of a long-term value creation strategy rather than expecting immediate financial gains. Managers should plan for the short-run costs of implementing environmental and social programs and seek efficiency-enhancing approaches—such as integrating sustainability into core operations, supply chains, and risk management—to reduce the likelihood of near-term performance declines. Fourth, investors and other stakeholders should interpret increased environmental and social disclosures carefully, recognizing that higher disclosure can coincide with transitional costs and may not immediately correspond to superior performance. Users of financial statements should complement ESG reports with operational indicators and longer-horizon performance evaluation. Finally, future research should test whether environmental and social disclosure have delayed positive effects by introducing time lags and alternative performance measures. Further work should also explore moderating and mediating factors—such as governance quality, industry sensitivity, regulatory changes, or firm strategy—that may shape when ESG disclosure strengthens or weakens firm performance.

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