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The Moderating Role of Transparency on Sustainability Reporting and Financial Performance of Corporate Firms in Kenya

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Abstract: Over the past two decades (2001–2021), corporate reporting has evolved to integrate sustainability concerns alongside traditional financial metrics. This shift is driven by increasing societal awareness, regulatory interest, and investor demand for non-financial information. However, despite the Kenyan government advocacy, implementation of sustainability reporting remains voluntary, with only 29 out of 65 listed firms adopting ESG reporting by December 2022. In 2021, Nairobi Securities Exchange in collaboration with Global Reporting Initiative introduced ESG Disclosure Manual to promote transparency in sustainability reporting. Despite this effort, a gap exists in empirical literature regarding the moderating role of transparency in the relationship between sustainability reporting and financial performance. Grounded in stakeholder theory, this study examined how transparency moderates the relationship between sustainability reporting and financial performance of listed corporate firms in Kenya. Using a census sampling technique, panel data were collected from 57 qualifying corporate firms from 2014–2023. A moderated multiple regression model was employed to analyze how transparency influences the link between sustainability reporting variables and financial performance, measured by return on equity. Findings revealed that transparency significantly moderates the effect of social reporting on financial performance ($\beta = 0.111$, $p = 0.029$), enhancing its positive impact, while weakening the effect of environmental reporting ($\beta = -0.090$, $p = 0.042$). Transparency had no significant effect on governance ($\beta = -0.071$, $p = 0.089$) or stakeholder engagement ($\beta = -0.021$, $p = 0.391$) as their p-values exceeded acceptable threshold of 0.05. Firms should enhance transparency in sustainability reporting to maximize financial benefits.

Keywords: Sustainability Reporting; Financial Performance; Transparency; Stakeholder Engagement; Return on Equity (ROE)

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1. Introduction

Over the past two decades, the scope of corporate reporting has significantly shifted to include sustainability concerns alongside traditional financial metrics (Wu & Li, 2023; Agutu & Githira, 2023). Sustainability reporting, which encompasses the disclosure of environmental, social, governance (ESG), and stakeholder engagement practices, has evolved as a critical strategy for enhancing corporate accountability and stakeholder trust (Dempere & Abdalla, 2023). This paradigm shift is driven by increased societal awareness, investor expectations, and regulatory interest in responsible and ethical corporate behaviour (Saha & Khan, 2024; Fu & Li, 2023). As investors globally seek comprehensive information on firms' non-financial performance, transparency has emerged as a pivotal component in shaping investment decisions and firm valuation (Fu & Li, 2023; Apiday, 2023). However, its moderating role in the relationship between sustainability reporting variables and corporate financial performance remains insufficiently explored, particularly among firms listed on the Nairobi Securities Exchange (NSE).

Globally, 2021 marked a turning point for ESG investing, with increased interest from investors, regulators, and consulting firms in ESG-compliant models tailored to different countries (Dempere & Abdalla, 2023; UNPRI, 2021). However, a universal ESG reporting framework is still lacking, resulting in unstandardized practices. A regional analysis by CFAPRI (2019) on ESG integration in the EMEA region revealed a 60% acceptance rate for governance factors, while environmental and social factors received lower acceptance at 24%, with 16% of respondents expressing contrary opinions—highlighting uneven ESG adoption.

Locally in Kenya, the NSE in collaboration with the Global Reporting Initiative (GRI) introduced ESG Disclosure Guidance Manual in 2021. However, ESG disclosure remains voluntary (NSE, 2021), and by the year 2022, only 29 out of 65 listed firms had implemented it despite advocacy from the Kenyan government (NSE, 2023; Lawi, 2023; Kivuva, 2022). This reflects a slow uptake and fragmented adoption. Transparency in this context—referring to the openness in disclosing financial and non-financial information—plays a critical role in reducing information asymmetry and influencing capital allocation (PwC, 2021). It also strengthens stakeholder confidence by allowing assessment of a firm's commitment to responsible business practices (Al-Dulaimi et al., 2020), yet its moderating role on the link between sustainability reporting and financial performance remains underexplored.

Although ESG awareness is growing among Kenyan firms, the credibility of disclosures remains in question. Reports from the Capital Markets Authority and other stakeholders highlight the need for capacity building to better integrate ESG into corporate strategy and reporting (NSE, 2021; The Lawyer Africa, 2023). Moreover, corporate managers identify internal challenges, such as resource constraints and expertise gaps, as significant barriers to effective sustainability reporting (PwC, 2021). Consequently, sustainability reports serve as strategic tools for companies to navigate global markets, attract capital, and manage relationships (Ellili & Nobanee, 2022; Yuliana & Utami, 2022). Nevertheless, without transparency, sustainability reports risk becoming tools for image enhancement rather than mechanisms for genuine accountability and performance improvement.

Empirical findings on the impact of sustainability reporting on financial performance remain mixed. Some studies report positive associations with firm profitability and value (Habib & Mourad, 2023; Wu & Li, 2023), while others show inconsistencies depending on factors like disclosure quality, industry, and regional frameworks (Buallay & Hamdan, 2023; Alareeni & Hamdan, 2020). Most of these studies overlook the potential moderating influence of transparency. Drawing on Stakeholder Theory (Freeman, 1984), which emphasizes corporate responsibility to a broader group of stakeholders, transparency emerges as a mechanism for enhancing trust, reducing agency costs, and aligning corporate behavior with stakeholder expectations (Xu et al., 2022; Opanyi & Omare, 2022).

In Kenya, firms like Safaricom Plc, Equity Bank, KCB Group, and KenGen have demonstrated strong shareholder value, investor confidence, and stakeholder loyalty attributed to sustainability and transparency practices. For instance, Safaricom Plc recorded a 13.8% increase in shareholder value in 2021 (Safaricom Plc, 2021). Equity Bank's ESG disclosures positioned it as a leading sustainable financial institution in Africa in 2021 (Equity Bank, 2021), while KCB Group and KenGen's sustainability reporting enhanced brand value and investor confidence (KCB, 2020; KenGen, 2023).

Conversely, Kenya Airways, despite reducing carbon emissions by 7% in 2020 and improving employee welfare, has not translated these initiatives into improved financial performance—possibly due to gaps in transparency and stakeholder engagement (Kenya Airways, 2020). These contrasting cases highlight the need to understand the specific role transparency plays. Accordingly, this study sought to determine the moderating effect of transparency in the relationship between sustainability reporting and financial performance of corporate firms listed on the NSE. The findings offer critical insights for corporate managers, regulators, investors, and policymakers seeking to enhance corporate accountability, improve reporting standards, and drive long-term financial performance through sustainable practices.

1.1. Statement of the Problem

Sustainability reporting has emerged as a critical strategy for enhancing transparency, stakeholder trust, and financial performance, grounded in Stakeholder theory and Legitimacy theory, which emphasize corporate accountability to a broad range of stakeholders. However, empirical evidence on the relationship between sustainability reporting and financial performance remains mixed, particularly in emerging markets like Kenya. Existing studies often emphasize the direct effects of Environmental, Social, and Governance (ESG) disclosures, while overlooking the potential moderating role of transparency and the broader impact of stakeholder engagement practices. Despite efforts by the NSE to promote ESG reporting, adoption remains voluntary and inconsistent, raising concerns about the credibility and strategic value of sustainability disclosures.

Although Stakeholder and Legitimacy Theories highlight the importance of transparent and inclusive reporting, practical evidence from Kenyan firms reveals mixed outcomes: while companies like Safaricom Plc and Equity Bank have linked transparent sustainability practices to stronger financial performance, others like Kenya Airways demonstrate that sustainability initiatives alone do not guarantee financial success without credible disclosure. These inconsistencies leave corporate managers, investors, and policymakers uncertain about the true financial benefits of sustainability initiatives. This gap is particularly pronounced in emerging markets where stakeholder dynamics are critical. Therefore, this study investigates the moderating role of transparency in the relationship between sustainability reporting (environmental, social, governance and stakeholder engagement) and financial performance among firms listed on the Nairobi Securities Exchange.

1.2. Conceptual Framework

The conceptual framework comprises independent, dependent, and moderating variables. It outlines the connection between corporate sustainability reporting variables (independent variables) and financial performance (dependent variable), with transparency playing a dual role by both directly influencing financial performance and moderating the relationship between sustainability reporting variables and financial performance, as shown in Figure 1. The visual representation of the framework is adapted from Lu *et al.* (2021).

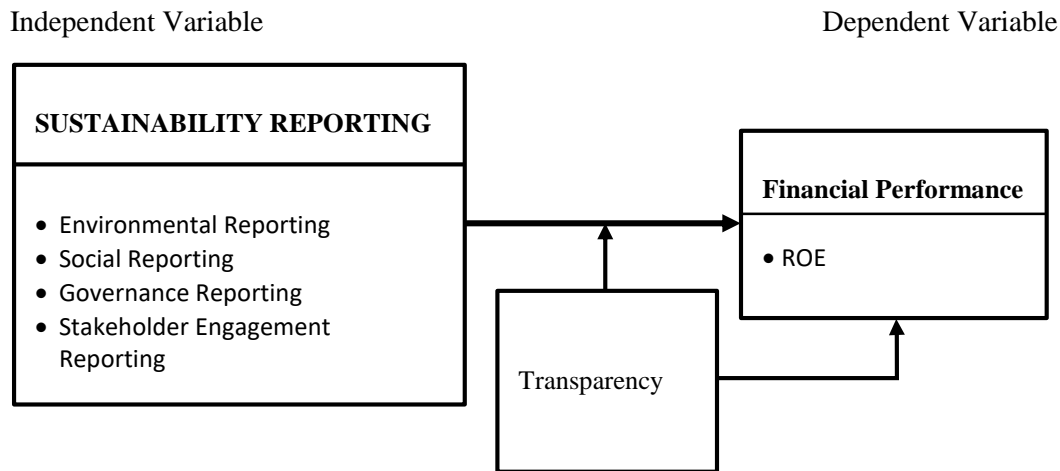


Figure 2. Conceptual Framework

Source: Researcher, 2024

Note: This framework illustrates how sustainability reporting variables influence the financial performance of corporate firms listed on the NSE, emphasizing the dual role of Transparency in moderating this relationship and directly influencing financial performance.

2. Literature Review

2.1. Theoretical Literature Review

This study is anchored on Stakeholder Theory, first introduced by Freeman (1984), which posits that organizations should not only serve shareholders but also meet the expectations of all stakeholders who are affected by or can affect the firm's operations. The theory argues that long-term corporate success depends on the quality of relationships with key stakeholders such as investors, customers, employees, regulators, and the community. By addressing stakeholder concerns through sustainability reporting and transparency, firms enhance legitimacy, trust, and competitive advantage (Ellili & Nobanee, 2022; Yuliana & Utami, 2022).

Stakeholder Theory conceptualizes firms as relationship-centered entities, where managers are tasked with balancing diverse stakeholder interests (Opanyi & Omare, 2022). Within the context of this study, sustainability reporting—comprising environmental, social, governance (ESG), and stakeholder engagement reporting—is viewed as a strategic response to stakeholder expectations. Such reports not only communicate a firm's commitment to ethical and sustainable practices but also reduce information asymmetry, build investor confidence, and minimize agency costs (Alsayegh et al., 2020; Xu et al., 2022).

The theory supports the idea that transparency serves as a moderating mechanism in strengthening the link between sustainability reporting and financial performance. By openly disclosing ESG activities, firms align with both normative stakeholder obligations and instrumental stakeholder expectations, fostering accountability and attracting long-term investments (Opanyi & Omare, 2022; Rajakulanajagam & Nimalathasan, 2020). Transparent reporting signals legitimacy and commitment, which enhances corporate reputation, stakeholder loyalty, and ultimately improved financial outcomes (Fu & Li, 2023; Bosi et al., 2022).

The theory emphasizes that stakeholder needs and preferences should be integrated into corporate strategies to build trust and enhance legitimacy, which in turn strengthens a firm's reputation and

stakeholder support—key drivers of financial performance (Xu et al., 2022). Transparency across ESG dimensions reduces information asymmetry and guides investor decisions. Freeman (1984) also noted that stakeholder engagement is shaped by social identity, which influences how a firm's practices are perceived and legitimized. This, however, emphasizes the importance of stakeholder perceptions in shaping corporate actions and outcomes, ultimately affecting financial performance (Mumo, 2022). Accordingly, stakeholder theory provides a suitable lens for this study, which investigates the moderating effect of transparency on the relationship between sustainability reporting and financial performance of corporate firms listed on the Nairobi Securities Exchange.

2.2. Empirical Literature Review

Empirical studies on sustainability reporting have yielded varied outcomes across environmental, social, and governance (ESG) dimensions, with transparency increasingly acknowledged as a key moderating factor. In Turkey, Saygili et al. (2021) and Özer et al. (2023) found that while transparency in environmental disclosures enhances stakeholder trust and long-term valuation, it may also reduce short-term financial performance due to implementation costs. Similar findings were noted in Norway (Giannopoulos et al., 2022), where transparent environmental initiatives reduced Return on Asset (ROA) but improved Tobin's Q. Conversely, in China, Li et al. (2018) and Fu and Li (2023) reported that both voluntary and mandatory transparent environmental disclosures improved ROA and Earnings Per Share (EPS), though these effects were moderated by regional economic development and the level of information penetration. In Kenya, Ikapel et al. (2023) showed that transparent environmental reporting significantly enhanced financial performance of NSE-listed manufacturing firms, reinforcing the argument that transparency moderates the sustainability-performance link positively in developing markets.

The influence of transparency in social sustainability reporting has also attracted empirical attention, with mixed results. In Indonesia, Prayanthi and Budiarto (2022) found that transparent social responsibility disclosures significantly improved ROA, Return on Equity (ROE), and Tobin's Q during the pandemic. In contrast, Mardini (2022) and Alareeni and Hamdan (2020) observed that while transparent social reporting was valued by markets (positive Tobin's Q), it negatively or insignificantly impacted accounting indicators such as ROA and ROE, possibly due to cost implications. In Turkey, Saygili et al. (2021) found that stakeholder engagement practices positively affected ROA, while other initiatives like human rights showed no significant financial impact. In Kenya, Ng'ang'a and Mugo (2022) demonstrated that transparent Corporate Social Responsibility (CSR) strategies enhanced financial outcomes, yet emphasized the importance of contextual and firm-specific factors in shaping these effects. These contrasting results suggest that the impact of social transparency is not uniform and is moderated by internal and external environmental dynamics.

Governance transparency has generally shown a positive association with financial performance across diverse contexts. In Borsa Istanbul, Saygili et al. (2021) found that disclosures on shareholder rights and board remuneration positively influenced Tobin's Q and ROA, although certain aspects such as shareholder information rights negatively affected ROA. Regional studies in South Asia (Rajakulanajagam & Nimalathasan, 2020) and Malaysia (Manoharan et al., 2024) confirmed that transparent governance practices, especially in firms with lower family ownership, enhanced firm value and financial stability. In Kenya, Kimilu (2021) reported that high-quality governance disclosures correlated with higher market valuations and lower investor risk perceptions. These findings support the assertion that governance transparency moderates the relationship between reporting and performance, contingent upon ownership structure, market regulation, and investor expectations.

Stakeholder engagement, a critical transparency mechanism, has been shown to influence financial performance through reputation and trust. Wang et al. (2021) and Boakye (2018) emphasized that

transparent engagement improves reputational capital and investment appeal, while Kimutai and Kwambai (2018) linked stakeholder involvement to institutional effectiveness in Kenya. However, Dzomonda (2020) found that although transparent stakeholder engagement correlated positively with firm size, it had a negative association with Tobin's Q and liquidity, implying that the benefits may be more long-term and less immediate. These findings suggest that transparent stakeholder engagement plays a moderating role, especially in sectors where relational capital is critical to performance.

Despite the expanding literature on sustainability reporting, several gaps persist. First, findings across ESG dimensions remain inconclusive, particularly in relation to short-term accounting metrics like ROA and ROE versus long-term valuation measures like Tobin's Q. Second, there is limited exploration of how transparency moderates the relationship between sustainability reporting and firm performance, especially in the African context. Most existing studies analyze the direct effects of sustainability disclosure without considering the role of transparency as a contextual enhancer or inhibitor. Third, sectoral and regional differences are often overlooked, despite evidence suggesting that the effectiveness of transparent sustainability practices is highly context-dependent. Furthermore, methodological inconsistencies—such as varied reporting indices, financial performance metrics, and analytical models—complicate cross-study comparisons and generalizability.

This study addresses these gaps by empirically investigating the moderating role of transparency in the relationship between sustainability reporting and the financial performance of corporate firms listed on the NSE. By focusing on a developing economy and employing panel data methods, the study contributes to both theory and practice by offering a nuanced understanding of how transparency influences ESG reporting outcomes. It integrates environmental, social, and governance disclosures into a unified model, providing comprehensive insights into firm-level sustainability strategies and their financial implications within a localized Kenyan context.

3. Methodology

This study employed a panel data approach to assess the moderating effect of transparency on the relationship between sustainability reporting and financial performance among firms listed on the NSE over the 2014 – 2023 period. The panel design, which integrates both cross-sectional and longitudinal dimensions, was chosen to enable the observation of dynamic patterns and support causal interpretations (Kothari & Garg, 2019; Yuliana & Utami, 2022; Oso & Onen, 2013).

The population consisted of 65 NSE-listed firms (NSE, 2023). Using a census approach, 57 firms that met the criteria of being consistently listed throughout the ten-year period and having complete financial and sustainability reports were included, while those that were delisted, merged, or acquired during the period were excluded. The selection of NSE-listed firms was informed by their regulatory compliance and economic significance. The census method was deemed appropriate given the manageable population size and the need for comprehensive coverage, thereby minimizing sampling error and bias (Oso & Onen, 2013; Kothari & Garg, 2019).

Financial data were obtained from secondary sources, specifically audited financial statements such as income statements and statements of financial position. Sustainability reporting data were also retrieved from corporate websites and other official publications. Document analysis served as the primary method of data collection, guided by a structured checklist to ensure comprehensive and consistent data capture. Diagnostic tests, including the Hausman and Wooldridge tests, were conducted first on five corporate firms, which is approximately 10% of the target population as recommended by Kimilu, (2021). The tests were done to detect and address any unobserved heterogeneity and autocorrelation, thereby enhancing the model's robustness and credibility of the regression results.

Data were organized and transformed using Microsoft Excel prior to conducting statistical analyses with STATA version 16.0. Descriptive statistics, including means and standard deviations, were used to summarize the data. Pearson correlation analysis was employed to examine the relationships among variables. For inferential analysis, a moderated multiple regression technique was applied to assess both direct and interaction effects. Accordingly, two panel regression models were developed to guide this analysis:

Model 1 examined the direct effects of sustainability reporting components—Environmental (E), Social (S), Governance (G), and Stakeholder Engagement (SE)—on return on equity (ROE), while accounting for firm-specific (α_i) and time-specific (λ_t) effects, as well as the error term (ε_{it}). The model is expressed as follows:

$$ROE_{it} = \beta_0 + \beta_1 E_{it} + \beta_2 S_{it} + \beta_3 G_{it} + \beta_4 SE_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \dots \dots \dots (i)$$

Model 2 extended Model 1 by introducing transparency (T) as an additional independent variable and incorporating interaction terms ($E \times T$, $S \times T$, $G \times T$, $SE \times T$) to assess the moderating effects of transparency on the relationship between sustainability reporting and ROE. This Model provided a more comprehensive analysis by examining both direct and moderating effects of transparency. The model is expressed as follows:

$$ROE_{it} = \beta_0 + \beta_1 E_{it} + \beta_2 S_{it} + \beta_3 G_{it} + \beta_4 SE_{it} + \beta_5 T_{it} + \beta_6 (E \times T)_{it} + \beta_7 (S \times T)_{it} + \beta_8 (G \times T)_{it} + \beta_9 (SE \times T)_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \dots \dots \dots (ii)$$

Where:

ROE_{it} = Return on Equity for firm **i** at time **t** (dependent variable representing Financial Performance)

β₀ = The regression constant (intercept)

β₁, β₂, β₃, and β₄, = Coefficients for the independent variables (**E, S, G, SE**)_{it} respectively.

β₅ = is the coefficient for Transparency (**T**)

β₆, β₇, β₈, and β₉ = Coefficients for the interaction terms between Sub-independent variables and the moderating variable Transparency (**E × T, S × T, G × T, SE × T**)_{it} respectively

α_i = Firm-specific effects

λ_t = Time-specific effects

ε_{it} = Error Term

E_{it} = Environmental Reporting for firm **i** and time **t**

S_{it} = Social Reporting for firm **i** and time **t**

G_{it} = Governance Reporting for firm **i** and time **t**

SE_{it} = Stakeholder Engagement Reporting for firm **i** and time **t**

T_{it} = is the independent variable representing Transparency for firm **t** and time **t**

(E × T)_{it} = Interaction between Environmental Reporting and Transparency

(S × T)_{it} = Interaction between Social Reporting and Transparency

(G × T)_{it} = Interaction between Governance Reporting and Transparency

(SE × T)_{it} = Interaction between Stakeholder Engagement Reporting and Transparency

3.1. Measurement of variables

The study utilized ROE as the proxy for financial performance, which served as the dependent variable. ROE was computed by dividing net profit after tax by the average shareholders' equity for the respective financial year. This is represented as follows:

$$\text{ROE} = \frac{\text{Net Profit After Tax}}{\text{Average Shareholders' Equity}}$$

ROE was chosen for this study because of its broad applicability across various industries and its robustness in capturing shareholder value over time, thus making it appropriate for longitudinal analysis (Pandey, 2006; Pike & Neale, 2009).

The independent variables (sustainability reporting dimensions) were assessed using a structured document review sheet developed in accordance with the Nairobi Securities Exchange ESG Disclosure Guidance Manual (2021) and GRI standards. According to Bowmans (2021), the NSE guidelines are aligned with these globally accepted benchmarks. The sheet was used to evaluate disclosures across Environmental, Social, Governance, and Stakeholder Engagement categories. Each criterion was rated between 0 to 5 based on compliance, quality of disclosure and depth. Annual average scores were calculated for each firm and aggregated to generate composite scores per variable using averaging formula described by Munjal and Sharma (2019):

$$\text{Mean Score}_{jt} = \frac{1}{N_j} \sum_{i=1}^{N_j} X_{ijt}$$

Where:

Mean Score_{jt} = The average sustainability score for firm **j** in year **t** for each variable (Environmental, Social, Governance and Stakeholder Engagement).

X_{ijt} = Scores for item **i** disclosed in the annual reports of firm **j**, based on the level and quality of disclosure.

N_j = Total number of disclosure items assessed for firm **j**.

The study adopted a time-series approach, analyzing data from 57 companies over a ten-year span. For each firm, average scores for the sustainability reporting dimensions—Environmental, Social, Governance, and Stakeholder Engagement—were computed across the entire period. These averages served as input variables in the multiple regression analysis, allowing for the assessment of the long-term influence of sustainability reporting on financial performance. The following formula was applied to derive the overall sustainability mean score:

$$\text{Overall Mean Score}_{jt} = \frac{1}{T} \sum_{t=1}^T \left(\sum_{j=1}^N \frac{X_{ijt}}{N_j} \right)$$

Where:

Overall Mean Score_{jt} = The average sustainability score for firm **j** at time **t**.

T = Total number of years (**T=10**).

t = A specific year within the study period (from 2014 to 2023).

N = Total number of firms in the study (**N=57**).

j = Index representing each firm (1 to 57).

X_{ijt} = The score (out of 5) for item i disclosed by firm j at time t , based on the level and quality of disclosure.

N_j = Total number of disclosure items assessed for firm j .

4. Results and Discussions

4.1. Descriptive Analysis

Table 1 presents descriptive statistics for the main variables analysed in this study covering 57 firms over a 10 years period (570 firm year observations). The results revealed that, on average, firms demonstrated moderate levels of sustainability reporting across the various reporting categories analysed. For instance, environmental reporting yielded a mean score of 2.36 with a standard deviation of 0.40, indicating moderate disclosure levels with limited variation between firms. Social reporting scored slightly higher, with a mean of 2.48 (SD = 0.54), reflecting a somewhat greater focus on social initiatives. Governance reporting showed the lowest mean score at 2.28 (SD = 0.50), pointing to relatively weaker governance disclosures. Stakeholder engagement emerged with the highest average score of 2.58 but also displayed the widest variability (SD = 0.92), highlighting differences in engagement strategies across firms. Return on Equity (ROE), the dependent variable had a mean of 2.46 with a standard deviation of 0.50, suggesting a generally moderate level of financial performance with some fluctuations over the review period. Overall, the statistics indicate a moderate trend of sustainability reporting among listed firms, with stakeholder engagement showing the greatest disparity.

Table 1. Descriptive Statistics

Variable	Observations (n)	Mean	Standard Deviation	Minimum	Maximum
Environmental Reporting	570	2.36	0.40	1.36	3.44
Social Reporting	570	2.48	0.54	1.43	3.89
Governance Reporting	570	2.28	0.50	1.24	3.67
Stakeholder Engagement	570	2.58	0.92	1.11	4.67
Return on Equity (ROE)	570	2.46	0.50	1.42	4.00

Note: This table outlines key descriptive statistics that offer insights into the data's underlying characteristics, forming a basis for analyzing how each dimension of sustainability reporting influences the financial performance of corporate firms listed on the NSE.

4.2. Diagnostic and Preliminary Tests

Given the large sample size and the use of Feasible Generalised Least Square (FGLS) estimation, strict adherence to normality assumption is not essential for valid inference, as the Central Limit Theorem posit that estimators approximate a normal distribution in sufficiently large samples (Wooldridge, 2010). To validate the application of panel regression techniques, several diagnostic checks were undertaken. The Levin-Lin-Chu test verified the stationarity of the main study variables—Environmental Reporting (ER), Social Reporting (SR), Governance Reporting (GR), Stakeholder Engagement Reporting (SER), and Return on Equity (ROE)—with all p-values below 0.001, thereby reducing the risk of spurious regressions and confirming the appropriateness of panel analysis (Stock & Watson, 2018). The Modified Wald test detected significant heteroskedasticity across the panels ($\chi^2 = 21,000,000$; $p < 0.001$), while the Wooldridge test identified the presence of first-order autocorrelation ($F = 41.785$; $p = 0.0001$). These violation of classical linear regression assumptions were mitigated through FGLS estimation, which adjusted for both heteroskedasticity and serial correlation, thereby enhancing the reliability of standard

errors (Baltagi, 2021; Torres-Reyna, 2007). Pairwise correlation analysis was also employed to check for multicollinearity, the test results indicated no severe multicollinearity problem as all coefficients fell below the 0.9 threshold. The Hausman specification test also produced a significant result ($\chi^2(5) = 34.93$, $p < 0.001$), supporting the use of fixed effects model over random effects model. Fixed effect model was thus found to be more appropriate for this study as it accounts for unobserved firm-specific heterogeneity.

4.3. Correlation Analysis

Table 2. Correlation between Sustainability Reporting Variables and Financial Performance (ROE)

No	Sustainability Reporting Variables	ROE	ER	SR	GR	SER
1	Return on Equity (ROE)	1				
2	Environmental Reporting (ER)	0.6411	1			
3	Social Reporting (SR)	0.8750	0.5279	1		
4	Governance Reporting (GR)	0.7727	0.6336	0.7715	1	
5	Stakeholder Engagement Reporting (SER)	0.7563	0.3950	0.7895	0.5830	1

Note: This table displays correlation matrix indicating the link between Return on Equity (ROE) and the different dimensions of sustainability reporting, emphasizing both the magnitude and direction of these relationships.

Table 2 above presents Pearson correlation coefficients assessing the association between sustainability reporting variables (Environmental, Social, Governance, Stakeholder engagement) and Return on Equity (ROE), as a measure of financial performance for corporate firms listed on the NSE. The results for the four sustainability reporting variables displayed positive correlations with ROE, highlighting the financial significance of transparent sustainability reporting. Social Reporting recorded the highest correlation ($r = 0.8750$), indicating that firms actively involved in areas like employee welfare, community engagement, and workplace diversity tend to experience superior financial outcomes. These findings reinforce the importance of social initiatives in enhancing corporate image, stakeholder relations, and internal efficiency, echoing evidence from Wu and Li (2023) and Agutu and Githira (2023).

Governance reporting ($r = 0.7727$) and stakeholder engagement reporting ($r = 0.7563$) also exhibited strong positive correlations with ROE, suggesting that firms prioritizing transparency, accountability, and inclusive stakeholder communication often achieve better financial performance. The findings emphasized the need for sound governance framework and active stakeholder participation in bolstering firm performance and investor trust. The findings are also consistent with insights from Alareeni and Hamdan (2020) and that of Suaidah *et al.* (2023). Environmental reporting, while still positively associated with ROE, showed a moderate correlation ($r = 0.6411$). This implies that environmentally responsible practices contribute to financial gains, likely through improved efficiency and corporate reputation, aligning with the findings of Ikapel *et al.* (2023).

Additionally, inter-variable correlations revealed that firms committed to social reporting often exhibited strong performance in governance ($r = 0.7715$) and stakeholder engagement ($r = 0.7895$). In contrast, environmental reporting showed weaker associations with the other sustainability dimensions—social reporting ($r = 0.5279$), governance reporting ($r = 0.6336$), and stakeholder engagement reporting ($r = 0.3950$)—suggesting that environmental initiatives may be implemented more independently. Overall, these correlation results highlight sustainability reporting as a strategic driver of both financial and stakeholder value in Kenya's capital market, extending beyond mere regulatory compliance.

4.4. Panel Regression Analysis

Table 3 presents the results of the multiple fixed-effects regression analysis (Model 1), which incorporated both firm-specific (α_i) effects and time-specific (λ_t) effects. The Model is specified as:

$$ROE_{it} = \beta_0 + \beta_1 E_{it} + \beta_2 S_{it} + \beta_3 G_{it} + \beta_4 SE_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \dots\dots\dots (i)$$

In this model, ROE denotes Return on Equity, and E, S, G, and SE represent Environmental Reporting, Social Reporting, Governance Reporting, and Stakeholder Engagement Reporting, respectively. The regression outcomes are summarized in Table 3 below:

Table 3. Fixed Effects Regression Analysis Results

Sustainability Reporting Variable	Coefficient (β)	Std. Error	t-test	p-value	[95% CI]
ER	0.2091	0.0265	7.88	0.000	[0.1570, 0.2611]
SR	0.5880	0.0335	17.57	0.000	[0.5222, 0.6537]
GR	0.0397	0.0284	1.40	0.162	[-0.016, 0.0955]
SER	0.0917	0.0189	4.86	0.000	[0.0546, 0.1287]
YEAR 2015	0.0442	0.0333	1.33	0.185	[-0.0213, 0.1096]
YEAR 2016	-0.0061	0.0332	-0.18	0.854	[-0.0715, 0.0591]
YEAR 2017	0.0382	0.0334	1.14	0.253	[-0.0273, 0.1037]
YEAR 2018	0.0092	0.0332	0.28	0.783	[-0.0561, 0.0745]
YEAR 2019	0.0532	0.0333	1.60	0.110	[-0.0122, 0.1186]
YEAR 2020	-0.0089	0.0332	-0.27	0.788	[-0.0742, 0.0564]
YEAR 2021	0.0581	0.0333	1.75	0.081	[-0.0073, 0.1235]
YEAR 2022	0.0011	0.0332	0.03	0.973	[-0.0642, 0.0665]
YEAR 2023	0.0336	0.0333	1.01	0.314	[-0.0319, 0.0991]
Constant/Intercept	0.1613	0.0619	2.60	0.009	[0.0396, 0.2830]
sigma_u	0.1260				
sigma_e	0.1774				
rho	0.3353				(fraction of variance due to u_i)
F-test	F(56, 500)	4.47		0.000	

Note: Number of observations = 570; Number of groups = 57; R-squared (within) = 0.773; R-squared (between) = 0.876; R-squared (overall) = 0.825; F(13, 500) = 130.94, $p < 0.001$; F test for all $u_i = 0$: F(56, 500) = 4.47, $p < 0.001$; Sigma_u = 0.126; Sigma_e = 0.177; Rho = 0.335 (fraction of variance due to u_i). Mean of the dependent variable = 2.461, SD = 0.497. AIC = -400.747, BIC = -339.908. *** $p < .01$, ** $p < .05$, * $p < .1$.

The fixed-effects regression results presented in Table 3 offer valuable insights into the relationship between sustainability reporting components and financial performance, as measured by Return on Equity (ROE). Environmental Reporting, Social Reporting, and Stakeholder Engagement Reporting all show statistically significant positive coefficients—0.2091, 0.5880, and 0.0917, respectively. In contrast, Governance Reporting yields a positive but statistically insignificant coefficient of 0.0397. These results suggest that firms actively engaging in environmental initiatives, social responsibility, and stakeholder involvement are more likely to achieve enhanced financial performance, whereas governance alone may not directly enhance performance.

Building upon the baseline findings in Table 3, Model 2 was developed to investigate whether transparency moderates the relationship between sustainability reporting and financial performance. In this context, transparency (T) is introduced as both an independent variable and a moderator, allowing for the evaluation of its direct impact on ROE as well as its interaction with the four sustainability reporting variables.

The model includes interaction terms between transparency and each reporting variable, enabling an assessment of whether the effect of sustainability reporting on Return on Equity (ROE) varies based on the level of transparency exhibited by each firm.

The moderated regression model is specified as:

$$ROE_{it} = \beta_0 + \beta_1 E_{it} + \beta_2 S_{it} + \beta_3 G_{it} + \beta_4 SE_{it} + \beta_5 T_{it} + \beta_6 (E \times T)_{it} + \beta_7 (S \times T)_{it} + \beta_8 (G \times T)_{it} + \beta_9 (SE \times T)_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \quad (ii)$$

In this model, T_{it} denotes the direct effect of transparency on financial performance (β_5) and the interaction terms ($E \times T$, $S \times T$, $G \times T$, $SE \times T$) test whether transparency moderates the effect of each respective sustainability reporting component. This specification facilitates an analysis of both the independent and interactive roles of transparency in enhancing the performance effects of sustainability reporting initiatives. The regression results for this moderated model are presented in Table 4.

Table 4. Moderated Fixed Effect Regression Results

Variable	Coefficient (β)	Std. Error	t-test	p-value	[95% CI]
ER	0.406	0.115	3.53	0.000	[0.180, 0.632]
SR	0.329	0.121	2.72	0.007	[0.091, 0.567]
GR	0.217	0.105	2.08	0.038	[0.012, 0.423]
SER	0.126	0.06	2.10	0.037	[0.008, 0.245]
TR	0.215	0.074	2.89	0.004	[0.069, 0.361]
ER_T	-0.09	0.044	-2.04	0.042	[-0.178, -0.003]
SR_T	0.111	0.051	2.19	0.029	[0.011, 0.211]
GR_T	-0.071	0.042	-1.70	0.089	[-0.153, 0.011]
SER_T	-0.021	0.024	-0.86	0.391	[-0.068, 0.026]
YEAR 2015	0.035	0.033	1.06	0.292	[-0.030, 0.099]
YEAR 2016	-0.008	0.033	-0.23	0.817	[-0.071, 0.056]
YEAR 2017	0.021	0.033	0.65	0.516	[-0.043, 0.086]
YEAR 2018	0.002	0.033	0.08	0.94	[-0.062, 0.067]
YEAR 2019	0.041	0.033	1.25	0.212	[-0.023, 0.105]
YEAR 2020	-0.006	0.033	-0.17	0.865	[-0.070, 0.058]
YEAR 2021	0.044	0.033	1.34	0.18	[-0.020, 0.108]
YEAR 2022	0	0.033	0	0.998	[-0.064, 0.064]
YEAR 2023	0.025	0.033	0.74	0.457	[-0.040, 0.090]
Constant/Intercept	-0.294	0.195	-1.51	0.131	[-0.677, 0.088]
sigma_u	0.116				

sigma_e	0.174		
rho	0.309		(fraction of variance due to u_i)
F-test	F(56, 494)	3.96	0.000

Note: In regression analyses with time variables, one year is typically omitted as the base year; in this case, 2014. This omission prevents perfect multicollinearity associated with including all year dummies. As a result, it allows for a more accurate estimation of the effects of the other variables over time while ensuring proper model identification. Obs: 570, Groups 57, R-Sq (overall) 0.834, R-Sq (between) 0.891, R-Sq (within) 0.776.

The moderated fixed-effects regression results (Table 4) revealed how the relationship between sustainability reporting variables and corporate financial performance shifts when transparency is introduced as a moderating factor. Environmental Reporting (ER) demonstrates a stronger positive coefficient in the moderated model ($\beta = 0.406$, $p < 0.001$) compared to the baseline model ($\beta = 0.2091$, $p < 0.001$), suggesting that the financial benefits of ER are context-sensitive. Similar trends were observed for Social Reporting (SR), which, although slightly lower in the moderated model ($\beta = 0.329$, $p = 0.007$) compared to the baseline ($\beta = 0.5880$, $p < 0.001$), remains statistically significant. Governance Reporting (GR) became statistically significant in the moderated model ($\beta = 0.217$, $p = 0.038$) in contrast to the baseline where it was not ($\beta = 0.0397$, $p = 0.162$). Stakeholder Engagement Reporting (SER) maintains a consistent positive effect ($\beta = 0.126$, $p = 0.037$), slightly stronger than in the baseline ($\beta = 0.0917$, $p < 0.001$). These findings confirm that firms emphasizing sustainability, particularly in environmental, social, and governance dimensions, tend to experience improved financial performance. This aligns with earlier research by Pawar and Munuswamy (2024) and Ikapel et al. (2023), which highlighted how sustainability investments build operational efficiency and stakeholder trust.

Transparency (TR) on its own exhibits a positive and significant association with ROE ($\beta = 0.215$, $p = 0.004$), reinforcing its role in reducing information asymmetry and enhancing firm credibility. However, the interaction effects present a more nuanced dynamic. Notably, the interaction between ER and TR (ER_T) is negative and significant ($\beta = -0.090$, $p = 0.042$), suggesting that high levels of transparency may reduce the marginal gains from environmental reporting. This finding resonates with Özer et al. (2023), who cautioned that over-disclosure or poorly contextualized information can invite greater scrutiny or stakeholder fatigue. In contrast, the interaction between SR and TR (SR_T) is positive and significant ($\beta = 0.111$, $p = 0.029$), indicating that transparency enhances the effectiveness of social disclosures by building trust and stakeholder loyalty—a finding consistent with that of Ikapel et al. (2023).

The interaction between GR and TR (GR_T) is negative and marginally significant ($\beta = -0.071$, $p = 0.089$), implying that transparency in governance disclosures alone may not drive financial performance unless backed by substantive practices. This supports Pang and Yuan (2019), who argued that governance reports must be credible and not merely symbolic. Meanwhile, the interaction between SER and TR (SER_T) is negative but statistically insignificant ($\beta = -0.021$, $p = 0.391$), suggesting that while stakeholder engagement remains beneficial, its financial impact is not significantly influenced by transparency. This may be due to the qualitative nature of engagement, which may not be fully captured in quantitative metrics.

The model also includes time-fixed effects, none of which are statistically significant, indicating that the relationship between sustainability reporting and financial performance remains stable across the observed years. This reinforces conclusions by Prayanthi and Budiarto (2022), who found that sustainability practices offer resilience across economic cycles. Furthermore, the variance decomposition shows that 30.9% of the variance in ROE is attributable to firm-specific effects ($\rho = 0.309$), validating the use of fixed-effects models to account for unobserved heterogeneity across firms (Mardini, 2022).

Overall, the model demonstrates a strong fit, with an R^2 within groups of 0.776 and an F-statistic of 3.96 ($p < 0.001$), indicating that the selected variables meaningfully explain variations in financial performance. These findings emphasize that while sustainability reporting significantly contributes to firm value, the role of transparency is double-edged—amplifying social impact but potentially muting gains from environmental or governance disclosures when overdone. This underscores the importance of strategic, credible, and well-framed communication in sustainability efforts, as supported by Özer et al. (2023), Mardini (2022), and Pang and Yuan (2019).

4.5. Hypothesis Assessment Based on Moderation Analysis

Drawing on the results of the moderated regression model presented in Table 4, the null hypothesis (H_0), that transparency does not moderate the relationship between sustainability reporting and the financial performance of corporate firms listed on the NSE—is assessed for each reporting dimension as follows:

4.5.1. Environmental Reporting and Transparency (ER_TR)

H0₁: Transparency does not moderate the relationship between environmental reporting and financial performance of corporate firms listed on the NSE

The analysis of the interaction term between Environmental Reporting and Transparency (ER_TR) reveals a statistically significant negative coefficient ($\beta = -0.090$, $p = 0.042$), which is statistically significant at the 5% level, as $p < 0.05$, suggesting that transparency diminishes the positive effect of environmental reporting on ROE. Therefore, we reject the null hypothesis for ER_TR.

4.5.2. Social Reporting and Transparency (SR_TR)

H0₂: Transparency does not moderate the relationship between social reporting and financial performance of corporate firms listed on the NSE

The analysis of the interaction term between Social Reporting and Transparency (SR_TR) reveals a statistically significant positive coefficient ($\beta = 0.111$, $p = 0.029$), which is statistically significant at the 5% level, as $p < 0.05$, indicating that transparency enhances the positive impact of social reporting on ROE. Consequently, we reject the null hypothesis for SR_TR.

4.5.3. Governance Reporting and Transparency (GR_TR)

H0₃: Transparency does not moderate the relationship between governance reporting and financial performance of corporate firms listed on the NSE

The analysis of the interaction term between Governance Reporting and Transparency (GR_TR) reveals a marginally negative coefficient ($\beta = -0.071$, $p = 0.089$), which is not statistically significant at the 5% level, as $p > 0.05$. Accordingly, we fail to reject the null hypothesis for GR_TR.

4.5.4. Stakeholder Engagement Reporting and Transparency (SER_TR)

H0₄: Transparency does not moderate the relationship between stakeholder engagement reporting and financial performance of corporate firms listed on the NSE

The analysis of the interaction term between Stakeholder Engagement Reporting and Transparency (SER_TR) reveals an insignificant coefficient ($\beta = -0.021$, $p = 0.391$), which is not statistically significant at the 5% level, as $p > 0.05$. Consequently, we fail to reject the null hypothesis for SER_TR.

5. Conclusions and Recommendations

The study examined the moderating role of transparency in the relationship between sustainability reporting and financial performance among corporate firms listed on the NSE. Findings revealed that sustainability reporting—particularly in the environmental ($\beta = 0.2091$, $p < 0.001$), social ($\beta = 0.5880$, $p < 0.001$), and stakeholder engagement ($\beta = 0.0917$, $p < 0.001$) dimensions—positively influences financial performance. However, transparency plays a mixed moderating role. It significantly strengthens the positive impact of social reporting on ROE ($\beta = 0.111$, $p = 0.029$), suggesting that firms with clear, credible social disclosures gain stakeholder trust and improved financial outcomes. Conversely, transparency weakens the financial benefits of environmental reporting ($\beta = -0.090$, $p = 0.042$), possibly due to stakeholder scrutiny or the costs of over-disclosure. The moderating effects of transparency on governance ($\beta = -0.071$, $p = 0.089$) and stakeholder engagement ($\beta = -0.021$, $p = 0.391$) were statistically insignificant, indicating that transparency alone may not drive value in these areas unless backed by substantive internal practices.

Based on these findings, firms should adopt targeted transparency strategies that prioritize quality over quantity—especially in social disclosures where financial returns are more pronounced. Environmental disclosures should be carefully balanced to ensure they are relevant and strategic without overwhelming stakeholders. Regulators such as the Capital Market Authority (CMA) and NSE are encouraged to enhance ESG disclosure guidelines and promote standardized reporting frameworks to improve consistency. Moreover, capacity building for corporate managers is essential, particularly in integrating ESG into business strategy and communicating transparently. The moderated model's strong explanatory power ($R^2 = 0.834$ overall; $F(56, 494) = 3.96$, $p < 0.001$) reinforces the importance of transparency in shaping sustainability-performance outcomes, and future research should continue to explore these dynamics across sectors using both quantitative and qualitative approaches.

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