

**SUSTAINABILITY DISCLOSURES AND FINANCIAL PERFORMANCE OF
LISTED COMPANIES ON THE NAIROBI SECURITIES EXCHANGE, THE
MEDIATING ROLE OF FIRM SIZE**

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2026

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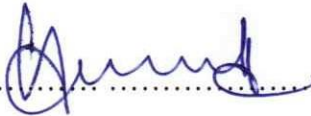
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DEDICATION

I dedicate this thesis to my children, Brianna Bitutu, Stephenson Magara, and Pauline Okemwa; my husband, Mofford Anyona; and my mother, Elizabeth Kemunto. Their love, encouragement, and support created an enabling environment for me to pursue and complete this study.

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ABSTRACT

This study examined the effect of sustainability disclosures on the financial performance of firms listed on the Nairobi Securities Exchange (NSE) and assessed the mediating role of firm size. The study was motivated by the volatility in the financial performance of listed firms, mixed empirical findings on the sustainability disclosure financial performance relationship, and limited evidence concerning the mediating role of firm size in emerging markets. The study was grounded in Agency Theory, Legitimacy Theory, and Triple Bottom Line Theory. A positivist philosophy as adopted, explanatory and longitudinal research designs were used. Secondary data were obtained from annual reports, sustainability reports, and integrated reports of 40 NSE-listed firms covering 2012–2023, resulting in a balanced panel of 480 firm-year observations. Social, governance, and environmental sustainability disclosures were measured using content-based disclosure indices, while financial performance was measured using Return on Assets (ROA). Firm size, measured as the natural logarithm of total assets, was the mediating variable, whereas firm age and leverage were controlled. Fixed-effects and random-effects panel regression models were selected using the Hausman specification test and estimated using cluster-robust standard errors. Mediation was assessed using the Baron and Kenny stepwise approach. The findings showed that social sustainability disclosure had a positive and statistically significant effect on ROA ($\beta = .0015$, $p < .001$; within $R^2 = .5070$). Governance sustainability disclosure also had a positive and significant effect on ROA ($\beta = .0008$, $p < .001$; within $R^2 = .1566$), while environmental sustainability disclosure positively and significantly affected ROA ($\beta = .0014$, $p < .001$; within $R^2 = .5012$). In the joint model, social ($\beta = .00088$, $p < .001$), governance ($\beta = .00019$, $p < .001$), and environmental disclosure ($\beta = .00076$, $p < .001$) remained positive and significant, with $R^2 = .8116$. Accordingly, $H01$, $H02$, and $H03$ were rejected. The Baron and Kenny stepwise analysis showed that social and environmental sustainability disclosures had positive, significant effects on financial performance ($\beta = .0015$ and $\beta = .0014$, respectively; both $p < .001$) and negative, significant associations with firm size ($\beta = -.0074$ and $\beta = -.0086$, respectively; both $p < .001$). Firm size was negatively associated with financial performance ($\beta = -.0130$, $p = .014$). After firm size was included, the social and environmental disclosure coefficients declined to $.0014$ and $.0013$, respectively, but remained significant, indicating partial mediation; $H04a$ and $H04c$ were rejected. Governance disclosure positively affected financial performance ($\beta = .0008$, $p < .001$), but did not significantly predict firm size ($\beta = -.0019$, $p = .201$); therefore, $H04b$ was not rejected. In the joint model, all three disclosures remained positive and significant (social $\beta = .00085$; governance $\beta = .00020$; environmental $\beta = .00071$; all $p < .001$), while firm size remained negative and significant ($\beta = -.0065$, $p < .001$). The model was jointly significant ($Wald \chi^2 = 4099.60$, $p < .001$), and $H04$ was rejected.

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LIST OF ABBREVIATION AND ACRONYMS

BSC	Balance Score Card
CDS	Central Depository System
CMA	Capital Market Authority
CSR	Corporate Social Responsibility
ESG	Environmental, Social and Governance
GRI	Global Reporting Initiative
IFRS	International Financial Reporting Standards
IR	Integrated Reporting
ISSB	International Sustainability Standards Board
NIM	Net Interest Margin
NSE	Nairobi Stock Exchange
ROE	Return on Equity
SASB	Sustainability Accounting Standard Board
VIF	Variance Inflation Factor

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Evaluating a company's financial performance helps determine whether it is in line with its strategic goals. Operating cash flow, working capital, current ratio, debt-to-equity ratio, inventory turnover, accounts receivable and payable turnover, and return on assets are examples of performance measures, according to Jelagat (2024). Tudose et al. (2022) stated that financial performance is frequently assessed using profitability, liquidity, and efficiency ratios. The ratios reveal details about a business's capacity to make money, manage resources, and keep things running smoothly. Common profitability measurements include Return on Assets (ROA), ROE, (NIM), and the ratio of operating expenses to operating income (BOPO). According to Buallay (2021), an organization's financial success is directly tied to its ability to sustain competitive advantage through efficient resource management and transparent corporate practices.

In general, the determinants of financial performance are grouped into two groups, financial and non-financial. Financial determinants for example include business liquidity and capital structure (Batrancea, 2021). While non-financial determinants include corporate governance, sustainability practices which are Environmental, Social, and Governance (ESG) activities (Imhanzenobe, 2020; Buallay, 2021). These findings were especially relevant for firms listed on securities exchanges, where corporate governance practices are closely monitored by regulatory bodies such as the Capital Markets Authority (CMA) in Kenya. For companies

listed on stock exchanges like the NSE, financial performance is a direct reflection of how well they meet their operational, strategic, and financial objectives. Strong financial performance enhances investor confidence and can lead to higher stock prices, improved access to capital markets, and increased market share. Investors particularly institutional ones, rely heavily on financial performance indicators when making portfolio allocation decisions (Friede et al., 2021).

In Europe, the financial performance of publicly traded companies varies considerably across countries, reflecting differences in governance structures, regulatory environments, strategic priorities, and institutional frameworks. Evidence from European firms suggests that corporate environmental performance can also influence financial outcomes. Secinaro et al. (2020), for example, found that higher environmental performance was positively associated with corporate financial performance among European publicly listed firms. More recent evidence also indicates that ESG performance is an important consideration in European corporate decision-making, with studies examining firms across countries including Germany, France, Luxembourg, Italy, Austria, Finland, Denmark, Portugal, the Netherlands, and Switzerland (Ktit & Abu Khalaf, 2024).

In Asia, financial performance of firms is influenced by governance quality and financial resilience; firms with longer listing histories and higher leverage performed better (Zhang et al., 2025), while those engaged in green innovation report improved financial indicators (Zhou et al., 2025). In Africa, positive trends were observed with the adoption of transparency measures and international standards. For instance, Morocco's adoption of IFRS enhanced financial reporting quality and boosted investor confidence (Oubahou et al.,

2025). Similarly, in Nigeria, the effectiveness of audit committees correlated with improved ROE, ROCE, and PBIT (Christiana & Francis, 2025). In contrast, Kenya experienced a steady decline in ROE between 2020 and 2023, reflecting reduced profitability and capital efficiency likely driven by macroeconomic conditions and firm-specific challenges (NSE, 2021; 2023).

1.1.1 Sustainability Disclosures

Sustainability disclosures entail the methodical conveyance of a company's Governance, Environmental, and Social (ESG) initiatives to essential stakeholders, including regulators, investors, and the public. These disclosures serve as a transparency mechanism for non-financial performance, illustrating how an organization's activities influence ecological integrity, societal wellbeing, and ethical governance practices (Guttermann, 2023). This evolution reflected a growing awareness that corporations are accountable not just to shareholders, but to a wider community.

The broader Corporate Social Responsibility (CSR) movement of the 1950s, which at first focused on social issues, is where the idea of sustainability reporting originated. By the 1980s, environmental concerns were receiving a lot of attention, and in the 1990s, complete frameworks that integrated economic, social, and environmental performance were developed. Clarifying and standardizing sustainability reporting has been the goal of several initiatives, although many have failed. The Global Reporting Initiative (GRI), which is renowned for providing a strong and inclusive reporting framework, is one noteworthy exception. The International Integrated Reporting Council (IIRC) was founded in reaction to

the impact of GRI in order to advance an integrated strategy that encompasses financial and ESG disclosures (IIRC Website, 2024).

The International Sustainability Standards Board (ISSB) was established by the IFRS Foundation in 2021 to develop a global baseline of high-quality sustainability-related financial disclosure standards that meet the information needs of investors and other capital-market participants. The ISSB sought to improve the comparability and consistency of sustainability reporting by building on the work of existing initiatives, including the Climate Disclosure Standards Board (CDSB), the Task Force on Climate-related Financial Disclosures (TCFD), the Value Reporting Foundation's Integrated Reporting Framework, and the Sustainability Accounting Standards Board (SASB) (IFRS Foundation, 2023). The growing integration of sustainability reporting into mainstream corporate reporting is demonstrated by the issuance of IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information and IFRS S2 Climate-related Disclosures in June 2023. IFRS S1 establishes general requirements for disclosure of material sustainability-related risks and opportunities, while IFRS S2 focuses specifically on climate-related risks and opportunities relevant to investors and other users of general-purpose financial reports (IFRS Foundation, 2023).

Established frameworks such as the Sustainability Accounting Standards Board (SASB) and the Global Reporting Initiative (GRI) have provided important guidance for identifying, measuring, and communicating sustainability-related information. These frameworks have contributed to greater consistency and comparability in corporate sustainability reporting by helping organizations identify and disclose material sustainability matters relevant to

investors and other stakeholders (IFRS Foundation, 2023; Global Reporting Initiative [GRI], 2024). The integration of sustainability information into corporate reporting has also strengthened transparency and accountability by enabling stakeholders to assess how sustainability-related risks and opportunities may affect an organization's prospects and long-term value creation (IFRS Foundation, 2023). Furthermore, transparent sustainability reporting can improve the availability of decision-useful information for investors and other stakeholders, thereby supporting informed investment decisions and strengthening corporate accountability (GRI, 2024). Empirical evidence also suggests that corporate sustainability performance and disclosure can be associated with improved financial outcomes, particularly where sustainability practices are effectively integrated into corporate strategy and governance (Friede et al., 2015; Whelan et al., 2021). Consequently, sustainability disclosures have become important mechanisms for promoting transparency, accountability, stakeholder confidence, and sustainable value creation in the contemporary business environment.

This integrated approach is increasingly being adopted as it demonstrates the link between sustainable practices and long-term organizational value (Guterman, 2023). To reinforce the credibility of these disclosures, numerous companies opt for third-party validation, thereby boosting the trust of investors and other stakeholders (Yehezkiel et al., 2023). The incorporation of digital platforms has also transformed how sustainability data is communicated, offering real-time insights into Environmental, Social, and Governance (ESG) activities and enhancing stakeholder engagement (Metzker, 2025). Additionally, companies are increasingly involving stakeholders through surveys and consultative

processes, enabling them to tailor their disclosures to public expectations and thereby improving their corporate legitimacy.

A sustainability index was found to be a measurement framework designed to evaluate a firm's performance across ESG criteria. It assigned quantitative scores to sustainability efforts, helping stakeholders, especially socially conscious investors, benchmark and compare companies effectively. According to Sustainability Indices (2024), these indices are instrumental in decision-making and served as tools for gauging corporate responsibility. Kara et al. (2024) further emphasize their importance in promoting ethical investment practices. These indexes usually evaluate performance in three main areas; environmental indicators monitor ecological consequences including carbon emissions, resource efficiency, waste management and biodiversity conservation; social indicators focus on consumer protection, community outreach, employee relations and human rights; while governance indicators examine executive compensation structures, board diversity and anti-corruption measures.

The implications of sustainability disclosures have also been widely examined globally. According to research by Latif et al. (2020) and Khandelwal and Chaturvedi (2021), environmental disclosure did not significantly affect corporate performance metrics such as ROA and profit margin in Malaysia and India, suggesting that investors in these countries may not prioritize such disclosures. Conversely, Komara et al. (2024) found a strong positive association between environmental disclosure and company value in Indonesia, particularly within the basic and chemical industries, indicating increasing environmental awareness in emerging markets. Similarly, Nogueira et al. (2024) established that employee participation,

training and equal opportunity policies significantly improved organizational performance in Europe, while Driss and Jaballah (2025) reported that social sustainability reporting positively influenced ROA and ROE among large corporations in Asia, supporting signaling theory and highlighting firm size as an important moderating factor.

Across Africa, evidence regarding sustainability disclosures and financial performance remains mixed. Aniebiet and Emenyi (2024) found a weak but positive relationship between environmental sustainability and the financial performance of deposit money banks in Nigeria. Similarly, Igbekoyi et al. (2021) established a negative relationship between social sustainability disclosures and financial performance among Nigerian firms, although only the association with ROE was statistically significant. Kafidipe et al. (2021) emphasized that governance compliance and effective risk management significantly enhanced bank stability and performance in Nigeria. In Ghana, Sarpong-Danquah et al. (2022) reported that board size and audit committee independence positively influenced firm performance, whereas board compensation had a negative effect, while concentrated ownership reduced agency conflicts. In South Africa, Msomi et al. (2025) observed that social sustainability disclosures positively influenced return on investment, whereas environmental disclosures negatively affected returns within the mining sector, suggesting sector-specific responses to sustainability initiatives.

In Kenya, sustainability reporting has gained momentum following regulatory reforms aimed at strengthening transparency, accountability and responsible corporate governance. The Capital Markets Authority introduced the Code of Corporate Governance Practices for Issuers of Securities to the Public (2015) to enhance accountability, ethical leadership and

stakeholder engagement among listed firms. Building on this regulatory framework, the Nairobi Securities Exchange introduced the NSE ESG Disclosure Guidance Manual (2021) to guide listed companies in identifying, measuring and reporting environmental, social and governance information using internationally recognized reporting frameworks.

Prior to the NSE issuing the ESG Disclosure Guidance Manual, companies mainly complied with mandatory disclosures required under legislation and international agreements, including the Code of Corporate Governance Practices for Issuers of Securities to the Public (2015), the United Nations Declaration on Human Rights, environmental regulations administered by NEMA, the Occupational Health and Safety Act, the Consumer Protection Act and the Data Protection Act (NSE, 2021).

Within the Kenyan capital market, sustainability disclosures have produced varying empirical results. Agutu and Githira (2023) found that environmental disclosure had a strong and significant effect on the financial performance of firms listed on the Nairobi Securities Exchange, explaining approximately 48% of the variation in financial performance. In contrast, Serem et al. (2024) reported that social sustainability disclosures had no significant effect on firm performance among Kenyan companies, suggesting that sustainability reporting may still be at a developmental stage or that stakeholders have not yet fully incorporated such information into investment decisions. These inconsistent findings among NSE-listed firms justify further investigation into the relationship between sustainability disclosures, firm size and financial performance.

1.1.2 Firm Size

Firm size, can be measured by total assets, revenue, or market capitalization, it reflected a firm's operational strength and financial capacity (Mirichii et al., 2023). Large enterprises are advantaged from economies of scale and superior financing options, while smaller firms often exhibit agility and innovation. This study used net total assets to define firm size. Empirical studies show that firm size can mediate the link between organizational factors and financial performance. Ismail (2023) found full mediation by firm size in Nigerian industrial firms between profitability and variables like the cash conversion cycle and payables. Tapang et al. (2021) observed partial mediation between CSR spending and ROE in Nigerian non-financial firms, favoring larger firms.

Across sectors, firm size remains a key determinant of performance. Mirichii et al. (2023) reported better financial health in larger Kenyan SACCOs while Kijkasiwat and Phuensane (2020) noted that firm size affects the innovation performance relationship. Offia and Ajuonu (n.d.) suggested a mediating role of firm size between gender diversity and bank performance, though insignificantly affirming firm size as a critical factor in shaping financial outcomes.

1.1.3 Nairobi Security Exchange

The NSE forms an integral part of Kenya's financial ecosystem by promoting savings, facilitating investment, and fostering the growth of private firms. Recent data reveals a declining trend in financial performance among enterprises listed on the Nairobi Securities Exchange (NSE), notably evidenced by a persistent decrease in Return on equity (ROE). This decline reflects diminished profitability, increased operational expenses, and limited returns

to shareholders. Macroeconomic factors, including inflation, variable interest rates, and sluggish economic growth, have been identified as key contributors to the observed decline in performance (Ondiwa & Aila, 2021). Additionally, market volatility and decreased trading activity have negatively impacted investor confidence and firm valuation. In addition to macro-level factors, characteristics specific to firms are also significant. Studies demonstrate that firms exhibiting diverse ownership structures and effective governance practices tend to sustain higher Returns on Equity (ROE) over extended periods (Mose & Kipchirchir, 2024). Profitability metrics are closely associated with equity premiums, which influenced firms' capacity to produce consistent returns (Shibanda et al., 2024). The trends show that good governance, smart financial management, and a stable economy are important for achieving lasting financial success at the NSE.

1.2 Statement of the Problem

Ideally, robust ESG disclosures should reduce information asymmetry, build investor confidence, and ultimately drive improved financial performance. However, it remains unclear whether increased sustainability disclosures have actually translated into better financial outcomes for NSE-listed companies. Listed companies at the Nairobi Securities Exchange (NSE) have continued to experience persistent market weakness and declining financial performance. The Nairobi All Share Index (NASI) declined sharply by 23.42% in the year 2022 and by a further 27.7% in the year 2023, while market capitalization intermittently dropped below KSh 2 trillion in the year 2023 amid massive foreign investor outflows (CMA, 2023; The Star, 2024; Tuko, 2025). The deterioration in market performance was accompanied by declining profitability at Nairobi Securities Exchange PLC, the

company that operates the securities exchange. Its return on assets declined from 7.25% in 2020 to 5.96% in 2021 and fell sharply to 0.68% in 2022. Although ROA recovered marginally to approximately 1.0% in 2023, it remained substantially below the levels recorded in 2020 and 2021 (NSE PLC, 2022, 2023, 2024).

Previous studies conducted in Kenya generally report mixed associations between sustainability disclosures and financial performance (Agutu & Githira, 2023; Masila et al., 2024; Kipngetich & Gatauwa, 2024), the evidence remains inconclusive since most studies examine individual sustainability dimensions, specific industries, or selected categories of disclosures. Furthermore, available evidence suggests that ESG reporting among many Kenyan firms remains largely compliance-driven rather than value-driven, limiting its usefulness in influencing investment decisions and corporate financial performance (Gatauwa, 2024). Consequently, the extent to which comprehensive environmental, social, and governance disclosures enhance the financial performance of firms listed on the Nairobi Securities Exchange remains insufficiently established.

Also, firm size has predominantly been treated as a control or moderating variable, despite theoretical arguments suggesting that it may constitute an important mediating mechanism through which sustainability disclosures influence financial performance. Larger firms generally possess greater financial resources, stronger reporting capabilities, and higher organizational visibility, enabling them to produce more comprehensive sustainability disclosures that may enhance investor confidence and improve profitability (Drempetic et al., 2020; Aityassine et al., 2025). However, this mediating pathway remains largely unexplored among firms listed on the Nairobi Securities Exchange. Therefore, this study

seeks to address these contextual, conceptual, and methodological gaps by examining the effects of environmental, social, and governance disclosures on the financial performance of firms listed on the Nairobi Securities Exchange and by determining the mediating role of firm size in this relationship.

1.3 Objectives of the Study

In realizing the goal of this study, both general and specific objectives were fundamentally considered.

1.3.1 General Objective

This study investigated the link between sustainability disclosures, firm size, and financial performance of listed companies at the Nairobi Security Exchange.

1.3.2 Specific Objectives

The research was directed by the subsequent particular objectives.

- i. To determine the effect of social sustainability disclosure on financial performance of firms listed in NSE
- ii. To evaluate the effect of corporate governance sustainability disclosures on financial performance of firms listed in NSE.
- iii. To examine the effect of environmental sustainability disclosure on the financial performance of firms listed in NSE.
- iv. To examine the mediating role of firm size on the relationship between sustainability disclosures and the financial performance of firms listed at the Nairobi Securities Exchange.
 - (a) The mediating role of firm size on the relationship between social sustainability disclosures and financial performance of firms listed at the NSE.

(b)The mediating role of firm size on the relationship between corporate governance sustainability disclosures and financial performance of firms listed at the NSE.

(c) The mediating role of firm size on the relationship between environmental sustainability disclosures and financial performance of firms listed at the NSE.

1.4 Research Hypotheses

This study sought to validate the following hypotheses:

H₀₁: Social sustainability disclosures have no statistically significant effect on the financial performance of firms listed on the Nairobi Securities Exchange

H₀₂: Corporate governance sustainability disclosures have no statistically significant effect on the financial performance of firms listed on the Nairobi Securities Exchange.

H₀₃: Environmental sustainability disclosures have no statistically significant effect on the financial performance of firms listed on the Nairobi Securities Exchange.

H₀₄: Firm size has no statistically significant mediating effect on the relationship between sustainability disclosures and the financial performance of firms listed on the Nairobi Securities Exchange.

H_{04a}: Firm size has no statistically significant mediating effect on the relationship between social sustainability disclosures and the financial performance of firms listed on the Nairobi Securities Exchange.

H_{04b}: Firm size has no statistically significant mediating effect on the relationship between corporate governance sustainability disclosures and the financial performance of firms listed on the Nairobi Securities Exchange.

H_{04c}: Firm size has no statistically significant mediating effect on the relationship between environmental sustainability disclosures and the financial performance of firms listed on the Nairobi Securities Exchange.

1.5 Significance of the Study

This study offered meaningful insights for a wide range of stakeholders. For the Nairobi Securities Exchange (NSE), it underscored the importance of sustainability disclosures in enhancing the reputation and attractiveness of listed companies, which ultimately boosted investor confidence and market participation.

Investors gained a deeper understanding of how sustainable policies affect financial performance, thereby facilitating morally aligned and financially prudent investment decisions. Government agencies and regulatory bodies, particularly the Capital Markets Authority (CMA) and the NSE, can utilize the findings to strengthen policy frameworks and promote higher standards of sustainability reporting, encouraging listed companies to act more responsibly toward environmental and social issues. The general public stands to benefit from improved corporate practices that contribute to societal well-being and environmental preservation.

Financial analysts found the insights valuable for assessing firms' long-term sustainability and risk profiles, leading to more informed investment evaluations. Environmentalists and

other advocacy groups can leverage the findings to advocate for stronger corporate accountability and environmental stewardship.

Finally, the study advanced academic knowledge by expanding the theoretical and empirical understanding of the connection between firm size, sustainability disclosures, and financial success. It also pinpointed critical areas in need of further investigation, particularly within emerging markets such as Kenya.

1.6 Scope and Justification for the Study

The scope of this study is defined in terms of its conceptual, geographical, population, and temporal dimensions.

The study examined the effect of sustainability disclosures on financial performance among firms listed on the Nairobi Securities Exchange. Sustainability disclosures constituted the independent variable and were operationalized using three dimensions: environmental disclosures, social disclosures, and governance disclosures, measured through a sustainability disclosure index developed from internationally recognized ESG reporting frameworks. Financial performance, measured using Return on Assets (ROA), constituted the dependent variable because it reflects management's efficiency in utilizing corporate assets to generate earnings. Firm size, measured using the natural logarithm of total assets, was examined as the mediating variable to determine whether it explains the relationship between sustainability disclosures and financial performance.

The study was confined to firms listed on the Nairobi Securities Exchange (NSE) in Kenya. The NSE provides an appropriate setting because it is Kenya's principal securities market,

comprises firms from diverse economic sectors, and has progressively strengthened sustainability reporting following the introduction of the NSE ESG Disclosure Guidance Manual (2021). The Exchange therefore provides a suitable institutional environment for examining the relationship between sustainability disclosures and financial performance within an emerging capital market.

The target population comprised all 62 firms listed on the Nairobi Securities Exchange as at the commencement of the study. However, only firms that remained listed throughout the study period and had complete audited annual reports, financial statements, and sustainability disclosures for the period under investigation were included in the analysis. Consequently, 40 listed firms satisfied the inclusion criteria and formed the study sample.

The following firms were excluded from the study, Firms listed after the commencement of the study period were excluded because they could not provide balanced longitudinal observations over the entire study period. Firms that were delisted, suspended, or underwent major restructuring, mergers, or acquisitions during the study period were excluded because such events significantly alter financial and disclosure characteristics, potentially introducing structural breaks that compromise panel data comparability. Firms with incomplete annual reports, missing financial statements, or inadequate sustainability disclosure data were excluded because reliable computation of the sustainability disclosure indices and financial performance measures requires complete and consistent information across all study years. These exclusion criteria were adopted to ensure a balanced panel dataset, improve the reliability of the empirical analysis, and enhance the comparability of observations across firms and over time.

The study covered the 2012–2023 financial years. This twelve-year period was selected because it captures the evolution of sustainability reporting before and after major developments in ESG reporting within Kenya, including the introduction of the Capital Markets Authority Code of Corporate Governance (2015) and the NSE ESG Disclosure Guidance Manual (2021). The period also encompasses significant economic events, including the COVID-19 pandemic and subsequent market recovery, thereby providing sufficient longitudinal observations to examine changes in sustainability disclosure practices and financial performance over time using panel data techniques.

The study is justified by the continued decline in the financial performance of firms listed on the Nairobi Securities Exchange despite increasing adoption of sustainability reporting. During recent years, the Kenyan capital market has experienced declining profitability, weakening investor confidence, and reduced market capitalization, prompting regulators to strengthen ESG reporting through the NSE ESG Disclosure Guidance Manual (2021). Although sustainability disclosures are expected to improve transparency, reduce information asymmetry, and enhance corporate financial performance, empirical evidence from Kenya remains inconsistent, while the mechanisms through which sustainability disclosures influence financial performance remain insufficiently understood.

Furthermore, previous studies have primarily examined individual sustainability dimensions or treated firm size as a control or moderating variable, with limited attention given to its potential mediating role. This study therefore addresses important contextual, conceptual, and methodological gaps by examining the individual effects of environmental, social, and

governance disclosures on financial performance while simultaneously evaluating the mediating role of firm size among firms listed on the Nairobi Securities Exchange.

The findings of the study are expected to contribute empirical evidence to sustainability accounting literature and provide context-specific information that may support policymakers, regulators, investors, and corporate managers in strengthening sustainability reporting practices and improving decision-making within Kenya's capital market.

1.7 Limitations and Delimitations of the Study

The study encountered limitations relating to the availability, consistency, and comparability of sustainability disclosure data. During the period studied, sustainability-reporting practices were not fully standardized across firms listed on the Nairobi Securities Exchange. Some firms disclosed sustainability information in considerable detail, while others provided limited information or changed their reporting formats over time. Consequently, differences in disclosure scores may partly reflect variations in reporting practices rather than differences in firms' actual sustainability performance.

To minimize this limitation, the study applied a consistent content-analysis checklist and uniform scoring criteria to all the firms and years examined. Data were obtained primarily from audited annual reports, integrated reports, and official sustainability reports. Nevertheless, the use of publicly disclosed information could not entirely eliminate the possibility of selective reporting, reporting bias, or differences between reported sustainability practices and the practices implemented by firms.

1.8 Assumptions of the Study

It is presumed that financial statements and sustainability reports of all NSE firms are complete, accurate, and publicly available, according to the relevant regulatory disclosure requirements. This prevents any material misstatements or biases in the data collected. Further, it is presumed that NSE-listed companies adhere to well-known ESG reporting frameworks. These frameworks permit comparison across firms and sectors and ensure that differences in ESG disclosure quality do not create substantial distortions to the overall findings.

Moreover, the researcher assumes that over the study period, there will be no radical changes in financial reporting, corporate governance, or ESG disclosure policies by the NSE or regulatory agencies such as the Capital Markets Authority (CMA). This isolates any changes in the financial performance to sustainability disclosures and firm size, with no adjustments from regulatory sources.

1.9 Operational Definition of Terms

Sustainability Disclosures: The communication of a firm's Environmental, Social, and Governance (ESG) practices and performance, typically reported in sustainability reports, annual reports, or other public documents.

Social Sustainability Practices: Initiatives and policies aimed at improving social equity, community welfare, employee well-being, human rights,

	and stakeholder engagement to foster positive social impact. Measured by Social Sustainability Disclosure Index (SSDI)
Environmental Sustainability Practices:	Strategies and actions undertaken by a firm to minimize its environmental footprint, including resource conservation, pollution reduction, and sustainable sourcing. Governance Sustainability Disclosure Index (GSDI)
Corporate Governance Sustainability Practices:	The frameworks and processes that ensure a firm operates ethically and in a responsible manner, focusing on board structure, transparency, accountability, and stakeholder engagement in decision-making. Environmental Sustainability Disclosure Index (ESDI)
Firm Size:	A measure used to classify companies based on their total assets, categorized as small, medium, or large enterprises. Measured by log of total assets.
Security Exchange:	A regulated marketplace, such as the Nairobi Securities Exchange where financial instruments (e.g., stocks, bonds) are bought and sold, facilitating capital raising for listed firms.

Financial Performance:	An assessment of a firm's profitability, efficiency, and financial health, typically measured using indicators such as return on equity. Measured by return on assets (ROA)
Profitability Metrics:	Specific financial indicators that evaluate a firm's ability to generate profit relative to its revenue, for this study it is Return on Assets (ROA).
Listed Firms:	This term refers also to listed companies and they are used interchangeably in this study to mean firms whose shares are traded in Nairobi Stock Exchange.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Review

The following section outlines the theories that underpinned this study. Agency theory was the main theory, while legitimacy and triple bottom line theory were supplementary theories.

2.1.1 Agency Theory

Agency theory, developed by Jensen and Meckling (1976), explains the relationship between principals (such as shareholders) and agents (such as managers), where principals delegate decision-making authority to agents. The theory highlights issues such as goal conflict, information asymmetry, and opportunistic behavior. According to Clark (2024), this delegation aims to reduce operational costs and enhance resource utilization. However, differing goals and unequal access to information often result in agency problems. Bessler et al. (2023) note that agency theory assumes individuals are rational and self-interested, which can lead agents to pursue personal objectives, such as increasing influence or compensation, rather than aligning with the principal's goal of maximizing returns. Additionally, adverse selection may arise when an unqualified agent is unknowingly appointed.

The theory assumes that both parties act rationally and in their own interest (Bessler et al., 2023). It also assumes that agents have more information than principals, necessitating monitoring to prevent opportunistic actions (Clark, 2024). Contracts are presumed to be effective tools for aligning interests through mechanisms like performance-based incentives. Supporting this, recent evidence indicates that well-designed managerial incentives can

strengthen managerial effort and align managers' interests more closely with those of shareholders, thereby improving corporate decision-making and firm performance (Edmans et al., 2021).

Agency theory has been criticized for its unrealistic assumptions. It presumes complete rationality and that contracts can anticipate all future events, which is rarely feasible (Hendrastuti & Harahap, 2023). Moreover, it focuses primarily on agent opportunism, overlooking the possibility that principals may also act in self-serving ways. The theory's narrow economic lens also tends to ignore ethical motivations and broader social responsibilities.

Despite its limitations, agency theory remains relevant for examining corporate governance, sustainability disclosures, firm size, and financial performance, especially in the ESG context. Khan (2022) observes that firms aligning sustainability with strategy reduce agency costs and attract socially responsible investors. Rao (2022) supports its continued relevance in managing stakeholder expectations. This study adopts agency as the main framework for analyzing how ES related disclosures affect financial performance, moderated by firm size.

2.1.2 Legitimacy Theory

Legitimacy theory was first proposed by Dowling and Pfeffer in 1975. Suchman (1995) further developed the concept of organizational legitimacy and classified legitimacy into pragmatic, moral, and cognitive legitimacy. This theoretical framework suggests that organizations must maintain a reputation that is considered socially acceptable. Specifically, organizational legitimacy arises when an entity's value system corresponds with the prevailing values within its broader social environment (Spanuth & Urbano, 2024).

According to this theory, organizations are compelled to ensure their operations align with the standards and norms of their societies. Consequently, external stakeholders expect enterprises to undertake actions that will render their activities transparent, adhering both to legal requirements and economic principles (Martens & Bui, 2023).

Consequently, this theory clarifies the reasons why corporations participate in sustainable reporting practices, such as Environmental, Social, and Governance (ESG) initiatives, to meet global expectations for sustainability accountability. It implies that businesses might implement these strategies to bridge perceived discrepancies between their values and those of key stakeholders (Alam et al., 2024). According to legitimacy theory, it is crucial for organizations to continuously exhibit that their operations are legitimate and recognized by society as adhering to established standards. From this theoretical perspective, the connection between external social responsibility efforts and internal corporate obligations strengthens fundamental aspects of business ethics (Díez-Martín et al., 2021). Furthermore, legitimacy theory offers insights into how companies produce and share disclosures related to environmental impacts alongside issues concerning social governance (Akhter et al., 2023)

Legitimacy theory assumes that organizations operate within a social contract with society. The agreement indicates that the organization's survival is contingent upon its ability to fulfil the expectations and standards of the society from which it obtains its resources. If the organization fails to fulfill these societal expectations, it risks losing legitimacy and, consequently, its license to operate (Adeoye, 2024). Legitimacy is not an objective or static condition, rather, it is a dynamic, perception-based construct. The desirability, ethical behavior, or appropriateness of an organization's acts and operations is contingent upon societal beliefs inside a framework of built norms, values, and convictions. Consequently,

the definition of legitimacy may differ among cultures and eras (Adeoye, 2024). Organizations frequently employ several disclosure mechanisms, including sustainability reports, Corporate Social Responsibility (CSR) statements, and environmental impact disclosures, as strategic instruments to acquire, sustain, or rehabilitate legitimacy. In times of crisis or negative publicity, increased disclosure may be used to signal accountability, transparency, and alignment with societal values, thereby repairing or reinforcing legitimacy (Alam et al., 2024).

The theory has faced criticism for primarily acting as a persuasive instrument to fulfill managerial objectives and for failing to illustrate how management's decisions regarding adoption and disclosure may impact accountability and transparency. The theory often neglects the role of power and influence in shaping legitimacy. Powerful organizations may shape societal expectations through lobbying, media, or advertising, thereby manipulating the legitimacy process rather than merely responding to it. The vagueness in the inconsistent interpretation of terms such as legitimacy, societal expectations, and social contract is often broad, abstract, and hard to measure empirically, and it weakens the theory's robustness and relevance (Martens & Bui, 2023).

The legitimacy theory is relevant in this study since it clarifies how organizations disclose Environmental and Social information while facilitating accurate predictions in empirical research. The motivation for implementing ESG practices and communicating them through annual reports or media arises from pressures imposed by both internal and external stakeholders, along with the organization's intent to uphold its reputation. Legitimacy

provides an organization with the justification to function in harmony with stakeholder interests.

2.1.3 Triple Bottom Line Theory

The Triple Bottom Line (TBL) theory was developed by John Elkington, a British sustainability entrepreneur and author, in the mid-1990s. Elkington (1997/2004) introduced the concept to challenge firms to move beyond the traditional financial focus and instead account for value creation across three interdependent dimensions' people, planet, and profit. His vision was to redefine corporate success by integrating environmental stewardship and social responsibility alongside economic performance. In his later reflections, Elkington expressed concern that the original intent of TBL had been diluted into a mere accounting or reporting slogan (Rimmel, 2025). Elkington emphasized that the theory was never meant to be a measurement framework alone but a strategic rethinking of capitalism, aimed at internalizing social and environmental externalities while still pursuing financial returns. Thus, Elkington's TBL provides a transformative lens for understanding and implementing sustainable business practices in both developed and emerging markets.

The (TBL) theory broadens the definition of corporate performance by incorporating three key dimensions: people, planet, and profit. The people dimension emphasizes social sustainability through attention to employee welfare, workplace safety, diversity, and community engagement. The planet dimension focuses on environmental sustainability through responsible management of natural resources, pollution control, emissions reduction, and waste minimization. The profit dimension remains concerned with economic sustainability, measured through financial indicators such as profitability, Return on Assets

(ROA), Return on Assets (ROE), and market value. According to Serzante and Stankevych (2024), the three dimensions are mutually reinforcing rather than competing, with governance acting as the integrative mechanism that ensures alignment among them. Firms that effectively manage environmental and social factors tend to experience reduced risks, greater operational efficiencies, enhanced reputations, and improved access to capital factors that ultimately strengthen financial performance (Devie et al., 2020). Therefore, the TBL framework underscores the interdependence between sustainability practices and long-term economic success.

The Triple Bottom Line theory operates on several key assumptions. First, it assumes that a firm's long-term success depends on balanced performance across the social, environmental, and economic dimensions. The theory presumes that investments in environmental protection and social welfare are not merely ethical obligations, but strategic drivers of value creation and competitiveness. It further assumes that firms engaging in sustainability initiatives will realize tangible benefits such as enhanced efficiency, improved risk management, stronger stakeholder trust, and greater brand loyalty. Another critical assumption is that environmental and social performance can generate synergistic rather than conflicting outcomes with financial performance (Stern & Rockefeller, 2021). Additionally, the theory assumes that transparency, accountability, and stakeholder engagement are essential in realizing the potential benefits of sustainability. Firms that disclose their sustainability practices openly are likely to build credibility with investors, regulators, and consumers fostering a virtuous cycle of improved reputation and financial strength.

Despite its wide acceptance, the theory has faced several criticisms. One major critique is that the framework is often vague and difficult to operationalize, as there is no universal standard for measuring or comparing social and environmental performance across firms. Elkington acknowledged that TBL was sometimes misappropriated as a marketing or accounting slogan, rather than as a transformative business philosophy. Critics argue that the concept can lead to ambiguous trade-offs among the three dimensions raising questions about how firms should prioritize between profit, people, and planet when conflicts arise. Furthermore, the theory has been critiqued for being normative rather than empirical, offering moral guidance without always providing clear causal mechanisms linking sustainability to profitability. In emerging markets such as Kenya, another limitation is the lack of standardized reporting frameworks and consistent data quality, which can hinder meaningful comparison and verification of sustainability outcomes. These criticisms highlight the need for context-specific adaptation and robust measurement frameworks to make TBL practically effective.

The Triple Bottom Line theory provides a strong theoretical foundation for examining the relationship between Environmental, Social, and Governance (ESG) disclosures and financial performance among firms listed on the Nairobi Securities Exchange. In Kenya, the institutionalization of sustainability reporting through the NSE ESG Disclosures Guidance Manual (2021) developed in partnership with the Global Reporting Initiative (GRI) reflects the TBL philosophy by promoting integration of environmental, social, and financial reporting. The framework encourages firms to adopt governance structures that ensure accountability and transparency in their sustainability performance. Empirical studies among NSE listed firms have shown positive associations between ESG disclosures and financial

outcomes (Agutu & Githira, 2023; Kipngetich & Gatauwa, 2024), supporting TBL's core assertion that sustainable practices enhance profitability. Moreover, earlier studies on Corporate Social Responsibility (CSR), a precursor to ESG, also documented similar findings (Mbuthia & Gatauwa, 2022). Methodologically, TBL informs how sustainability performance can be measured by integrating financial indicators (e.g., ROE, ROA) with environmental (e.g., emissions, resource efficiency) and social indicators (e.g., employee welfare, community engagement). It also supports the inclusion of mediating variables such as firm size and disclosure quality, which influence the strength of the ESG–financial performance relationship. Hence, the TBL framework offers both conceptual guidance and empirical justification for assessing how sustainability practices contribute to firm value in the Kenyan context.

This study integrates Agency Theory, Legitimacy Theory and Triple Bottom Line Theory because no single theory fully explains the relationship between sustainability disclosure, firm size and financial performance. Agency Theory explains how corporate governance disclosures reduce information asymmetry, strengthen managerial accountability and lower agency costs. However, its shareholder-centered approach does not adequately address employees, communities and environmental concerns. Legitimacy Theory addresses this limitation by explaining how social and environmental disclosures help firms demonstrate conformity with societal expectations, gain stakeholder acceptance and maintain their license to operate. Nevertheless, the theory cannot always distinguish genuine sustainability practices from symbolic disclosure or greenwashing. Triple Bottom Line Theory integrates the social, environmental and economic dimensions through the principles of people, planet and profit. It explains how social and environmental responsibility can support long-term

financial performance, although measuring and balancing these dimensions remains challenging.

2.2 Empirical Literature Review

The literature that informed this study was organized thematically based on the specific objectives of the study.

2.2.1 Social Sustainability Disclosures and Financial Performance of Firms

Sroufe and Gopalakrishna-Remani (2019) analyze the interaction between social sustainability disclosure, corporate reputation, and financial performance. The researchers utilized a sample of Fortune 500 businesses identified in the Newsweek Green rankings, the Corporate Knights Global 100, and the 100 Best Corporate Citizens lists. The research methodology integrated Stakeholder theory with the Resource-Based View (RBV), employing a quantitative, cross-sectional design utilizing purposive sampling techniques. The examination of this meticulously selected group of leading corporations reveals robust positive correlations between the management of sustainability practices, enhanced social sustainability performance, and several dimensions of a company's financial performance.

The outcomes of this study advance structures and items related to sustainability management and social sustainability practices, while experimentally examining their correlations with financial performance metrics. This study presents an empirical gap by focusing solely on Fortune 500 firms in global sustainability rankings, limiting the relevance of its findings to emerging markets and smaller listed firms. Methodologically, its cross-sectional design, purposive sampling of high-performing firms, and reliance on self-reported data restrict causal inference and introduce common method bias. Future research should adopt

longitudinal designs, broader samples, and diversified data sources to enhance validity and generalizability.

Erhinyoja and Marcella (2019) examined the correlation between social sustainability reporting and financial success in Nigeria's oil and gas industry. The research assessed the influence of corporate social sustainability reporting on Return on Assets, Return on Equity, and Return on Capital Employed for firms listed on the Nigerian Stock Exchange. A sample of ten oil and gas companies was chosen for this investigation. The study utilized an ex-post facto research design, employing secondary data obtained from financial ratios and corporate records, in conjunction with content analysis techniques. The data assessment encompassed descriptive statistics and regression analysis methodologies. Findings revealed that whereas social sustainability reporting adversely affected all three-performance metrics, only its effect on return on asset sustained statistical significance. The study recommends that existing sustainability reporting requirements be customized to tackle particular social and environmental concerns within the country; it also supports for the mandatory implementation of these reports instead of leaving them optional. The researcher detects an empirical gap by focusing exclusively on ten Nigerian oil and gas companies, hence limiting the generalizability of the findings to other industries and regions. The methodology employs an ex post facto approach based exclusively on a restricted sample. The present research includes broader sectoral coverage, larger sample sizes, and mixed-method approaches to enhance the robustness and application of the findings.

Hardiningsih et al. (2020) focused on examining the impact of social sustainability information on both financial and market performance. They employed purposive sampling;

a total of 21 mining companies from Indonesia and 18 from Malaysia were selected for analysis. The hypotheses were tested using regression analysis with WarpS software. The findings indicated that disclosures related to social factors significantly influence Return on Assets (ROA), Return on Equity (ROE), price-earnings ratios, and Tobin's Q in both Indonesia and Malaysia. Effective disclosure of sustainability information enhances not only financial outcomes but also fosters trust among stakeholders and regulators during decision-making processes, thereby contributing to an increase in corporate value. The study exhibits an empirical gap by limiting its analysis to social disclosures within Indonesian and Malaysian mining firms, thereby excluding broader industrial and geographical contexts. Methodologically, it relies on a purposive sample of 39 firms without longitudinal or mixed-methods data, weakening causal interpretation and limiting the credibility of the disclosure metrics. This research shall incorporate diverse industries, wider regional coverage, and more robust methodological designs to enhance validity and generalizability.

Singh and Chakraborty (2021) aimed to explore the relationship between Corporate Social Sustainability Disclosure (CSSD) and Financial Performance (FP) of companies in India. Data was collected from selected firms through content analysis of their annual reports. The study utilized a multidimensional framework based on stakeholder theory for assessing CSSD, which includes six primary stakeholder groups: employees, customers, investors, the community, the environment, and others. To evaluate the connection between CSSD and financial performance while controlling for variables such as firm size, risk level, age, industry type, ownership structure, and time frame, multiple regression analysis was conducted. The results indicate that both the quality and quantity of overall CSSD are positively associated with accounting-based indicators of financial performance. Conversely,

no statistically significant correlation was found between market-based financial performance measures and CSSD. These findings imply that transparent and thorough social disclosures can improve company profitability. The study identifies a distinct empirical gap by focusing exclusively on the relationship between corporate social and sustainability disclosure (CSSD) and accounting-based performance metrics, such as Return on Assets (ROA) and Return on Equity (ROE), while overlooking market-based performance indicators and non-financial outcomes, including social or environmental impact. Furthermore, it neglects to account for the impacts of CSSD on wider stakeholder groups beyond shareholders. A methodological deficiency is apparent, as the study depends solely on a cross-sectional content analysis of annual reports, excluding the utilization of panel data or longitudinal designs that could document temporal changes. The lack of qualitative insights restricts the assessment of quality, context, and intentions behind the disclosures, hence undermining the study's capacity to establish causal inferences.

Lambe et al. (2023) conducted a study to investigate the relationship between corporate performance and social sustainability disclosures in non-financial enterprises listed in Nigeria. The researchers utilized an ex-post facto design and employed a purposeful sampling method that is not based on probability. Their analysis included panel data derived from the annual reports of 112 non-financial firms listed on the Nigerian Stock Exchange over a ten-year period from 2012 to 2021. Subsequent to their screening procedure, they concluded their investigation utilizing data from 82 companies. To examine the correlation between corporate success and social sustainability disclosures, they utilized panel regression estimation methods and conducted the Hausman test to determine the appropriateness of a random effects model for their research using E-Views statistical software. The findings

revealed that larger companies exert a substantial and positive impact on the Social Disclosure Index, whereas older companies demonstrated just a marginal positive effect. This conclusion indicates that larger firms are more likely to reveal information about social sustainability due to more public scrutiny and elevated stakeholder expectations. The assessment of social sustainability disclosure was based on sixteen parameters established by the Global Reporting Initiative (GRI). This study demonstrates that disclosures regarding social sustainability significantly impact operational outcomes in Nigeria's non-financial industry. The study reveals a specific empirical gap by concentrating solely on the correlation between Corporate Social and Sustainability Disclosure (CSSD) and accounting-based performance metrics like Return on Assets (ROA) and Return on Equity (ROE), neglecting market-based indicators, non-financial results, and wider stakeholder effects. This limited perspective constrains the comprehension of the holistic benefit of sustainability disclosures. Moreover, a methodological deficiency is apparent in the study's employment of a cross-sectional content analysis of annual reports, which fails to provide the longitudinal insights required to evaluate the evolution, authenticity, and quality of disclosures. The capacity to prove causality or encapsulate the contextual complexity of CSSD practices is markedly limited.

Nogueira et al. (2024) examined the impact of social sustainability practices on organizational performance in Portugal. Using a quantitative methodology, the study collected information from 574 Portuguese workers who had been employed by their companies for at least six months. The study examined variables such as Employee Development, Employee Participation, and Equal Opportunity, and how these relate to organizational performance. The results indicated that social sustainability practices,

including employee development and participation, have a positive effect on perceived social sustainability. Furthermore, social sustainability was found to positively influence organizational performance. The study concludes that social sustainability practices significantly impact organizational success. The study reveals an empirical gap by depending on employee perceptions of performance without correlating social sustainability to tangible financial indicators. The methodology employs a singular cross-sectional poll, which introduces common technique bias and lacks longitudinal or archive financial data for comprehensive analysis.

Serem et al. (2024) undertook a comprehensive examination of the moderating role of corporate governance on the relationship between social sustainability reporting and firm value among firms listed on the Nairobi Securities Exchange in Kenya. The study's target included all 64 corporations that are publicly listed on the NSE. The research utilized secondary data obtained through the annual reports retrieved from the NSE and the respective websites of the firms, covering a period of eleven (11) years from 2012 to 2022.

A content analysis methodology was employed for the systematic collection of secondary data via data collection sheets. This inquiry adopted a longitudinal research design coupled with a correlational approach. The findings of the study indicated that social sustainability reporting exhibited an inconsequential impact on the firm value of companies listed on the Nairobi Securities Exchange. Furthermore, corporate governance was found to have no significant moderating effect on the relationship between social sustainability reporting and firm value. These results imply that corporations ought to reassess the pertinence and caliber of their social sustainability reports to more effectively align with stakeholder expectations.

There is a requisite for enhanced transparency and narrative articulation concerning social impacts to foster improved engagement with investors. The study reveals an empirical gap by indicating no significant correlation between sustainability disclosure (SSD) and firm value in Kenya; however, potential mediating variables, such as firm size or sectoral differences, that may affect this relationship was not evaluated.

Zhou et al. (2024) investigated how social sustainability disclosures affect the financial performance of firms in the energy sector, with a particular focus on the moderating role of ownership concentration. The research employed secondary data from 239 energy companies in Belt and Road Initiative (BRI) nations from 2009 to 2022. The researchers utilized the Common Correlated Effects Mean Group (CCEMG) and Pooled Mean Group (PMG) estimators for data analysis. Based on signaling theory, the study asserted that firms might utilize social sustainability reporting to exhibit their dedication to tackling social issues. The results demonstrated a favorable correlation between social sustainability disclosure and financial performance. Moreover, ownership concentration was found to strengthen this relationship. The study recommends that energy firms in developing economies emphasize transparent social policy disclosures to enhance their long-term financial outcomes. The study focused exclusively on energy companies in Belt and Road Initiative countries, thereby constraining the applicability of its findings to other sectors and geographic areas. Methodologically, although it employs advanced panel estimators like CCEMG and PMG on secondary data, it lacks mixed-method validation and does not perform robustness checks with alternative model specifications, thereby undermining the dependability and depth of its conclusions. This study will seek to address these gaps.

Driss and Jaballah (2025) investigated the effect of social sustainability disclosures on Saudi Arabian enterprises' performance. Between 2019 and 2023, they examined the yearly financial reports of 90 non-financial businesses that were listed on the Tadawul, or Saudi Stock Exchange. The researchers used text analysis technologies to assess the volume and caliber of disclosures related to social issues. The researchers examined the correlation between these disclosures and performance indicators such as Return on Equity (ROE) and Return on Assets (ROA), emphasizing social sustainability disclosure. The study's findings corroborated signaling theory by demonstrating a significant positive correlation between social sustainability declarations and company success. The results showed that companies with robust social sustainability policies typically have better financial results. Additionally, it was discovered that the association between social sustainability performance was moderated by business factors like firm size. The research is confined to non-financial enterprises in Saudi Arabia, thereby restricting the applicability of its conclusions to alternative market situations, sectors, and institutional frameworks. Also, the research utilizes a cross-sectional content analysis of disclosures and financial data, omitting the application of panel data or triangulation with diverse data sources. This limits its capacity to determine causality, monitor disclosure patterns over time, or appropriately assess the depth and quality of sustainability disclosures.

Saini et al. (2025) performed a meta-analysis to explain the relationship between ESG disclosure (including the social disclosure sub-dimension) and firm performance. The study sought to quantify (i) the combined effect of ESG disclosure and (ii) the individual effects of environmental, social, and governance disclosures on multiple performance outcomes. Methodologically, the authors synthesized 95 papers representing 60,247 firm-level

observations, and conducted subgroup analyses across performance measures (cost of capital, accounting-based performance such as ROA/ROE/EPS, and market measures such as Tobin's Q), while also incorporating moderators and controls (e.g., firm size, visibility, ownership structure, ESG data source, and publication quality). The meta-analysis reports that ESG disclosure positively influences firm performance, with pronounced effects for environmental and social disclosures, and that all ESG dimensions reduce the cost of capital while significantly improving firm performance. The study's key limitation (typical of meta-analyses) is dependence on the quality, heterogeneity, and operationalization choices of the underlying primary studies (e.g., different disclosure indices, ESG databases, and endogeneity controls), which can affect comparability and causal interpretation.

Tamasiga et al. (2024) conducted a systematic review (PRISMA-based) to clarify how ESG disclosures, explicitly including the social dimension, relate to firm value and profitability across industries and regions. The study aimed to address a persistent gap in the literature: while many papers correlate ESG scores with financial outcomes, fewer isolate ESG disclosure as the transparency mechanism that may translate sustainability activity into financial results. The authors searched Scopus and Web of Science, ultimately analyzing 52 studies. Their synthesis highlights strong industry and geography contingencies: food and retail frequently show positive links between strong ESG disclosures and improved financial performance; the utility sector shows particularly high accounting performance linked to social metrics; governance disclosure appears especially relevant for market performance in agriculture; and evidence from developing economies is often negative or insignificant. A core limitation is that the review aggregates studies using different disclosure definitions (mandatory vs voluntary), different proxies for "social disclosure," and different performance

horizons so the review maps patterns and contingencies more than it establish universal effects or clean causal pathways.

Aydoğmuş et al. (2022) examined whether ESG performance (with separate social, governance, and environmental scores) is associated with firm value and profitability using a large, cross-country dataset of public firms. The study sought to contribute to debates about whether ESG/CSR “pays” by leveraging a large, recent dataset and testing associations with both market-based and accounting-based outcomes. The authors selected the largest 5,000 publicly listed firms from Bloomberg (2013–2021), filtered to those with ESG scores available in Refinitiv, resulting in 1,720 firms and 14,043 firm-year observations. Using panel-model specifications, they report that the combined ESG score is positively related to profitability (ROA), and that social (SOC), governance (GOV), and environmental (ENV) scores each show positive and highly significant relationships with ROA; they also discuss differential effects between profitability and firm value for some ESG dimensions. The study’s main constraint for SSD-focused inference is that it uses ESG scores (performance/ratings) rather than a pure disclosure-quality index derived from report content; ratings can embed both performance and disclosure components, making it difficult to isolate the incremental effect of disclosure transparency alone. Additionally, large-sample panel associations remain vulnerable to reverse causality (better-performing firms can afford better ESG/CSR programs and reporting), unless designs explicitly address endogeneity.

Chen et al. (2023) investigated the effect of ESG performance on corporate financial performance using a global sample and explicitly connected the mechanism to how ESG information is presented and shared in markets (an important bridge to disclosure-driven

arguments). The study analyzed ESG–financial performance linkages over a 10-year period (2011–2020) using 3,332 listed organizations worldwide, yielding 24,076 valid observations, and applied multiple regression and categorized regression techniques. Findings indicate that ESG performance is positively associated with corporate performance, and that the effect is significant for large firms but insignificant for small firms; the positive effect is also more pronounced under higher risk conditions. For SSD-specific implications, the results suggest that “socially oriented” transparency (often embedded in ESG performance constructs) may be most financially material where firms are large, visible, and exposed to stakeholder scrutiny conditions consistent with stakeholder/legitimacy arguments. However, the paper’s SSD relevance is limited by its reliance on an aggregate ESG performance construct rather than a granular, content-validated social disclosure measure; the results therefore speak more to ESG as a bundled construct than to which types of social disclosures (e.g., labor vs community vs supply chain) drive performance.

Aminatuzzuhro et al. (2025) examined whether CSR disclosure improves financial performance and whether corporate governance in particular, independent commissioners/directors strengthens that relationship in a setting where state ownership and regulation are salient. The study focused on non-financial state-owned enterprises (SOEs) in Indonesia (2015–2021) and used fixed-effects regression to estimate the impact of CSR disclosure on financial performance, testing governance moderation via an interaction term. The authors report a statistically significant positive impact of CSR disclosure on performance in both public and non-public SOEs, and they find evidence that independent commissioners strengthen the CSR disclosure–performance relationship in public SOEs (while the moderation result is not consistently robust across alternative performance

measures and subsamples). The study's practical contribution to SSD research is its emphasis on governance as a credibility mechanism: where independent oversight is meaningful, social/CSR disclosure is more likely to be trusted and priced/translated into performance. Its limitations include (i) focus on one country and SOE context, which may limit generalizability to private-sector firms, and (ii) moderation findings that appear sensitive to robustness checks, implying possible model or measurement instability.

Across these studies, the emerging pattern is directionally positive but conditional: social disclosure/performance tends to correlate with better financial outcomes, yet the strength and sometimes even the sign depend on institutional context, sector, governance, and firm characteristics. The systematic review evidence suggests that in some industries (including utilities), social metrics may be especially tied to accounting performance, plausibly because social practices (labor stability, safety, service reliability, community license-to-operate) directly affect operating continuity and regulatory relationships (Tamasiga et al., 2024). The meta-analytic evidence similarly indicates pronounced effects for social disclosure on firm performance and cost of capital, consistent with the idea that credible social transparency reduces stakeholder uncertainty and risk premia (Saini et al., 2025). Empirical multi-country evidence strengthens this view by showing that social scores/disclosures correlate positively with profitability in large samples (Aydoğmuş et al., 2022), while firm-level global evidence indicates that size and risk condition the magnitude of ESG–performance effects (Chen et al., 2023).

Mechanistically, the SSD–financial performance relationship is most often synthesized through four linked channels. First, reputation and customer/market preference: credible social disclosures can differentiate firms, enhance brand trust, and support revenue resilience.

Second, human capital and operational efficiency: disclosures around labor standards, safety, diversity, and training may proxy for better workforce management, reducing turnover and disruptions and improving productivity. Third, financing and risk: higher-quality transparency can reduce information asymmetry, potentially lowering the cost of capital an effect explicitly aggregated in the 2025 meta-analysis (Saini et al., 2025). Fourth, license to operate and regulatory alignment: in high-scrutiny contexts (e.g., SOEs, regulated sectors), disclosure can signal compliance and responsiveness to public policy priorities, improving access to resources and buffering political risk (Aminatuzzuhro et al., 2025).

Methodologically, the literature also reveals why results sometimes conflict. A central challenge is measurement mismatch: many “disclosure” studies rely on ESG databases where scores blend underlying practices with disclosure quantity/quality, while others use content-analysis indices that capture presence/absence of items but may not capture credibility, specificity, or outcome relevance. This matters for SSD because social disclosure is especially prone to qualitative narratives (policies and commitments) that may not reflect measurable outcomes (e.g., injury rates, wage equity, grievance resolution, supplier audits). A second challenge is endogeneity and reverse causality: profitable firms may invest more in CSR and publish more expansive disclosures, meaning naïve regressions can overstate the “payoff” of SSD. Reviews in this period explicitly emphasize heterogeneity and moderation (industry maturity, governance structures, regional institutions), reinforcing that SSD is not a universal performance lever but a context-dependent strategic resource (Tamasiga et al., 2024; Saini et al., 2025).

Synthesizing the evidence, the conclusion is that social sustainability disclosures are more likely to be associated with superior financial performance when they are (i) credible, (ii) decision-useful, and (iii) supported by governance mechanisms that reduce skepticism about symbolic reporting. This is consistent with the Indonesian SOE evidence where independent commissioners can strengthen the disclosure–performance link (at least in certain subsamples) by enhancing monitoring and credibility (Aminatuzzuhro et al., 2025). It is also consistent with large-sample evidence that social (and broader ESG) metrics align with profitability (Aydoğmuş et al., 2022) and with global evidence that the benefits of ESG transparency are concentrated among large, visible, and risk-exposed firms (Chen et al., 2023). At the same time, the developing-economy findings caution that weak enforcement, low investor demand for ESG information, and symbolic reporting incentives can dilute or even negate SSD’s financial benefits (Tamasiga et al., 2024).

2.2.2 Corporate Governance, Sustainability Disclosures and Financial Performance

Wanjau (2019) aimed to determine if corporate disclosure may mitigate the deterioration in financial performance and business failures. This study aimed to investigate the impact of corporate disclosure on the financial performance of companies listed in East Africa. The study aimed to investigate the impact of governance transparency on the financial performance of companies listed in East Africa. The research was based on the theories of agency, stewardship, legitimacy, and signaling hypotheses. The research included both descriptive and correlational designs. Purposive sampling was employed to choose 51 firms listed on the Nairobi Securities Exchange in Kenya, 11 companies listed on the Uganda Securities Exchange, 3 companies listed on the Rwanda Securities Exchange, and 15

companies listed on the Salaam Securities Exchange from 2006 to 2015. Secondary data was obtained via a document check index derived from annual audited financial statements. Regression diagnostics and panel data diagnostic tests were conducted; correlation analysis demonstrated the strength of the association, while regression analysis elucidated the nature of the relationship between independent and dependent variables. The study's results indicated a favorable and significant correlation between governance disclosure and the financial performance of publicly listed companies in East Africa. It was determined that listed businesses must improve their information sharing to reduce monitoring and agency costs, thereby promoting greater performance.

Temba et al. (2023) looked into the relationship between corporate governance and Tanzanian commercial banks' financial performance. Multiple linear regression analysis was used in the study to evaluate the connection between corporate governance and financial success using panel data from 15 banks spanning 17 years. Agency theory, which investigates the conflict of interest between managers and shareholders and looks at how governance frameworks might resolve these conflicts, served as the framework for the study. The results showed that certain elements of corporate governance, like the makeup of the board and the over boarding of board members, had a beneficial effect on financial performance as determined by capital adequacy, asset quality, and earning ability. However, other elements have a negative relationship with equity efficiency and liquidity, such as board control, gender diversity, and specific governance features.

Sarpong-Danquah et al. (2022) examined corporate governance and its impact on the performance of Ghanaian manufacturing firms, with particular focus on ownership structure.

Utilizing agency theory, the research investigated the influence of corporate governance on business performance through a Generalized Least Squares regression analysis of a panel dataset comprising seven manufacturing firms over a 14-year period. Agency theory centers on the potential conflicts of interest that may arise between the owners (principals) and the management (agents). The study revealed a positive and significant correlation among board size, audit committee independence, firm size, and firm performance. Nevertheless, a negative link existed between performance and board compensation. The study revealed that the relationship between board size, board independence, and company performance was influenced by concentrated ownership, suggesting that block ownership may mitigate agency-related challenges.

El-Chaarani et al. (2022), in their study sought to assess the influence of internal and external corporate governance systems on the financial performance of banks in the under-explored Middle East and North Africa (MENA) area amid the COVID-19 pandemic. Data was obtained from annual bank reports, the Orbis Bank Focus database, and World Bank publications, encompassing both financial and non-financial dimensions of the banking sector. The analysis utilized fixed effects regression and two-stage least squares methods. The findings indicated that specific governance characteristics, including board independence, significant ownership concentration, minimal political interference in board appointments, and robust legal frameworks, were positively correlated with bank performance. Nonetheless, additional criteria such as performance-based compensation, gender diversity on boards, moderate board size, and anti-takeover measures shown no statistically significant impact during the crisis. The research concludes that improving internal and external governance procedures can bolster financial resilience in MENA banks

during crises. This analysis utilizes Entrenchment Theory, Stakeholder Theory, and Resource Dependency Theory to elucidate the findings.

A study by Kyere and Ausloos (2021) examined the relationship between financial performance in the UK and corporate governance standards. Following the adjustment for variables such as business size and leverage, the study utilized cross-sectional regression analysis to focus on five corporate governance approaches and their effects on two financial performance indicators: return on assets and Tobin's Q. The conceptual framework of the study was based on agency theory and stewardship theory. Stewardship theory posits that managers and owners may share aligned interests, whereas agency theory addresses the potential conflicts between managers and shareholders. The study, encompassing 252 companies listed on the London Stock Exchange in 2015, revealed a contradictory relationship between financial performance and corporate governance practices. Although many governance methods exhibited no significant correlation or a detrimental effect, others demonstrated a positive benefit. The study concluded that financial performance may be improved by selecting appropriate corporate governance mechanisms.

Kafidipe et al. (2021) employed a quantitative research methodology utilizing panel data regression analysis to examine corporate governance, risk management, and financial performance in Nigeria's listed deposit money banks. The study employed agency theory to examine the interplay between corporate governance, risk management, and financial performance, as well as how governance policies can mitigate conflicts between shareholders and management. The research identified that insufficient risk management and failure to comply with corporate governance norms were the primary factors impacting the

performance of Nigerian banks, underscoring the importance of both risk management and corporate governance in ensuring financial stability.

Abdallah and Bahloul (2021) utilized Generalized Least Squares regression models to investigate the relationship among the financial performance of Islamic banks, Shariah governance, and disclosure. The study analyzed data from 47 Islamic banks across eleven nations in the Middle East, North Africa, and Southeast Asia from 2012 to 2019. Financial performance indicators, including Return on Equity (ROE) and Return on Assets (ROA), were applied, alongside sub-indices for the Shariah Supervisory Board, Audit Committee, and Board of Directors, to evaluate Shariah governance. The analysis encompassed control variables such as age, leverage, and bank size. The analysis indicated a negative correlation between ROA and ROE with disclosure. Conversely, profitability was enhanced by exemplary governance, including the oversight roles of the Board of Directors and Audit Committee. This indicates that robust Shariah governance measures enhance the financial performance of Islamic institutions.

The impact of corporate sustainability disclosure on the financial performance of mining companies listed on the Johannesburg Stock Exchange (JSE) was studied by Wasara and Ganda (2019). Using text analysis and multiple regression techniques, the study examined sustainability reports from ten businesses over a five-year period (2010-2014). Reporting on social issues may improve financial performance in the mining industry, according to the research, which showed a positive link between social disclosure and ROI but a negative relationship between environmental disclosure and ROI. Similarly, Abdullah and Tursoy (n.d.) examined the relationship between corporate governance and financial performance in a shareholder-oriented framework. The study utilized Return on assets and Return on Equity

to measure performance, analyzing panel data from companies listed on the Frankfurt Stock Exchange from 2002 to 2018. While CEO duality was not statistically significant, the study revealed that the characteristics of the audit committee and board of directors adversely affected financial performance. Furthermore, company performance enhanced following the adoption of International Financial Reporting Standards (IFRS) in 2005.

Aydoğmuş et al. (2022) examined the impact of ESG performance on firm value and profitability using a large multi-country panel. The study sought to determine whether overall ESG scores and the separate environmental, social, and governance pillars are associated with (i) firm value and (ii) profitability. The authors employed panel-data modeling using firm-year observations drawn from Bloomberg financial data and Refinitiv ESG scores. The sampling frame began with the largest 5,000 publicly listed firms globally between 2013 and 2021, and after filtering for firms with available Refinitiv ESG scores, the final sample comprised 1,720 companies from 39 countries with 14,043 firm-year observations. Tobin's Q was used as a proxy for firm value and ROA as a proxy for profitability; size and leverage were included as controls. Findings indicated that the overall ESG combined score was positively associated with firm value, while the social and governance pillars (but not the environmental pillar) were significant for firm value; for profitability, the combined ESG score and each pillar (E, S, and G) were positively related. The study's key implication is that "governance" within ESG and not only environment appears particularly value-relevant in capital markets. A main limitation is that rating-based ESG measures can embed disclosure quantity and rater methodology choices, potentially conflating actual sustainability performance with disclosure practices; additionally, cross-country heterogeneity may mask institutional differences that shape the ESG-performance relationship.

Wu et al. (2022) investigated whether corporate ownership structure moderates the link between ESG performance and firm value in Chinese manufacturing firms. The study sought to test (1) whether ESG performance improves firm value and (2) whether ownership characteristics strengthen or weaken this relationship. Using Chinese listed manufacturing companies from 2016 to 2020, the authors measured ESG performance using Sino-Securities ESG ratings and operationalized ownership structure through ownership concentration, equity balance, executive shareholding, and institutional investor shareholding. The analysis found that ESG performance improved firm value, and that executive ownership and institutional ownership not only had direct positive associations with firm value but also strengthened (moderated) the ESG–firm value relationship, while ownership concentration and equity balance did not show significant moderating effects. The study contributes by demonstrating that governance embedded in ownership incentives matters for turning ESG efforts into market valuation gains. A limitation is that the focus on one sector (manufacturing) and one country context may limit generalizability, and ownership measures may proxy for unobserved governance quality (e.g., monitoring culture) that is difficult to fully isolate in observational data.

Choi et al. (2024) examined whether governance mechanisms condition the relationship between ESG disclosure and firm value in South Korea. The study sought to assess (i) the direct effect of ESG disclosure on firm value and (ii) the moderating effects of board size, board independence, audit quality, and ownership concentration. The authors used panel data for 2019–2020 covering 428 listed Korean companies and obtained ESG disclosure data from the Korea Corporate Governance Service, while governance variables and firm value data were collected from Kis Value and DART. The methodology relied on regression analysis

with mean-centering to mitigate multicollinearity in interaction terms, and firm size and industry type were included as controls. Results showed that ESG disclosure positively affected firm value, and that board size, board independence, and audit quality significantly moderated (strengthened) the ESG disclosure firm value relationship; ownership concentration did not exhibit a consistent positive moderating effect, and in combined models' ownership concentration could weaken the relationship. The paper's practical implication is that disclosure is more financially "rewarded" when monitoring and assurance-related governance mechanisms are strong. Limitations include a short two-year window, potential measurement tension in using ROA as "firm value" (an accounting indicator rather than a market valuation), and the possibility that unmodelled institutional or industry shocks during 2019–2020 influence results.

Erben-Yavuz et al. (2024) analyzed how corporate governance affects sustainability disclosures and whether governance–disclosure relationships differ across financial and non-financial firms. The study sought to determine how ownership structure (block holder, foreign, and institutional ownership) and board composition (size, gender diversity, and foreign directors) influence ESG disclosures in Türkiye. Using a panel dataset of 22 listed firms (6 financial and 16 non-financial) from Borsa Istanbul spanning 2013–2021, the authors compared sectoral differences in governance effects. Findings indicated that foreign ownership and the presence of foreign and female directors were positively associated with higher ESG disclosures, while ownership concentration was negatively related to ESG performance/disclosure; moreover, the patterns differed between financial and non-financial firms, cautioning against direct cross-sector comparability using ESG disclosure scores alone. This study strengthens the governance-to-disclosure argument: board diversity and

internationally oriented ownership can drive transparency. A limitation is the relatively small sample (22 firms), which can constrain statistical power and external validity; additionally, ESG disclosure measures may reflect both actual practices and reporting incentives.

Tamasiga et al. (2024) conducted a systematic review to clarify when ESG disclosures are linked to firm value and profitability and why results differ by context. The study sought to synthesize multi-industry evidence using a PRISMA-guided selection process, drawing studies from Scopus and Web of Science and analyzing 52 papers. The review found that the ESG disclosure and financial performance relationship is comprehensive, food and retail industries tended to show positive correlations between strong ESG disclosures and improved financial performance; utilities displayed stronger accounting performance tied to social metrics with less emphasis on environmental disclosures; and in developing economies, relationships were often negative or insignificant. Notably, the agriculture sector exhibited a pattern where governance disclosures specifically enhanced market performance, reinforcing the idea that governance-related transparency may be particularly salient to investors. The review's major contribution is contextual differentiation: the same disclosure strategy may not yield the same financial payoff across sectors or institutional settings. Limitations typical of systematic reviews apply, including heterogeneity of measurement (different ESG disclosure proxies, performance metrics, and estimation strategies) and potential publication bias toward significant results.

AlHares (2025) examined whether financial performance improves Sustainability Reporting Quality (SRQ) and whether corporate governance moderates this relationship in an emerging-market setting. The study sought to assess the direct effects of board characteristics

(size, independence, diversity, experience) on SRQ and to test whether stronger governance enhances the conversion of financial resources into higher reporting quality. Using an explanatory quantitative design, the author analyzed data from 88 listed firms in premier markets over 2015–2024, drawing from Refinitiv Eikon and annual reports. Ordered logistic regression was used for SRQ modeling, and panel GMM estimation was applied to address endogeneity. Findings showed that board size and board experience positively influenced SRQ, while financial performance alone was not significantly associated with SRQ; importantly, robust governance strengthened the financial performance–SRQ linkage (i.e., governance improved the translation of resources into better reporting). Larger firms exhibited higher SRQ, and financial-sector firms lagged non-financial firms in SRQ. The study’s value lies in explicitly modeling governance as a moderator and using econometric techniques aimed at endogeneity. Limitations include context specificity (GCC/premier markets) and the possibility that SRQ indices still capture compliance and presentation quality more than underlying sustainability outcomes.

Synthesizing across these studies, a fairly consistent pattern emerges: corporate governance is not merely an antecedent to sustainability disclosure; it is frequently the “enabling condition” that determines whether disclosure is credible enough and strategically integrated enough to influence financial outcomes. Ownership-related governance (executive and institutional ownership) appears particularly important for aligning incentives and strengthening the ESG–value link in settings such as Chinese manufacturing (Wu et al., 2022). Board-level monitoring and assurance-related mechanisms (board independence and audit quality) similarly strengthen the disclosure–value relationship, as demonstrated in Korean listed firms where audit quality (Big4 vs non-Big4) amplifies the positive association

between ESG disclosure and firm value (Choi et al., 2024). Cross-country evidence indicates that governance within ESG can be more value-relevant than environmental scores alone for market valuation, while profitability appears more consistently related to all ESG pillars (Aydoğmuş et al., 2022). At the same time, the governance–disclosure relationship itself varies by sector and institutional features: in Türkiye, foreign ownership and board diversity increase ESG disclosures, while ownership concentration reduces them, and the effects differ between financial and non-financial firms (Erben-Yavuz et al., 2024).

The review evidence reinforces that these results should not be interpreted as universal laws. In developing economies, ESG disclosure may be negatively related or unrelated to performance when disclosures are costly, when capital markets do not reward transparency, or when institutional enforcement is weak conditions highlighted in the multi-industry synthesis by Tamasiga et al. (2024). This insight helps explain why some firm-level studies find that financial performance does not automatically lead to better sustainability reporting unless governance structures actively direct resources toward reporting quality (AlHares, 2025). Collectively, the literature suggests that governance mechanisms function as (i) drivers of disclosure (through oversight and strategic orientation), (ii) credibility enhancers (through audit quality and independent monitoring), and (iii) “conversion factors” that determine whether sustainability disclosure becomes financially material rather than symbolic.

Several empirical gaps remain visible. First, measurement inconsistency persists: some studies treat ESG “performance” scores as proxies for disclosure, while others focus on SRQ indices or disclosure ratings, making cross-study comparison difficult (Aydoğmuş et al.,

2022; AlHares, 2025). Second, causal inference remains challenging: even with GMM or panel approaches, reverse causality (better firms disclose more) and omitted variables (managerial quality, regulatory scrutiny, stakeholder activism) can bias estimates. Third, context effects are strong sectoral and country governance environments shape both disclosure incentives and investor responses (Erben-Yavuz et al., 2024; Tamasiga et al., 2024). Future research is therefore likely to be most informative when it (i) separates disclosure quantity from disclosure quality and assurance, (ii) models governance as a moderator and not only an independent predictor, (iii) uses multi-period data that captures regulatory transitions (e.g., mandatory disclosure adoption), and (iv) tests mechanisms (cost of capital, risk reduction, stakeholder trust) through which governance-enabled disclosures translate into financial performance.

2.2.3 Environmental Sustainability Disclosure and Financial Performance of Firms

Aniebiet and Emenyi (2024) conducted a study to examine the correlation between environmental sustainability and the financial performance of 14 deposit money banks listed on the Nigerian Exchange Group from 2013 to 2021. Employing an ex-post facto methodology, they analyzed secondary data from the banks' annual reports. The study employed multiple regression analysis with the Unobserved Effects Model (UEM) alongside panel data. The Hausman test indicated that the fixed-effects model was more appropriate. The study primarily focused on four sustainability metrics: renewable energy, carbon emissions, waste management, and water use, and their impact on Return on Assets (ROA), a measure of financial performance. The study was guided by stakeholder, legitimacy, and agency theories. The results demonstrated a positive albeit statistically negligible correlation

between financial success and environmental sustainability metrics. It was shown that leverage adversely and significantly affected ROA. The study's findings indicate that the financial performance of banks was not significantly affected by environmental sustainability disclosures. The research focusses exclusively on 14 Nigerian deposit money banks, thereby limiting the generalizability of its conclusions to other financial institutions and non-banking sectors. The study used an ex post facto panel design utilizing a fixed-effects model, deliberately excluding other methods to investigate the factors contributing to the insignificance of sustainability disclosures in relation to Return on Assets (ROA). This constrains both the contextual profundity and the explanatory efficacy of the outcomes.

Akpan et al. (2024) investigated the connection between Nigerian consumer goods companies' cost of equity and environmental disclosure. They examined secondary data from the Nigerian Exchange Group fact book using an ex-post facto methodology, concentrating on 18 enterprises that were specifically chosen between 2013 and 2022. A self-made checklist was used to evaluate environmental disclosure, which was then reported as a percentage. Several diagnostic tests were performed, and panel multiple regression analysis was used. The study's foundation was agency and signaling theories, which hold that voluntary disclosures minimize capital costs by reducing investor uncertainty. The results showed that the cost of equity and environmental risk disclosure had a substantial negative association, accounting for roughly 53.7% of the variation. According to the study's findings, environmental disclosures have a major impact on equity costs, and regulatory agencies ought to encourage improved environmental reporting procedures. The research used only 18 Nigerian consumer goods companies, concentrating primarily on the cost of equity and

disregarding broader financial performance indicators like Return on Assets (ROA) and Return on Equity (ROE), therefore constraining the breadth and applicability of the results.

A study on how environmental cost, environmental transparency, environmental performance, and profitability affect firm value was carried out by Komara et al. (2024). The study examined ten basic and chemical firms listed on the Indonesian Stock Exchange between 2018 and 2022 using selective sampling. Regression analysis using panel data was used. The study tested its hypotheses using inferential statistics and an explanatory survey research methodology. While environmental disclosure was evaluated using a three-point scale based on the volume and quantification of provided data, environmental adverse expenses were calculated as the ratio of CSR expenditure to net profit after tax. Return on Assets (ROA) and Tobin's Q were used to determine profitability, and environmental performance was assessed using the proper ratings. The results indicate that while environmental expenses and profitability have no bearing on business value, environmental disclosure and performance are important factors in Indonesia's chemical and industrial sectors. The study evaluates the environmental accounting disclosures on market-oriented performance while neglecting accounting-based indicators and non-market results. The methodology employed a random-effects model, neglecting a comparison with fixed-effects, failing to address endogeneity.

The effect of environmental accounting disclosure on the financial performance of Nigerian listed companies was investigated by Nwamah et al. (2024). The study used an ex-post facto research design and was informed by stakeholder theory. A Robust Random Effect Model was used to analyze secondary data from yearly financial reports from 2013 to 2022.

Environmental disclosures were assessed using a disclosure index and content analysis. Descriptive statistics, correlation analysis, and variance inflation factor testing were all used in the preliminary data analysis. The findings showed that market performance is positively and considerably impacted by environmental effluents and waste declarations, and that market performance is also improved by adherence to environmental standards. Disclosures pertaining to biodiversity, worker health and safety, and environmental emissions, however, had fewer substantial or adverse effects on market performance.

Additionally, Saputra (2024) looked into the relationship between Market Performance (MP) and Environmental Disclosure (ED), particularly in the mining industry in Indonesia. Based on a review of the literature, his research verified that businesses with good environmental performance and transparency typically had better market performance because of increased consumer acceptance and trust. He recommended more investigation into the many elements influencing these connections. Using a literature review methodology, this study focusses on academic publications that have been indexed in the Sinta database during the previous five years. For national publications, the Sinta database is chosen as the main source. To make sure that the articles were in line with the research topic which explicitly examined the connections between environmental performance, environmental disclosure, and the market performance of businesses in the mining industry in Indonesia the inclusion criteria were carefully crafted. The study was guided by a number of theoretical frameworks, such as Stakeholder Theory, Signal Theory, and Legitimacy Theory. The findings show that while environmental performance has no effect on business value, financial performance, market capitalization, and Corporate Social Responsibility (CSR) do. The relationship between market capitalization and company value, as well as between environmental performance

and corporate value, is not mediated by CSR; rather, it acts as a mediator between financial performance and corporate value. The study is limited to a literature review of Indonesian mining research and does not conduct direct empirical analysis, thereby failing to provide original data on corporate disclosures or firm performance.

Yang et al. (2022) examined whether the quality of Environmental Information Disclosure (EID) improves firms' financial performance and whether internal and external stakeholders strengthen this relationship. The study focused on China's A-share listed pharmaceutical manufacturing firms over 2011–2019 and explicitly modeled moderating effects from environmental regulation, media pressure, and executive compensation. Using this sector-specific panel setting, the authors reported that higher EID quality was associated with lower financial performance, and that executive compensation did not meaningfully moderate the relationship; external governance channels (environmental regulation and media pressure) also did not generate the expected positive moderating influence. The authors further noted heterogeneity across regional marketization levels and ownership types, implying that institutional conditions shape whether disclosure quality translates into financial gains. Methodologically, the study's strengths include its explicit focus on disclosure quality (rather than volume) and attention to internal/external governance mechanisms; however, its industry-concentrated design (pharmaceuticals only) constrains generalizability to other high-emitting sectors, and the negative association raises endogeneity concerns (e.g., struggling firms could increase disclosure quality defensively, or disclosure could reveal costly environmental liabilities that markets/operations must absorb).

Ye et al. (2023) investigated the effect of corporate Environmental Information Disclosure (EID) on both environmental and financial performance and tested green innovation as a transmission mechanism. Using panel data for 1,125 Chinese A-share listed firms from 2009–2021, the authors applied a two-way fixed-effects model and then estimated mediation models to probe mechanisms. The study found that EID significantly improves corporate performance through green innovation: EID was associated with greater green innovation, which in turn enhanced financial performance for high-polluting firms and improved environmental performance for non-high-polluting firms. This design usefully distinguishes pathways (innovation-driven value creation) and recognizes that disclosure can be more consequential in pollution-intensive contexts where stakeholder scrutiny and regulatory pressure are higher. Limitations remain: the institutional setting (China) and reliance on firm-level panel models may not fully eliminate reverse causality (more capable firms may both disclose more and innovate more), and disclosure measures can still be sensitive to reporting style rather than substantive environmental action. Even so, the paper strengthens the argument that ESD is most financially beneficial when it is connected to strategic capability (innovation) rather than mere compliance.

Lin and Qamruzzaman (2023) examined how environmental disclosure, financial disclosure quality, Information Technology (IT) adoption, and corporate governance interact to shape firm performance sustainability. The study used secondary data from annual reports and related publications for 75 financial institutions listed in Bangladesh, spanning 1990–2019, and implemented multiple econometric techniques including system-GMM to address dynamic relationships. Findings indicated a positive and statistically significant association between firms' sustainability/performance and environmental and financial disclosure, IT

adoption, and good governance, with governance presented as an enabling condition that helps disclosures translate into stronger sustainability outcomes. The study contributes by expanding evidence beyond manufacturing into financial institutions and by treating governance and technology as complementary capabilities rather than simple controls. Nonetheless, the work's extremely long-time horizon introduces structural-break risk (major regulatory and market changes across decades), and "performance sustainability" can be difficult to compare with standard financial performance constructs (e.g., ROA, Tobin's Q). Additionally, the Bangladesh capital-market context may limit transferability to other jurisdictions with different disclosure enforcement and investor sophistication.

Sun et al. (2022) explored whether voluntary carbon disclosure improves firm value while accounting for the damaging effect of carbon emissions. Using listed companies in China's CSI 300 Index, the study tested (i) the relationship between emissions and firm value and (ii) whether the decision to voluntarily disclose carbon emissions is value-relevant. The authors reported that higher carbon emissions negatively affect firm value, while voluntarily choosing to disclose carbon emissions has a positive effect on firm value; they also applied a probit model to estimate the likelihood of voluntary carbon disclosure and noted that leverage increasingly influenced disclosure propensity over time. This study is important because it frames carbon disclosure as a potentially value-protective signal that can offset (or at least partially mitigate) the valuation penalty of emissions, consistent with signaling and legitimacy logics. Key limitations include potential self-selection (better-managed firms may be more willing to disclose), measurement sensitivity (binary or index-like disclosure indicators may not capture disclosure credibility), and restricted coverage (CSI 300 firms are large and may not represent smaller or privately held firms).

Liu et al. (2023) examined the simultaneous association among carbon emissions, carbon disclosure, and organizational performance through a legitimacy theory lens. Based on 62 UK FTSE 100 firms in carbon-sensitive sectors from 2010–2017, the authors found that carbon emissions are negatively associated with organizational performance, while firms with higher emissions tend to disclose more as a communicative legitimacy strategy to manage legitimacy threats. Importantly, carbon disclosure mediated the emissions–performance relationship, and the “legitimacy effect” became more pronounced after the UK introduced mandatory carbon reporting regulation in 2013. The study’s contribution lies in explicitly modeling disclosure as a strategic response to institutional pressure and demonstrating that regulation can change the economic meaning of disclosure (making it more capability-driven and comparable). However, the sample is narrow (large, carbon-sensitive UK firms), limiting generalization to broader markets, and mediation results still face causal identification challenges (policy timing helps, but disclosure may evolve with unobserved strategic shifts).

Long et al. (2023) focused on a financing-channel outcome by analyzing how Carbon Information Disclosure (CID) affects firms’ Weighted Average Cost of Capital (WACC) under differing regulatory pressures. Using 588 listed firms in heavy-polluting industries in Shanghai and Shenzhen from 2015–2019, the study examined lag effects and tested moderation by government and market regulatory pressure. The authors reported a U-shaped relationship between CID and WACC when CID was lagged two periods, implying that initial increases in disclosure may not immediately reduce financing costs (potentially because early disclosure reveals risks or imposes reporting costs), but beyond a turning point, higher-quality or more extensive CID is associated with lower WACC. They also found that

both government and market regulatory pressures positively moderated the relationship, and heterogeneity emerged by ownership structure and pollution monitoring intensity. The paper's strengths include focusing on WACC (a comprehensive financing metric) and explicitly modeling disclosure dynamics and nonlinearity; limitations include possible model dependence of the turning point, and the difficulty of distinguishing whether reduced WACC stems from genuine risk reduction versus reputational benefits or investor preferences for transparent firms.

Bonetti et al. (2024) investigated whether environmental disclosure affects firms' cost of capital by exploiting the Fukushima nuclear disaster as an exogenous shock that increased the salience of environmental information to investors. Using a large, hand-collected sample of Japanese firms, the authors found that firms disclosing carbon emissions experienced a smaller increase in cost of capital than non-disclosing firms following the disaster, and cross-sectional evidence suggested the mechanism was linked more to heightened investor uncertainty about energy supply shortages than to expectations of future regulatory costs. This design is influential in the ESD literature because it leverages a real-world shock to strengthen causal interpretation: when environmental risk becomes immediately financially relevant, disclosure appears to buffer financing penalties. Still, the context is specific (Japan; Fukushima; disaster-driven salience), so the magnitude and direction of effects may differ in "normal times" or in markets with different investor beliefs and disclosure institutions; moreover, hand-collected disclosure indicators may still face classification subjectivity unless standardized protocols are transparent and replicable.

Mondal and Bauri (2025) examined whether the extent of climate change-related disclosure aligned with TCFD recommendations influences firm value in India. The study analyzed 39 large non-financial firms from the NIFTY 50 Index, constructed a Climate Compliance Index (CCI) using content analysis of sustainability/integrated/ESG reports for 2019–2020 through 2022–2023, and regressed Tobin’s Q on disclosure compliance using OLS and GLS to improve estimation robustness. The authors found that TCFD-aligned climate disclosures were negatively associated with Tobin’s Q, while also noting that compliance levels were moderate but improving. This negative association can be interpreted in multiple ways: disclosures may reveal material climate transition risks and costs (which markets capitalize), investors may discount disclosures perceived as symbolic, or disclosure may be more common among firms facing greater climate exposure. The work is valuable for extending climate-disclosure evidence to a major emerging market and for operationalizing a TCFD compliance index, but it is limited by a relatively small sample, a short time window, and reliance on Tobin’s Q alone as the valuation proxy (leaving accounting performance and financing costs underexplored).

Li et al. (2023) explored whether CSR information disclosure incorporating environmental responsibility disclosure improves financial performance and whether green technology innovation serves as the “missing link,” focusing on energy-intensive firms. Using generalized least squares with fixed effects, the study reported that CSR disclosure significantly affects ROA, and that the environmental responsibility component of disclosure is positively associated with green technology innovation; the authors also concluded that green innovation mediates the disclosure–financial performance relationship. The study contributes a mechanism-based account consistent with the “capabilities pathway”:

disclosures matter financially when they correlate with innovation investments that improve efficiency, products, or legitimacy in environmentally sensitive industries. However, because the paper integrates environmental, shareholder, and employee responsibility dimensions, isolating the pure environmental disclosure effect can be challenging; moreover, mediation claims can be sensitive to model specification and timing assumptions (innovation benefits may materialize with longer lags than standard annual models capture).

Zhou et al. (2025) provided a technology-enabled approach to measuring carbon disclosure and linking it to multiple financial performance outcomes. In response to China's carbon neutrality agenda, the authors used natural language processing and related AI tools to analyze emissions disclosures for 4,336 Chinese A-share listed companies from 2017–2022 and examined market-based (stock returns, volatility) and accounting/valuation outcomes (ROE, Tobin's Q). They reported that higher-quality carbon disclosure is associated with higher stock returns, improved ROE, higher Tobin's Q, and reduced stock price volatility, with particularly strong benefits observed for high-carbon industries in the post "dual-carbon target" period. This study's main value is scale (thousands of firms) and measurement innovation (automated extraction of disclosure signals), enabling broader generalization within China and richer financial outcome coverage than single-metric studies. The main limitations are that the paper is an arXiv preprint (thus not yet peer-reviewed), NLP-based disclosure measures can misclassify boilerplate language as substantive disclosure, and causal inference remains difficult without stronger quasi-experimental identification; nonetheless, it demonstrates how disclosure research is shifting toward large-scale, text-based measurement that can better capture disclosure intensity and structure.

Saini et al. (2025) synthesized evidence across the ESG disclosure literature using meta-analysis and, critically for ESD, separated the combined ESG effect from the environmental sub-dimension effect. The authors analyzed 95 papers representing 60,247 firm-level observations and conducted subgroup analyses across cost of capital measures, accounting outcomes (e.g., ROA/ROE), and market measures (e.g., Tobin's Q), while also examining moderators such as firm size and visibility. They concluded that ESG disclosure positively influences firm performance and that the environmental (and social) disclosure effects are especially pronounced; across dimensions, disclosures reduce cost of capital and significantly improve performance. Meta-analytic work strengthens inference by averaging across many contexts, but it inherits the field's measurement inconsistencies (different disclosure scores and databases) and may still be affected by publication bias (positive findings being more likely to appear). Even so, the results provide a strong "central tendency" benchmark: environmental disclosure is more often associated with improved performance and financing terms than with harm, though context can flip the sign.

Wanget al. (2025) conducted a systematic literature review with meta-analytic elements to evaluate ESG disclosure impacts across multiple enterprise outcomes, including financial performance, costs, and risk (notably stock price crash risk). Drawing on studies published up to early 2024, the authors reported that ESG disclosure significantly influences seven outcome domains and is particularly effective in mitigating risk-related factors and costs, while also improving financial performance. Although the work is broader than environmental disclosure alone, it reinforces a key theme in the ESD-focused studies: markets appear to reward transparent sustainability information partly because it reduces perceived tail risks and uncertainty, which can translate into valuation and financing

advantages. The authors also emphasized that research has disproportionately focused on financial outcomes relative to environmental system outcomes and called for deeper mechanism testing and international disclosure standard harmonization, an important agenda given that non-comparable ESD metrics can weaken investor trust and blunt financial benefits.

Synthesizing the evidence, three patterns stand out. First, ESD most consistently improves market-facing outcomes (firm value, stock-return stability, and cost of capital) when disclosures are perceived as decision-useful and credible (e.g., carbon emissions disclosure buffering cost of capital increases after Fukushima; disclosure mediating legitimacy threats in regulated UK contexts; large-sample China evidence linking higher-quality disclosure to returns and lower volatility). Second, ESD effects are highly contingent: some settings show negative associations (e.g., pharmaceutical firms where higher EID quality correlates with lower financial performance; Indian TCFD compliance negatively related to Tobin's Q), suggesting that disclosure can surface costly risks, expose underperformance, or be adopted more intensely by already-risky firms (adverse selection). Third, mechanisms and boundary conditions matter: multiple studies point to green innovation and institutional pressure (regulation, market monitoring, mandatory reporting) as channels that convert transparency into financial gain, while nonlinearities (U-shaped CID–WACC) imply that partial or early-stage disclosure may not be sufficient to generate financing benefits until disclosure depth and comparability cross a threshold. Thus, the literature implies that “disclosure alone” is not a guarantee of improved financial performance; rather, financial benefits are most likely when ESD is (i) high-quality, (ii) aligned with substantive environmental management and innovation, and (iii) produced in environments where stakeholders can compare, verify, and

price the information. Key gaps remain around causal identification (separating value creation from self-selection), disclosure credibility/greenwashing measurement, and under-researched firm populations (SMEs and non-listed firms), particularly in emerging markets where reporting enforcement and assurance infrastructures vary widely.

2.3 Mediation Analysis

Mediation analysis was done on the following constructs.

2.3.1 Social Sustainability Disclosures and Firm Size

Vithana et al. (2021) aimed to assess whether Human Resource Disclosures (HRDs) a core component of the social pillar reflects organizational priorities toward labor and which firm attributes drive such disclosure. Analyzing FTSE 100 annual reports with a novel HRD index and estimating fixed-effects and pooled regressions, they modeled HRD breadth/depth against firm characteristics and governance variables. The regression tables include firm size (total assets) as a structural determinant; results show HRD varies with firm size alongside governance committees and productivity, indicating that larger companies disclose more and more substantive employee-related information (Vithana et al., 2021).

Ting (2021) asked whether large firms just talk CSR by testing how firm size affects CSR report disclosure and whether size moderates the disclosure performance link. Using Taiwanese listed firms (2010–2016) and panel regressions, the study measured CSR report issuance and scope and interacted disclosure with size. Findings showed that larger firms were more likely to disclose CSR information; moreover, CSR disclosure improved performance, and size moderated the association smaller firms gained more from marginal disclosure, but scale still increased the probability and depth of reporting (Ting, 2021).

Hossain et al. (2023) examined how disclosure practices and board attributes affect environmental and ESG performance across Europe and Asia, with firm-level controls including firm size. Using Refinitiv Eikon data for 8,094 firms (2016–2021) and fixed-effects estimators, they treated environmental and aggregate ESG performance as outcomes of disclosure and firm specifics. The authors found size positively associated with disclosure-related outcomes, reinforcing that larger firms both disclose more and show better measured sustainability performance likely because scale eases data collection, assurance, and stakeholder engagement (Hossain et al., 2023).

Rossi et al. (2020) (Management Decision/Measuring Business Excellence special issue) investigated human capital disclosure inside integrated reports and its determinants. Building an HC disclosure index via content analysis and estimating panel models, they tested whether firm attributes particularly size explain HC transparency. The study showed firm size significantly increases HC disclosure, suggesting larger firms' resources (HR systems, KPIs, assurance capacity) translate into richer social-pillar reporting within integrated-reporting regimes.

Makarem et al. (2023) critical perspectives on accounting assessed the state and determinants of corporate human rights disclosure among the world's 500 largest enterprises. Constructing a 13-item disclosure score (scope and quality) and estimating determinants, the authors examined whether scale predicts more robust human rights transparency. They documented wide gaps in disclosure and generally low quality, but firm size (global top-500 status and scale proxies) correlates with higher disclosure levels, reflecting resource availability and heightened exposure to stakeholder pressure.

Pham et al. (2023 stream) focused on modern slavery statement quality among large Australian issuers following the Modern Slavery Act 2018. Using content analysis of statements (ASX 100/ASX 300) and cross-sectional regressions, they tested whether size, Big-4 assurance, and standalone statements influence disclosure quality. The results indicate size is a significant positive driver of modern-slavery disclosure quality, underscoring that larger companies by resources and supply-chain reach produce more comprehensive social-risk reporting.

Drempetic et al. (2020) evaluated how firm size biases ESG scores, cautioning that size may inflate sustainability ratings because larger firms disclose more. Using several rating datasets and robustness checks, they showed that ESG's metrics correlate strongly with size, partly due to disclosure breadth rather than necessarily superior practices. Methodologically, their findings imply that any size–social disclosure nexus must be modeled carefully to avoid conflating reporting capacity with substantive performance.

Raimo et al. (2022) studied European ESG disclosure determinants using 7,840 firm-year observations from Bloomberg/Refinitiv, within the post-Directive 2014/95/EU context. Employing panel regressions to test micro- and macro-level drivers, they emphasized the roles of board CSR orientation and GRI use but also reported firm size as a robust correlate of greater ESG disclosure, which includes social information on employees and human rights. The European policy backdrop targeting “large” undertakings reinforces the regulatory mechanism through which size and disclosure co-vary.

Cazier et al. (2022) examined employee-related disclosures in the EU after the Non-Financial Reporting Directive. Using an employee-disclosure index and difference-in-

differences/fixed-effects models, they evaluated whether the directive and employee board representation affected the extent and quality of employee-related reporting. They found that the directive significantly increased employee-related disclosure, with large firms (within scope) showing more comprehensive reporting highlighting formal size thresholds as a policy lever for social transparency.

Christensen et al. (2021) investigated the real effects of the EU non-financial reporting mandate, which applies to large listed firms. Using a rich set of outcomes (CSR activities, assurance, and reporting practices) and exploiting the staggered implementation of the directive in a difference-in-differences design, they documented increases in CSR engagement and non-financial reporting among in-scope (large) firms. Though not exclusively “social,” the employee/human-rights components are central to the mandate, reinforcing that size-based regulation spurs social disclosure.

Makarem et al. (2022) drew on the Corporate Human Rights Benchmark (CHRB) to review global human rights disclosure themes and company responses to allegations. Synthesizing indicators on governance, due diligence, and remedy across 230 multinationals, they found persistent gaps but steady improvement among larger firms’ subject to investor and civil-society scrutiny implying that scale both necessitates and enables more systematic human rights reporting.

2.3.2 Corporate Governance Sustainability Disclosures and Firm Size

Chithambo et al. (2020) aimed to identify which board attributes most strongly predict voluntary Greenhouse-Gas (GHG) disclosure among UK listed companies. Using content analysis of Carbon Disclosure Project (CDP) responses for 215 London Stock Exchange

firms and multivariate regressions, they modeled GHG disclosure on board gender diversity and the presence of an environmental committee, controlling for size and other firm characteristics. The authors reported a positive association between board gender diversity and GHG disclosure, and an incremental effect for environmental committees; larger firms were systematically more likely to disclose, consistent with resource availability and visibility pressures that scale with firm size. The results support agency and resource-dependence views that diversified, sustainability-focused boards enhance disclosure while size amplifies both capability and scrutiny.

Karaman et al. (2020) examined whether corporate governance conditions shape the link between firms' green logistics performance and their GRI-based sustainability reporting. Using an international sectoral dataset and panel estimators (including moderation tests for governance quality), they tested whether country-level governance strengthens or weakens the translation of operational greening into disclosures. The study found that in weaker governance environments, firms tend to "substitute" with more disclosure to compensate for lower institutional credibility, while in stronger governance contexts, green performance and disclosure move more in tandem; firm size enters robustly as a positive determinant of reporting breadth.

Drempetic et al. (2020) investigated whether ESG rating sand by extension observed sustainability disclosure intensity are biased by firm size. Using Thomson Reuters ASSET4 ESG data and covariance-based structural equation modeling, the authors decomposed how size and data availability feed into ESG scores used by investors. They found a strong positive size-ESG association attributable partly to disclosure capacity and information

availability advantages of larger issuers, cautioning that researchers must control carefully for size when studying governance–disclosure relations and that investors should interpret ESG scores knowing they may favor large, well-resourced firms.

Raimo et al. (2023) aimed to unpack sustainability reporting dimensions (economic, environmental, and social) and assess how board characteristics affect each. Using panel regressions across a multi-country sample and separate indices for the three pillars, they tested board independence, gender diversity, CEO duality, meetings, and committees with standard controls (including firm size). They reported that several board attributes (e.g., independence and gender diversity) improved reporting quality across pillars, while CEO duality impaired it; size consistently increased the extent/quality of disclosures, aligning with legitimacy and political-cost arguments that larger firms disclose more.

Zhang et al. (2023) (Sustainability) focused on China and asked which board characteristics best explain Corporate Sustainability Reporting (CSR) across the three pillars. Using 9,842 firm-year observations from Shanghai and Shenzhen exchanges (2006–2019), they applied FMOLS and DOLS to address endogeneity between governance and reporting. Findings showed that larger boards, independent directors, more board meetings, and a sustainability committee were positively associated with CSR reporting; CEO duality reduced it. Among controls, company size and ROA were positively related to economic and environmental reporting, underscoring size as a structural determinant of disclosure capacity.

Chouaibi et al. (2021) aimed to assess whether board attributes enhance Integrated Reporting (IR) quality for European ESG-index constituents. Using linear panel regressions on 253 firms (2010–2019) with IR quality based on content compliance, they tested board size,

independence, diversity, and leadership structure, controlling for firm size and other factors. The authors found that larger, more independent and diverse boards were associated with higher IR quality; given IR's multi-capital scope, they interpreted size as a proxy for resources and stakeholder exposure that promote more comprehensive, decision-useful disclosures.

De Masi et al. (2023) asked which board profiles (combinations of characteristics) lead to high ESG reporting. Using configurational methods (e.g., fsQCA) on international data, they identified 16 high-reporting board profiles and showed complementarity and substitution among traits such as independence, expertise, and gender diversity. While not centered on size, their models controlled for firm size, and the authors stressed that robust governance configurations are more likely in larger firms with resources to formalize ESG oversight, again implying that size conditions the governance–disclosure link.

Al-Shaer and Zaman (2023), examined whether board gender diversity improves ESG disclosure in UK settings following the evolution of non-financial reporting regulation. Using multi-year panel models distinguished by E, S, and G components, they found that gender diversity increases ESG disclosure quality, with stronger effects in larger issuers likely because such firms can operationalize diversity into committee structures, KPIs, and assurance; the work highlights that governance levers and firm size jointly shape disclosure quality.

A cross-country panel by Bhat et al. (2023) investigated whether corporate board structure predicts ESG performance (a disclosure-sensitive construct). Using 2015–2020 data for emerging-market firms and fixed-effects regressions, they found that board size and

independence positively relate to ESG performance, and noted that firm size correlates with higher ESG scores consistent with heavier stakeholder pressure and better reporting systems in larger firms. The authors argued that governance reforms are most effective when combined with the reporting infrastructure typically found in large issuers.

Zhang (2021) conducted a global test of board gender diversity and carbon disclosure a material environmental subset of sustainability reporting. Using 22,841 firm-year observations across 38 countries (2010–2019) and panel estimators, the study documented a positive relation between female director share and carbon disclosure propensity. The models controlled for firm characteristics, and size retained its well-known positive association, which the authors interpreted as a mix of resource capacity (measurement/assurance) and visibility to capital markets.

2.3.3 Environmental Sustainability Disclosures and Firm Size

Gerged (2020) examined whether internal governance and firm characteristics including size shape Corporate Environmental Disclosure (CED) in an emerging-market setting. Using 500 firm-year observations for Jordanian listed firms (2010–2017), the study combined panel quantile regressions with two-step dynamic GMM to address heterogeneity and endogeneity in disclosure behavior. Gerged (2020) reported that larger firms were systematically more forthcoming in CED across the conditional distribution of disclosure, consistent with legitimacy and political cost arguments that size heightens public scrutiny and creates incentives to disclose (Gerged, 2020).

Luo et al. (2024) investigated how corporate size and performance jointly influence environmental information disclosure quality for China A-share firms. Drawing on more than

3,000 observations for 2008–2017, they built an Environmental Information Disclosure Index and estimated unbalanced panel models with industry and year fixed effects. The authors documented that firm size (proxied by total assets) had a positive and statistically significant association with disclosure quality, even after controlling for profitability, leverage, and industry pollution intensity; they concluded that larger firms possess superior resources and stakeholder pressures that translate into richer disclosure (Luo et al., 2024).

Mukiri and Muathe (2020) assessed whether board size and firm size explain variation in environmental accounting disclosure among Nairobi Securities Exchange issuers. Using a longitudinal design on 27 listed firms (2008–2017) and OLS with robustness checks, they found that firm size positively and significantly predicted environmental disclosure, while board size had a negative effect. Their results imply that in an African emerging market, scale effects (visibility, resource availability, and pressure from institutional investors) drive fuller environmental reporting.

García-Sánchez et al. (2021) sought to identify corporate attributes that shape the extent and quality of environmental disclosures over time. Applying a longitudinal content analysis across a wide set of industries and testing hypotheses within a legitimacy-theory lens, they modeled disclosure against firm size, age, leverage, profitability, board independence, and gender diversity. The study reported that size exerts one of the strongest positive effects on both the quantity and quality of environmental disclosure, reinforcing the notion that larger firms respond to wider stakeholder audiences and reporting expectations.

Buallay (2022) conducted a bibliometric and meta-analysis to synthesize the ESG disclosure–performance literature and its firm-level antecedents. Pulling effect sizes across

studies published since 2015 and estimating random-effects models, the paper highlighted firm characteristics (including size) as consistent drivers of disclosure intensity. The meta-analytic evidence pointed to a robust positive average effect of firm size on sustainability disclosure, interpreting the result as both a resource capacity effect and a legitimacy response to the higher political costs faced by large companies.

Lu and Zhang (2023) aimed to understand how Environmental Information Disclosure (EID) expenditures relate to production efficiency and whether effects vary across firms. Using 2010–2018 data for Chinese listed manufacturers, they adopted a conditional nonparametric frontier to estimate firm-level productive efficiency and then linked it to EID spending. While not centered solely on size, the authors documented heterogeneity consistent with scale: larger firms were better able to convert EID-related environmental expenditures into efficiency gains around the turning point of an inverted U, suggesting that size can mitigate short-run disclosure costs by leveraging learning and technology.

Şendur and Coşkun (2019) investigated determinants of voluntary greenhouse-gas disclosure among Turkish listed firms, focusing on financial characteristics and board structure. Using two proxies for disclosure behavior (CDP response and transparency tendency) and logistic regressions, they found that firm size significantly increased the likelihood of both responding to CDP and providing transparent emissions information. The authors interpreted size as a proxy for visibility and resource availability that lowers the marginal cost of measurement and assurance, thereby promoting environmental disclosure.

Anagnostopoulos et al. (2022) examined whether ESG disclosure affects European firms' performance after the Non-Financial Reporting Directive (NFRD), while acknowledging

firm size as a key conditioning factor. Using panel data for large issuers and fixed-effects estimators, they reported that disclosure improved performance particularly among larger firms' subject to the directive's scope, implying that materiality thresholds and reporting infrastructure scale with size and facilitate richer environmental transparency.

Gerged (2020) also provided methodological innovations relevant to firm size effects by applying panel quantile regressions and dynamic GMM. Beyond governance channels, the paper showed that size remains positively associated with disclosure at both lower and higher quantiles that is., size matters for laggards and leaders, pointing to the pervasiveness of legitimacy pressure regardless of baseline disclosure levels.

Hossain et al. (2023) explored environmental disclosure antecedents and consequences across Europe and Asia using Refinitiv Eikon data for 8,094 firms (2016–2021). Employing fixed-effects panel regressions, they modeled environmental and aggregate ESG performance as outcomes of disclosure and firm specifics. Firm size emerged as a consistent positive correlate of disclosure and performance, with the authors arguing that large firms possess both stakeholder incentives and compliance capacity, making environmental reporting more comprehensive.

Zhang et al. (2022) investigated how environmental information disclosure affects investor reactions in China, controlling for firm attributes including size. Using 2004–2020 firm-year data and event-study methods layered onto multi-factor asset-pricing models, they found that enhanced disclosure generated positive abnormal returns and that larger firms experienced stronger investor responses, plausibly because improved transparency is more decision-useful when baseline information environments are broad and liquid.

García-Gómez et al. (2021) analyzed the impact of Directive 2014/95/EU on environmental disclosure quality in Italy, differentiating “hard” versus “soft” information. Applying a pre-/post-directive panel design with matching and fixed effects, they observed significant increases in environmental disclosure quality among firms within the directive’s scope predominantly larger issuers. The authors concluded that size-based regulatory thresholds help explain cross-sectional differences in environmental reporting behavior.

Cui et al. (2020) evaluated whether mandatory environmental information disclosure improved firm value using a difference-in-differences design around China’s regulatory changes (2006–2016). The authors reported value gains after disclosure mandates and, in heterogeneity tests, stronger effects among larger firms, consistent with greater investor attention and lower marginal reporting costs in large organizations (Cui et al., 2020).

Li et al. (2022) tested how business strategy types (prospector vs. defender) shape environmental disclosure quality, with firm size as a control and contextual variable. Using A-share heavy-pollution industries (2008–2020) and fixed-effects regressions, they found that prospector-type (innovation-oriented) firms disclosed less than defender-type firms, but larger firm size mitigated this gap by enabling disclosure processes and system seven for prospectors.

Xie and Zhang (2023) examined whether environmental information disclosure reduces stock price crash risk among heavily polluting Chinese firms (2013–2019). Using panel regressions with firm and year fixed effects, they showed that better disclosure lowered crash risk and that size moderated the effect, larger firms enjoyed a stronger risk-reduction benefit, in line with their greater analyst coverage and investor base.

Sultana et al. (2024) assessed drivers of sustainability performance disclosures in India's BSE market (2017–2022) under the GRI framework. Using content analysis to score disclosure and multivariate regressions, they found that firm size remained a dominant driver of disclosure breadth and depth across sectors, reinforcing cross-country evidence that scale facilitates reporting capability and stakeholder engagement.

2.3.4 Firm Size and Financial Performance

Firm size has been utilized as an intermediary factor in a variety of research contexts to examine its impact on the link between financial performance and other variables. The interaction of several factors, such as corporate governance, sustainability policies, and financial success, is significantly influenced by the size of the company.

Ismail (2023) investigated how company size mediated the connection between profitability and working capital management in Nigerian listed industrial goods companies. A purposive sample technique was used to choose five businesses for the research. Partial least squares Structural Equation Modelling (PLS-SEM) was used to analyze the data, which came from the financial accounts of these businesses as well as the Nigerian Exchange Group Plc. The results showed that profitability was much enhanced by the accounts payable period. However, the Cash Conversion Cycle (CCC) and the accounts receivable term had a detrimental impact on profitability. Firm size completely mediated the effects of the accounts payable, accounts receivable, and CCC periods on profitability, but it did not mediate the effect of the inventory turnover period on profit.

Similar to this, Tapang et al. (2021) investigated the role that firm size plays in mediating the relationship between financial success and Corporate Social Responsibility (CSR) spending

in Nigeria's non-financial sector. Secondary data from the financial statements and annual reports of non-financial companies listed on the Nigerian Stock Exchange were used in the study. The authors tested the mediating influence of company size using Ordinary Least Squares (OLS) regression. According to their findings, larger businesses often devote more money to CSR initiatives than do smaller businesses, and this investment had a beneficial impact on Return on Equity (ROE). The Sobel test verified that business size acted as a partly mediating factor in the link between CSR spending and ROE.

The relationship between the CAMEL grading model and the financial performance of deposit-taking Savings and Credit Cooperatives (SACCOs) in Kenya was investigated by Mirichii et al. (2023), who also looked at the mediating effect of company size. The study used a multistage sampling technique and concentrated on 176 SACCOs. With larger institutions exhibiting higher market value and superior financial performance, the findings showed that business size significantly mediated the relationship between the variables of the CAMEL model and financial performance.

The mediating and moderating effects of business size and finance on the connection between innovation and performance among SMEs in 29 Eastern European and Central Asian countries were examined (Kijkasiwat & Phuensane, 2020). They made use of information from 12,890 SMEs in the World Bank's BEEPS study. According to their analysis, the association between innovation and business performance was tempered by firm size, with innovation having a greater beneficial effect in larger organizations. Furthermore, it was discovered that, with a standardized path coefficient of .015, company size mediates the relationship between financial capital and innovation and performance.

Lastly, Offia and Ajuonu (n.d.) investigated how business size mediated the connection between enterprise risk management committee diversity and deposit money bank performance in Nigeria. Using data from ten banks, the study used panel regression analysis and summary statistics. Their results demonstrated that, although the association between committee competence and performance was less clear-cut, company size significantly mediated the relationship between gender diversity in risk management committees and bank performance.

Yadav et al. (2021) aimed to examine how firm size interrelates with growth and profitability across Asia-Pacific markets using a very large multi-country panel of listed non-financial firms. The econometric methodology employed a dynamic fixed-effects framework on COMPUSTAT Global data (1995–2016), classifying firms as small, medium, or large based on multiple size proxies (total assets, net sales, and market capitalization) to test robustness. Their models assessed whether size has a direct effect on profitability and whether growth mediates or conditions that link. The authors reported that firm growth strongly and positively associates with profitability, and that the size–profitability link is sensitive to how size is measured and to competitive and macro-financial controls; in some specifications the size effect attenuates once growth and leverage are accounted for. Therefore, the paper underscored that the size–performance nexus is nuanced rather than monotonic and depends on operational and market contexts.

Pallayil and Ambrammal (2022) aimed to assess whether firm size improves or impairs performance in Indian manufacturing from 2007 to 2019. The econometric methodology employed dynamic panel estimators (two-step system GMM) to address endogeneity while testing multiple performance proxies (e.g., ROA and market-based indicators). The authors

found that size is positively associated with accounting-based performance (consistent with economies of scale and scope) yet it can negatively relate to market-based performance measures, suggesting investor discounts for bigness when balance-sheet “bulk” raises perceived risk or reduces agility. These findings highlight that results hinge on the performance lens: larger firms may convert assets more efficiently (higher ROA) but not necessarily create proportionate market value (lower Tobin’s Q), reinforcing the need to triangulate across metrics.

Fonseca et al. (2022) aimed to determine whether size matters for the profitability of newly established firms, tackling the “liability of newness.” Using microdata on start-ups and young firms and econometric models suited to skewed profitability distributions, the authors examined how initial size and subsequent scaling correlate with ROA/ROS while conditioning on survival and capitalization. The methodology combined panel techniques with robustness checks on size definitions. Findings indicated that size is a statistically significant determinant of early profitability and that, across much of the profitability distribution, larger young firms tend to exhibit better operating returns, although benefits diminish at higher quantiles; the results emphasize resource buffers and market access advantages linked to initial scale.

Fernández et al. (2019) aimed to disentangle the relative weight of firm-specific versus industry effects on performance for small, medium-sized, and large firms in Europe. The econometric methodology employed variance-decomposition and multilevel approaches to separate within-industry firm effects from industry structure effects across size classes. The authors identified that the firm effect generally dominates performance variation, but its

dominance differs by size: for medium-sized firms, industry conditions play a comparatively larger role than for small and large firms. These findings suggest that size positions firms differently vis-à-vis competitive forces and strategic latitude, implying that the size–performance relationship is mediated by how much a firm’s own resources versus its industry context matter.

Kramoliš and Školudová (2025) aimed to identify determinants of firm performance in Czech service industries with a focus on whether size systematically influences returns. The econometric methodology applied two-step system GMM on a recent panel of service firms to address endogeneity and persistence in profits. The analysis revealed a negative and significant effect of firm size on performance, indicating that, in these services, larger scale may bring complexity costs or demand frictions that outweigh operational efficiencies. The authors’ evidence adds to the mixed literature by showing that service-sector settings can exhibit decreasing returns to organizational scale when coordination costs and customer-centric agility become pivotal.

Kliestik et al. (2023) aimed to determine whether profitability indicators (ROA, ROE, ROS) changed materially across size categories before, during, and after the COVID-19 shock in the Visegrad Four economies. The methodology combined one-sample Wilcoxon tests with correspondence analysis on 8,671 enterprises classified by size (ORBIS) to track shifts from 2019 to 2021. The analysis showed that median ROA and ROE did not change significantly across size categories, although small firms saw clearer stress on ROS, consistent with thinner pricing power during demand disruptions. The findings suggest that size alone did

not guarantee resilience; policy environments and sector positions conditioned outcomes, while small firms' margin sensitivity was more visible in sales-based indicators.

Kijkasiwat and Phuensane (2020) aimed to evaluate whether firm size moderates the well-known positive link between innovation and firm performance among SMEs. Using survey-based microdata and PLS-SEM to handle latent constructs, their models incorporated product/process innovation and financial constraints, with firm performance proxied by accounting and perceptual measures. The results indicated that innovation improves performance, and firm size strengthens this effect larger SMEs were better able to appropriate returns from innovation due to resource slack, market reach, and complementary capabilities. The study highlights size as a boundary condition for translating innovative inputs into realized performance gains.

Demirgüç-Kunt et al. (2019) (*Acta Oeconomica*) aimed to test whether larger boards improve shareholder value creation and how this effect varies by firm size. Employing panel regressions that interact board characteristics with firm size buckets, the econometric approach isolated size-contingent governance effects on performance (e.g., Tobin's Q). The findings pointed to size-contingent outcomes: increases in board size did not uniformly enhance value and in larger firms could be associated with lower value creation, consistent with coordination and monitoring frictions amplifying with organizational scale. This suggests that governance design interacts with firm size in shaping performance, cautioning against one-size-fits-all board prescriptions.

Martínez-Turégano (2020) aimed to provide a macro view of how a country's firm-size distribution relates to productivity, an essential pillar of performance. Using Eurostat

Structural Business Statistics and a decomposition that separates sectoral, size-distribution, and within-class productivity effects, the analysis found an overall positive relation between firm size and labor productivity; moreover, countries skewed toward smaller firms (e.g., Greece, Italy) exhibit notably lower aggregate productivity partly due to size distribution effects. Although not a micro-causal paper, the evidence reinforces that, at scale, larger average firm size is associated with stronger productivity performance, informing the micro literature on size and firm-level outcomes.

Tsiapa (2021) aimed to uncover the characteristics driving profitability among large Greek firms during 2011–2016, a period of severe macroeconomic stress. The econometric methodology used dynamic system-GMM on panel data for 125 large firms, explicitly modeling profit persistence and endogeneity. The analysis showed that higher productivity and leaner balance-sheet structures limited assets and liabilities implying lower risk were associated with higher profitability. Within the universe of large firms, this indicates that performance improves when “effective size” in terms of asset heaviness is restrained relative to sales, highlighting that beyond sheer scale, asset intensity and flexibility condition profitability.

Mazón-González et al. (2020) aimed to test whether sustainable performance is primarily explained by “firm effects” or “industry effects,” and whether this differs by size. Using a massive sample (~15,000 Spanish firms) and hierarchical linear modeling with a time-varying performance construct (rooted in ROA dynamics), the authors separated the contributions of firm-level and industry-level drivers. They found that the firm effect overwhelmingly dominates sustainability of performance regardless of firm size, though

industry effects are relatively more important for small firms. The implication for the size–performance debate is that, while size shapes exposure to industry forces, idiosyncratic resources and capabilities are central across the spectrum.

Bolarinwa and Obembe (2019) aimed to test the causality between firm size and profitability among Nigerian listed financial firms asking whether size drives profits or profits drive size. The econometric methodology employed a panel vector autoregression (PVAR) and two-step system-GMM to address endogeneity and profit persistence. Results documented significant dynamic interdependence: size Granger-causes profitability (consistent with scale economies and market power) and profitability Granger-causes size (internal financing and growth), confirming a bidirectional nexus in an emerging-market financial context. This evidences feedback loops whereby performance enables scaling and scaling, in turn, can reinforce performance.

Kuncová et al. (2018) asked, “Are large firms more profitable than small and medium firms?” across 54,654 companies in 21 European countries over 2004–2013. The econometric approach controlled for country and industry fixed effects to isolate size-related profitability differentials (e.g., ROA). Findings suggested that larger firms tend to display higher profitability on average, though with substantial heterogeneity across industries and nations; the results support the idea that average size correlates with efficiency advantages, but that institutional and sectoral contexts modulate the premium to scale.

2.4 Control Variables on Firm Performance Literature

The following literature explicates the control variables for the study.

2.4.1 Firm Age and Firm Performance

Cowling et al. (2017) aimed to assess whether firm age, prior experience, and access to finance shaped SME performance after the 2008–2009 global financial crisis in the UK. Using six waves of post-crisis survey data and panel econometrics, their methodology separated age and experience effects and controlled for sector clustering. The findings showed a persistent negative age growth relationship young firms contributed disproportionately to recovery among high-growth SME whereas prior entrepreneurial experience was not strongly performance-enhancing in this turbulent context. The authors conclude that while experience mattered less in the post-crisis environment, younger firms' dynamism remained central to growth, consistent with stylized facts on age growth gradients and the outsized role of younger cohorts in job creation.

Anyadike-Danes and Hart (2018) aimed to track survival and growth outcomes over 15 years for a complete UK cohort of firms founded in 1998, to illuminate age-linked performance trajectories. Employing a cohort-tracking methodology on 239,000 firms, the authors used survival functions, origin–destination size matrices, and trajectory analysis. Findings revealed extraordinary mortality (90% exit by age 15), and that growth when it occurs concentrates in the first five years, with later growth both rarer and slower. Hazard rates remained materially high even among survivors, and small initial size did not doom performance provided subsequent scaling occurred early. The results imply that age is tightly coupled with survival probabilities and growth potential: the “early window” matters most, and performance persistence attenuates with age, reinforcing the need to model lifecycle phases when testing the age–performance nexus.

Grazzi and Moschella (2017) aimed to identify how youth and export participation shape firm growth, isolating the role of age in growth dynamics. Using linked firm-level and trade data and growth regressions, their methodology focused on determinants of growth among small, young exporters. The findings showed that export status and youth jointly predict higher growth, but that the growth premium declines with age, consistent with learning and selection dynamics: younger exporters seize opportunities and expand quickly, while older incumbents face diminishing marginal returns to exporting on growth. The paper thus connects age to performance via exporting channels highlighting that age interacts with internationalization to shape growth outcomes and that lifecycle effects should be embedded in models of export-driven performance.

Pellegrino (2017) aimed to examine how age affects the perceived obstacles to innovation, a key antecedent of performance. The methodology applied random-effects models on Spain's PITEC panel (2004–2011) to compare “young” and “mature” firms' reported deterring and revealed barriers. Findings indicated a clear negative relationship between age and perceived financial constraints: young firms felt financing barriers more acutely, whereas mature firms emphasized skills shortages and market-structure obstacles once engaged in innovation projects. Because innovation capability links to future productivity and profitability, these age-differentiated barriers imply distinct performance pathways: youth confer agility but faces financing frictions; maturity brings resource depth but potential rigidity both shaping downstream financial outcomes.

Warusawitharana (2018) aimed to quantify how profitability evolves over the firm lifecycle and to rationalize the pattern with theory. Using data on private and public firms and

estimating/comparing to a dynamic lifecycle model, the methodology documented empirical age–profitability profiles and simulated firm policies via value-function iteration. The study found profitability is hump-shaped with age rising for young firms (product development gains) and then gradually declining for mature firms (wage pressures and entrant competition), with financing and growth decisions more sensitive at young ages. This lifecycle–profitability pattern provides a structural basis for observed non-linear age–performance relations, reconciling evidence of youthful growth spurts with later-stage margin erosion.

Pervan et al. (2019) aimed to determine firm-, industry-, and macro-level drivers of profitability in Croatian manufacturing, explicitly testing the role of firm age. The methodology used a large panel (9,359 firms, 2006–2015) and dynamic panel estimators (system GMM), enabling robust inference under endogeneity. Results showed that several firm-specific variables dominate profitability, and age tends to be positively associated with profitability in multiple specifications, albeit with modest economic magnitude consistent with accumulation of capabilities and reputational capital as firms mature. Still, the effect is not monotonic across all models, underscoring potential non-linearities and sectoral heterogeneity. The study supports incorporating age as a structural determinant of ROA/ROE in profitability models, while being cautious about generalizability across contexts.

Hosono et al. (2020) aimed to explain how sales and productivity grow as firms age, focusing on the role of intangible capital. The methodology-built firm-level intangible-capital panels (software, organizational capital, R&D) for Japan (1991/1994–2015), linking them to physical-productivity (TFPQ), mark-ups, and misallocation measures. Findings showed that

TFPQ is central to sales growth with age and that intangible capital accumulation is a key engine of age-related performance improvements, especially for young firms closing capability gaps. The implication is that age correlates with performance partly because aging enables the build-up of intangibles that sustain productivity and margins clarifying a micro-mechanism behind observed age–profitability/productivity profiles.

Asimakopoulou et al. (2023) aimed to assess whether international R&D sourcing elevates innovation performance differently across the firm-age spectrum. Using a panel of 9,000+ Spanish firms (2008–2016) and fractional-response models with moderation by age, the methodology distinguished “born-international sourcers” from later internationalizes. Findings indicated that international R&D sourcing boosts new-to-market innovation, with the effect negatively moderated by age i.e., younger firms benefit more from global knowledge sourcing. Because innovation outcomes feed future revenue growth and profitability, the results imply that age conditions how external knowledge strategies translate into financial performance, favoring young firms’ opportunity capture.

Wang and Xu (2021), aimed to test whether firm age influences realized idiosyncratic return volatility, a risk attribute tied to the cost of capital and performance stability. Using 26,676 firm-year observations (2001–2019) and panel regressions, the methodology measured realized idiosyncratic volatility from high-frequency returns. Findings showed a negative association between age and realized idiosyncratic volatility: older firms’ returns were less idiosyncratically volatile. This risk attenuation with age suggests a financing/performance channel: lower volatility can reduce discount rates and earnings variability, stabilizing

profitability and valuation. Although the paper focuses on market-based risk, it supports the view that age can shape financial performance indirectly via the risk–return trade-off.

Bercovitz et al. (2023) (appearing as “Firm growth and profitability: The role of age and size,” aimed to clarify how age and size jointly condition the growth–profitability nexus. Using a broad, multi-industry panel and dynamic analysis on growth conditional on profitability states, the methodology uncovered state-dependent effects and interactions between age and size. Key findings reported that very small, young firms face fewer risks from growing at low profitability, while the benefits of size for future performance depend on current profitability, pointing to lifecycle-contingent trade-offs and thresholds. The study implies that age does not act alone: it interacts with scale and profitability states to shape feasible growth paths and the speed of moving to higher-performance regimes.

Zainudin et al. (2024) aimed to evaluate whether firm age mitigates the adverse impact of financial constraints on growth and profitability across ASEAN-6 listed firms (2009–2019). The methodology combined fixed effects, difference-GMM, and system-GMM to identify causal effects of financing constraints (e.g., SA Index) on asset growth and profitability (ROA/ROE), and tested age interactions. Findings showed that financial constraints significantly depress growth and profitability, but older firms are less adversely affected; age moderates these links, with results robust to alternative measures. This indicates that age-related resource buffers and reputation can cushion financing frictions, supporting performance resilience a vital nuance for policy and capital-market development in emerging economies.

2.4.2 Firm Leverage and Firm Performance

García-Gómez et al. (2021) aimed to test whether leverage enhances or harms performance in a highly debt-sensitive services sector. Using panel data on 313 U.S. hospitality firms (2001–2018), they combined OLS, fixed/random effects, and two-step system GMM to tackle endogeneity and dynamic adjustment. The econometric methodology also explored nonlinearity to detect optimal capital-structure bands. The authors reported a predominantly negative leverage performance link consistent with pecking-order predictions and documented an inverted U shape: while modest leverage coincided with higher performance, the high indebtedness common in this industry left firms on the descending (value-reducing) side of the curve. Robustness checks across specifications and alternative measures (ROA/ROE/Tobin's Q) supported the central conclusion that, in hospitality, excessive debt erodes operating results.

Tian et al. (2024) aimed to clarify whether debt structure affects firm performance directly and indirectly through business-model innovation in China's high-tech Growth Enterprise Market. Employing a dynamic panel system-GMM design for 2016–2022 with lagged performance and leverage terms, they modeled ROA/EPS and tested mediation. The methodology detected lagged and nonlinear effects: prior-period total-debt ratio related to current performance in a U-shape, with short-term debt's one-period lag improving results, while business-model innovation significantly mediated the leverage performance link (Sobel/bootstrapped tests). Their findings imply firms can escape low-performance zones by adjusting debt toward levels that unlock innovation benefits consistent with a tax-shield vs. distress-cost trade-off operating through innovation capability.

Attia et al. (2023) aimed to determine whether the leverage performance relationship depends on firm size thresholds in MENA markets. Using 6,986 firm-years (2007–2020) across 499 listed firms, they estimated a dynamic panel threshold regression (DPTR) to allow coefficients to switch once log-size crosses internally estimated cutoffs. The methodology uncovered pronounced nonlinearities: debt's effect on Tobin's Q, ROA, and ROE changed sign around estimated size thresholds, indicating that smaller firms suffer more from leverage while larger firms can sustain higher debt before distress costs dominate. The results reconcile mixed findings in prior work by showing that size conditions capital-structure outcomes and that optimal leverage is firm-scale contingent.

Arhinful and Radmehr (2023) aimed to identify how different leverage proxies relate to performance for non-financial corporations in Japan. Analyzing 263 Tokyo Stock Exchange firms (2001–2021) in the automobile and industrial producer sectors, they applied GMM estimators to handle endogeneity and autocorrelation. The methodology contrasted several financing risk metrics (equity multiplier, interest-coverage, cash-coverage) against ROA, ROE, EPS, and Tobin's Q. Findings showed positive, statistically significant effects of equity-multiplier and interest-coverage on accounting and market performance measures, suggesting that in Japan's context, prudent debt usage, reflected in coverage ratios, can enhance profitability and value. This sector-focused evidence tempers generalized "debt-is-bad" narratives by highlighting quality of debt (ability to service) as crucial for performance.

Le and Phan (2017) aimed to re-examine whether leverage depresses performance in an emerging, bank-centric setting. Using all non-financial firms listed in Vietnam (2007–2012), they estimated panel models relating short-, long-, and total-debt ratios to ROA and other

outcomes. Their econometric strategy (fixed/random effects with controls) revealed that all debt ratios are significantly negatively associated with performance, indicating that, in a small transition economy with higher borrowing costs and weaker creditor enforcement, distress costs can dominate tax benefits even at moderate leverage. The results underscore institutional setting as a determinant of the optimal capital structure.

Dao and Ta (2020) aimed to reconcile conflicting empirical results by synthesizing the direction and magnitude of the leverage–performance link and examining moderators (region, development level, firm size, methods). Using formal meta-analysis over a curated set of studies, they reported that the association varies across contexts and measurements, with mixed signs overall but a central tendency consistent with nonlinearity (benefits at low debt, costs at high debt) and sensitivity to methodological choices. The paper highlighted that single-theory explanations (pure trade-off or pecking order) are insufficient; instead, institutional frictions and firm characteristics shift where firms sit on the performance-leverage curve.

Priyan et al. (2023) aimed to evaluate how capital-structure and asset-structure choices shape performance among East African listed non-financial firms. Using a multi-country panel (2005–2019), they employed GMM estimators to address endogeneity between financing policy and outcomes. The methodology considered short- and long-term debt alongside asset tangibility and firm controls. Results showed that both capital-structure decisions and asset mix significantly influence ROA/ROE, with evidence that certain debt components can improve performance when matched to asset structure (maturity alignment), whereas

misalignment erodes returns. The study's regional perspective emphasizes that debt's effect hinges on how it is paired with productive assets and country-level financing conditions.

Kijkasiwat et al. (2022) aimed to test whether corporate governance affects performance via the mediating role of financial leverage across developed and emerging economies (2,568 firms; 2002–2017). Using two-step dynamic panel GMM, they modeled governance → leverage → performance pathways. The methodology found that stronger governance improves performance in part by restraining excessive leverage, while “too much” debt can turn the governance–performance link negative through heightened distress risk. The findings position leverage as a mechanism transmitting governance quality to firm outcomes, and caution that even well-governed firms can underperform if capital-structure choices overshoot optimal levels.

Yamin et al. (2024) aimed to revisit the leverage–performance nexus across 11 MENA countries using both static fixed-effects and two-step system-GMM on 6,870 firm-years (2013–2022). The methodology allowed for endogeneity and heterogeneity across countries. The authors found a positive average correlation between capital-structure ratios and performance, robust to GMM, but also reported cross-country variability, implying that financial depth and institutional quality shift the benefits/costs trade-off. The results suggest that, where credit markets function efficiently and investor protections are stronger, firms can sustain higher leverage without a performance penalty.

Arhinful and Radmehr (2023) aimed to replicate and extend their Tokyo evidence using a broader model space and alternative leverage/performance measures. Leveraging random-effects and GMM across 2000–2021, they again found that interest-coverage and related

debt-service capacity measures have positive, significant associations with ROA/ROE/Tobin's Q, while overall debt load must be disciplined to avoid tipping into value-destructive zones. The methodological contribution was to triangulate across estimators and stress debt-service quality over raw debt ratios as the practical signal managers and investors should monitor.

2.5 Summary of the Research Gaps

The reviewed literature demonstrates that sustainability disclosures, including environmental, social, and governance disclosures, are increasingly associated with improved financial performance across different institutional and industrial contexts. Studies such as Sroufe and Gopalakrishna-Remani (2019), Singh and Chakraborty (2021), Lambe et al. (2023), and Aydoğmuş et al. (2022) established positive relationships between sustainability disclosures and financial performance. Similarly, governance-related studies by Wanjau (2019), Temba et al. (2023), and Choi et al. (2024) emphasized that governance transparency and monitoring mechanisms significantly influence firm performance and the effectiveness of sustainability disclosures. However, despite these positive findings, other studies such as Serem et al. (2024) and Aniebiet and Emenyi (2024) reported insignificant relationships between sustainability disclosures and financial performance, suggesting that the relationship remains inconclusive and context-dependent.

The review further reveals several empirical, methodological, and contextual gaps. Empirically, many studies focused on single dimensions of sustainability disclosures, particularly social or governance disclosures, while neglecting the integrated effect of environmental, social, and governance disclosures on financial performance (Wanjau, 2019; Singh & Chakraborty, 2021; Lambe et al., 2023). Additionally, several studies concentrated

on specific sectors such as banking, manufacturing, mining, or energy industries, thereby limiting the generalizability of findings across all listed firms (Temba et al., 2023; Aniebi et al., 2024; Wu et al., 2022). Moreover, limited studies have examined the mediating role of firm size in the relationship between sustainability disclosures and financial performance, despite evidence suggesting that firm size may influence the effectiveness and visibility of sustainability initiatives (Chen et al., 2023).

Methodologically, many studies relied on cross-sectional designs, ESG rating scores, or disclosure measures that did not adequately distinguish between disclosure quality and disclosure quantity (Sroufe & Gopalakrishna-Remani, 2019; Aydoğmuş et al., 2022). Others focused primarily on market-based performance indicators such as firm value and Tobin's Q while giving limited attention to accounting-based measures such as Return on Equity (ROE) (Choi et al., 2024; Akpan et al., 2024). Furthermore, systematic reviews and meta-analyses by Tamasiga et al. (2024) and Saini et al. (2025) highlighted inconsistencies in sustainability measurement frameworks, contextual heterogeneity, and limited evidence from developing economies, particularly within African capital markets.

Consequently, the current study seeks to address these gaps by examining the relationship between environmental, social, and governance disclosures and the financial performance of firms listed on the Nairobi Securities Exchange. Unlike previous studies, the study adopts a comprehensive ESG disclosure framework, utilizes accounting-based financial performance measured by Return on Equity (ROE), and examines the mediating role of firm size using panel data analysis. By focusing on listed firms within the Kenyan context, the study provides

context-specific evidence from an emerging African economy and contributes to the growing sustainability disclosure literature.

Table 2.1*Summary of Research Gaps*

Author(s), Year, and Study Context	Focus of the Study / Study Objective	Research Methodology	Research Findings	Research Gaps	Addressing Gaps Via the Current Study
Sroufe & Gopalakrishna-Remani (2019) – Fortune 500 firms	Social sustainability and financial performance	Cross-sectional quantitative design using purposive sampling	Social sustainability positively influenced financial performance	Focused on large firms in developed economies using cross-sectional data and ignored mediation effects	Examines sustainability disclosures and financial performance among NSE-listed firms using panel data and firm size mediation
Singh & Chakraborty (2021) – India	Corporate social sustainability disclosure and financial performance	Content analysis and multiple regression analysis	Social disclosures positively influenced accounting-based performance	Focused mainly on social disclosures and excluded ESG integration and mediation analysis	Incorporates environmental, social, and governance disclosures with firm size as mediator
Lambe et al. (2023) – Nigeria	Social sustainability disclosures and corporate performance	Ex-post facto design using panel regression analysis	Social disclosures significantly affected firm performance	Focused mainly on social disclosure and ignored mediation mechanisms	Examines comprehensive sustainability disclosures and mediating role of firm size

Serem et al. (2024) – Kenya	Social sustainability reporting and firm value	Longitudinal correlational design using content analysis	Social sustainability reporting had insignificant effect on firm value	Did not examine firm size mediation or broader ESG dimensions	Assesses ESG disclosures and firm size mediation among NSE-listed firms
Aniebiet & Emenyi (2024) – Nigerian banks	Environmental sustainability disclosures and financial performance	Ex-post facto panel design using fixed-effects regression	Environmental disclosures had insignificant effect on ROA	Focused only on banks and omitted mediation analysis	Covers multiple NSE sectors and examines firm size as mediator
Akpan et al. (2024) – Nigerian consumer goods firms	Environmental disclosure and cost of equity	Ex-post facto design using panel multiple regression	Environmental disclosures reduced cost of equity	Focused on financing cost rather than accounting-based performance	Uses ROE as the measure of financial performance
Wanjau (2019) – East African listed firms	Governance disclosure and financial performance	Descriptive and correlational panel research design	Governance disclosure positively affected financial performance	Focused only on governance disclosures and excluded environmental and social dimensions	Integrates environmental, social, and governance disclosures jointly
Temba et al. (2023) – Tanzanian banks	Corporate governance and financial performance	Panel data regression analysis	Governance mechanisms positively influenced financial performance	Focused only on banking institutions and governance variables	Examines sustainability disclosures across firms from different sectors

Sarpong-Danquah et al. (2022) – Ghana manufacturing firms	Governance structure and firm performance	GLS regression analysis using panel data	Board independence and firm size positively influenced performance	Excluded sustainability disclosure dimensions and mediation effects	Incorporates sustainability disclosures and firm size mediation
Aydoğmuş et al. (2022) – Global firms	ESG performance and profitability	Panel-data modeling using ESG scores	ESG pillars positively influenced profitability and firm value	Relied on ESG rating scores instead of disclosure indices	Uses disclosure indices developed from annual and sustainability reports
Kipngetich & Gatauwa (2024), Kenya (NSE)	Impact of environmental sustainability reporting on financial performance	Explanatory design, primary data (semi-structured questionnaires), census of 58 NSE-listed firms	Environmental sustainability has a statistically significant effect on financial performance	Focused only on environmental dimension; firm size was not considered; lacks multi-dimensional ESG analysis	Expands scope to include all ESG dimensions.

Masila et al. (2024), Kenya (NSE)	Link between corporate sustainability reporting and financial performance	Cross-sectional, secondary data (2011–2020), regression and correlation analysis	Sustainability reporting positively affects financial performance	General analysis of sustainability reporting without disaggregating components (E, S, G); does not account for moderating variables	Examines environmental, social, and governance disclosures separately; tests mediating role of firm size
Agutu & Githira (2023), Kenya (NSE financial firms)	Sustainability reporting and financial performance in financial sector	Census of 23 financial firms; secondary data (2015–2021); regression analysis	ESG reporting has strong positive correlation with financial performance	Sector-specific (financial only); no examination of moderating effects; no disaggregation of ESG components	Focuses on all sectors of listed firms; analyzes ESG components separately

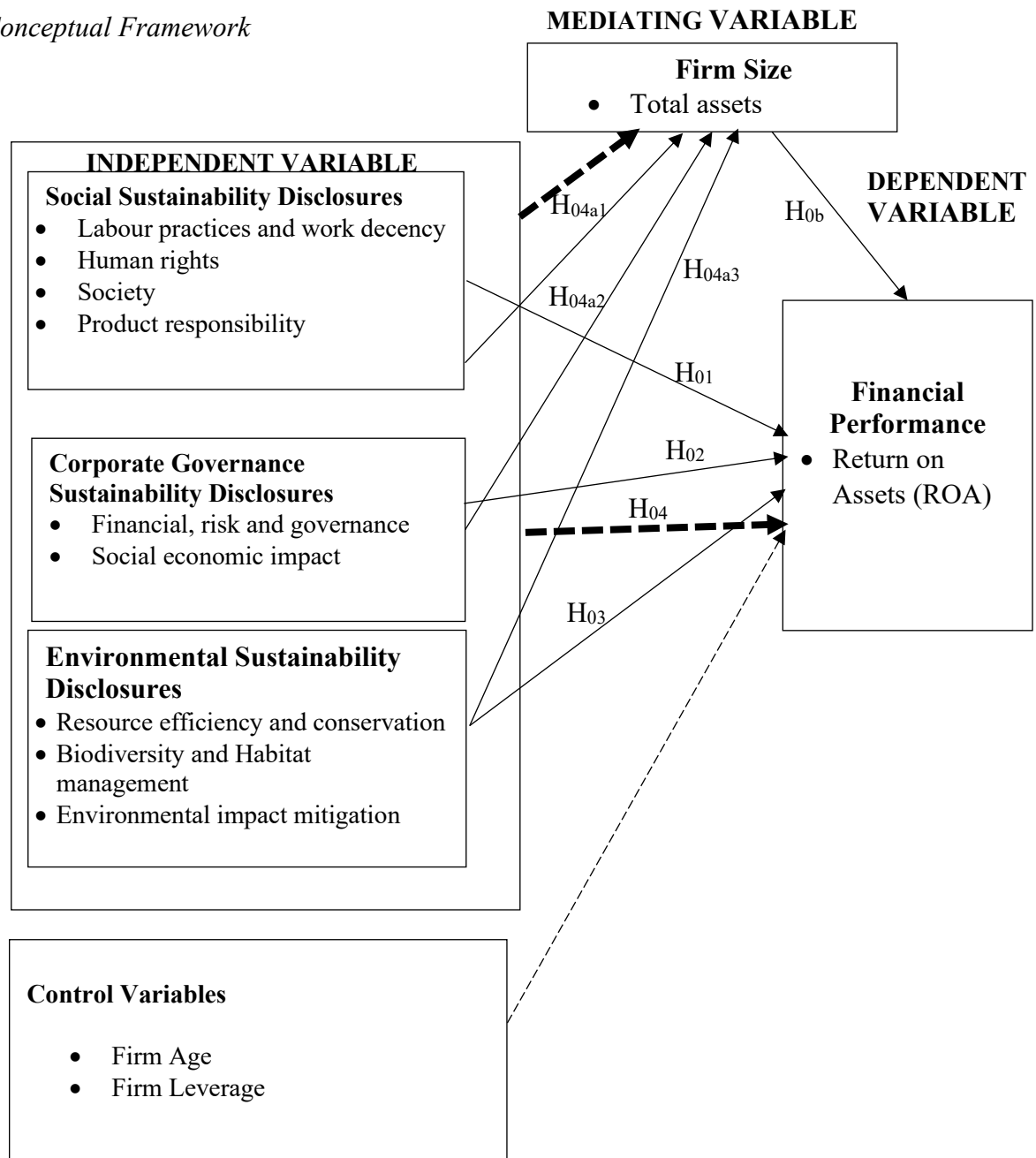
2.6 Conceptual Framework for the Study

The conceptual framework illustrates the hypothesized relationships between sustainability disclosures and the financial performance of firms listed at the Nairobi Securities Exchange. Sustainability disclosure is conceptualized as a multidimensional construct consisting of social sustainability disclosure, corporate governance sustainability disclosure, and environmental sustainability disclosure, which form the independent variables of the study. The social dimensions reflect the extent to which firms disclose information related to labour practices and work decency, human rights, society and product responsibility. Corporate governance involves Financials, risk and social economic impact of the organization. The environmental dimension is about biodiversity and habitat management, environmental impact mitigation and resource efficiency and conservation. Financial performance, measured using Return on Assets (ROA), represents the dependent variable and captures the ability of firms to generate returns for shareholders relative to their equity base.

The framework further proposes that the relationship between sustainability disclosures and financial performance may operate both directly and indirectly through the mediating role of firm size, proxied by total assets. Firm size is included to examine whether the scale of a firm influences how sustainability disclosures translate into financial outcomes, as larger firms often possess greater resources, visibility, and capacity to implement sustainability initiatives. In addition, firm age and firm leverage are incorporated as control variables to account for firm-specific characteristics that may influence financial performance. These controls help isolate the specific effects of sustainability disclosures and firm size on firm profitability, thereby providing a clearer understanding of the sustainability performance relationship within the NSE context.

Figure 2.1

Conceptual Framework



CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Philosophy

Research philosophy provides the foundational assumptions that guide how knowledge is generated, interpreted, and validated within a study. Ugwu et al. (2021) observe that a research paradigm serves as a framework for considering the concept of truth, guiding researchers on the appropriate methodological approaches, data description, and interpretation of outcomes. Central to a research philosophy are ontological and epistemological assumptions, which shape how a researcher understands reality and how knowledge about that reality is acquired. Ontology concerns the nature of reality, while epistemology focuses on the source, nature, and validity of knowledge (Al-Ababneh, 2020).

Guided by the nature of the research objectives and the structure of the data employed, this study adopted a positivist research philosophy. Positivism assumes that social and economic entities, such as firms and markets, possess an objective reality similar to that of physical objects and natural events. Under this paradigm, reality is considered external to the researcher and remains unaffected by individual perception, thereby permitting objective observation, measurement, and analysis (Pervin & Mokhtar, 2022). This philosophical stance underscores the importance of empirical investigation and systematic inquiry in the development and advancement of knowledge.

Consistent with the positivist paradigm, the study employed a quantitative approach based on secondary data that were pre-existing and systematically structured. Ali (2024) notes that the generation of precise and meaningful knowledge under positivism depends on procedures

that are observable, quantifiable, and replicable. In this context, epistemology was primarily concerned with the identification and examination of empirical facts and observable patterns within firm-level data. Through the analysis of such patterns, it becomes possible to establish generalizations and infer causal relationships among variables.

The adoption of positivism in this study is further consistent with neo-empirical research traditions and positive accounting theory, which are firmly grounded in empiricism and objective analysis. These traditions emphasize hypothesis testing, statistical modeling, and evidence-based conclusions derived from measurable financial and non-financial indicators. Accordingly, the use of panel data regression techniques and formal econometric analysis in this study aligns with the underlying assumptions of the positivist research philosophy (Ambe, 2021).

3.2 Research Design

This study was guided by a longitudinal and explanatory research design. A longitudinal design is appropriate where the same measurement instruments are applied to the same units of analysis across multiple time periods. According to Hopwood et al. (2022), this design enables the examination of changes over time and allows researchers to observe dynamic patterns within a study. By tracking firms across successive years, longitudinal designs facilitate the assessment of temporal variations and provide a basis for making causal inferences regarding relationships among variables.

The longitudinal design was particularly suitable for this study because it enabled the analysis of firm-level financial performance and ESG disclosures over an extended period. This approach allowed the study to capture both cross-sectional differences among firms and time-

series variations within firms, thereby enhancing the robustness of the empirical analysis. Through repeated observations, the design made it possible to monitor how changes in ESG practices and firm characteristics were associated with changes in financial performance over time.

In addition, the study adopted an explanatory research design. Wen et al. (2025) describes explanatory research as a correlational design in which the researcher is interested in determining the extent to which variables co-vary and the direction of their relationships. In this study, the explanatory design was employed to examine the causal relationships between ESG performance, firm characteristics, and financial performance. As noted by Mohajan (2020), explanatory research is appropriate where the objective is to establish cause-and-effect relationships among variables through empirical testing. The integration of longitudinal and explanatory research designs provided a coherent framework for addressing the study objectives. Combining time-based analysis with causal explanation aided the study to rigorously investigate how variations in ESG disclosures and firm-specific factors influenced financial performance across firms and over time.

3.3 Study Area

The study was conducted within the context of companies listed at the Nairobi Securities Exchange (NSE) in Kenya. The NSE is Kenya's principal securities exchange, located in Nairobi, the country's capital and economic hub. Established in 1954, it is the oldest and largest stock exchange in East Africa and plays a vital role in capital mobilization, investment, and economic development.

The NSE has 62 listed companies across diverse sectors, including Banking, Manufacturing, Agricultural, Insurance, Commercial and Services, and Investment. These firms operate under strict regulatory oversight by the Capital Markets Authority (CMA), which enforces standardized financial reporting and disclosure requirements. In November 2021, the NSE introduced the ESG Disclosures Guidance Manual to promote sustainability reporting among listed companies.

The NSE provided an appropriate setting for this study because listed firms are required to publish audited financial statements and sustainability disclosures. This regulatory environment ensures data consistency and comparability, making it suitable for longitudinal and panel data analysis. Furthermore, as an emerging market, Kenya's capital market offers valuable insights into how sustainability practices interact with firm characteristics such as size to influence financial performance in a developing economy context.

3.4 Target Population

The target population refers to the complete set of elements that share common characteristics and upon which the researcher intends to generalize the study findings. According to Willie (2024), a target population comprises all units that possess attributes relevant to a particular inquiry. In line with this definition, the target population for this study consisted of all firms listed on the NSE. As of the study period, the NSE comprised 62 listed firms (NSE, 2024) drawn from diverse economic sectors, including agriculture, banking, manufacturing, energy and petroleum, insurance, telecommunications, investment, and real estate investment trusts, among others, as detailed in Appendix G. These firms operated within a regulated disclosure environment and are required to publish audited annual financial statements in compliance

with capital markets regulations. In addition, listed firms increasingly disclose Environmental, Social, And Governance (ESG) information through annual reports or sustainability-related disclosures, making them appropriate units of analysis for examining ESG financial performance relationships. The sectoral diversity of NSE-listed firms provided a broad and representative population for assessing variations in ESG practices and financial performance across industries. The longitudinal coverage of the study period further enabled the examination of changes in firm performance and ESG disclosures over time within the Kenyan capital market context.

Table 3.1*Distribution of NSE-Listed Firms by Sector*

Sector	Number of Companies
Agricultural	6
Automobiles & Accessories	1
Banking	10
Commercial & Services	13
Construction & Allied	5
Energy & Petroleum	4
Insurance	6
Investment	5
Investment Services	1
Manufacturing & Allied	8
Telecommunication	1
Real Estate Investment Trust	1
Exchange Traded Funds	1
Total	62

Source: Researcher data, 2025 (Extracted from NSE)

3.5 Sample and Sampling Design

Sampling design refers to the framework through which a subset of units is selected from the target population for purposes of empirical analysis. The choice of sampling design is informed by the nature of the study, the availability of data, and the need to obtain reliable

and representative observations (Lohr, 2021). According to Willie (2024), an effective sampling design enhances the validity and generalizability of research findings by ensuring that the selected units adequately represent the population under investigation. Given the longitudinal and explanatory nature of this study, as well as the relatively small and well-defined population of listed firms, a census approach was considered appropriate.

The target population comprised all 62 firms listed at the Nairobi Securities Exchange as of the period of study (NSE, 2024). However, only firms with complete and accessible financial and ESG disclosure data throughout the study period were included in the final analysis. Firms with missing annual reports, incomplete financial information, prolonged suspension from trading, or inadequate sustainability disclosure data were excluded to ensure consistency and reliability of the panel dataset.

The census approach was considered suitable for this study because it minimized sampling bias and enhanced the representativeness and generalizability of the findings within the NSE context. In addition, the inclusion of all eligible firms improved the comprehensiveness of sectoral representation and strengthened the reliability of the panel data analysis. The approach further enabled the study to capture both cross-sectional differences among firms and time-series variations within firms over the study period. Consequently, the census approach provided a robust basis for examining the relationship between ESG disclosures, firm size, and financial performance among firms listed at the NSE.

3.5.1 Sample Frame

The sample frame comprised all firms listed on the NSE as of the study period, as documented in the official NSE listings and presented in Appendix G (NSE, 2024). The frame included firms drawn from all sectors of the exchange and formed the basis from which the final analytical sample was derived. The use of a clearly defined and comprehensive sample frame ensured consistency in firm identification and facilitated longitudinal tracking of firm-level observations over the study period (Geurts, 2016).

3.5.2 Sample Size

The sample size for the study was determined by the availability, completeness, and consistency of the data required to operationalize the study variables (Ahmed, 2025). From the initial population of 62 firms listed at the Nairobi Securities Exchange, a final sample of 40 firms with complete and reliable financial and ESG disclosure data was obtained. Firms with missing annual reports, incomplete financial statements, or inadequate ESG disclosure information were excluded from the analysis. The resulting dataset was a balanced panel, indicating consistent data availability across firms and years. The use of a balanced panel enhanced comparability of observations and improved the reliability and robustness of the longitudinal panel data analysis (Ferreira et al., 2025).

3.5.3 Inclusion and Exclusion Criterion

The study adopted a census approach to identify firms suitable for inclusion in the empirical analysis. Firms were included in the study if they were actively operating during the period 2012–2023 and had complete and accessible financial and ESG disclosure data in the study period. Firms that underwent major restructuring activities such as mergers, acquisitions,

delisting, prolonged suspension from trading, or had incomplete data were excluded to ensure consistency and comparability of the panel dataset. This criterion is supported by (Filippou et al., 2025).

The target population comprised 62 listed firms; however, after applying the inclusion and exclusion criteria, 40 firms qualified for the final analysis. The procedure ensured the construction of a balanced panel dataset and enhanced the reliability and validity of the empirical findings. The list of selected firms is in appendix k.

3.6 Data Collection

Taherdoost (2021) defines data collection as the process of gathering evidence with the objective of responding to research questions or testing study hypotheses. Similarly, Arun et al. (2022) characterize data collection as a systematic process of gathering, assessing, and analyzing accurate research data using standardized methods. Guided by these perspectives, the study employed secondary data, which were collected using a structured data collection schedule designed to ensure consistency and accuracy across firms and over time.

The reliance on secondary data was appropriate given the study's focus on firm-level financial performance and ESG disclosures. Prior studies indicate that secondary data offer a higher degree of reliability and objectivity compared to primary data, particularly in financial and corporate disclosure research (Cheong et al., 2023). Financial and ESG-related information was obtained from audited annual reports and sustainability disclosures of firms listed on the NSE, sourced from company websites, the Capital Markets Authority, and the African Financials database.

3.6.1 Instrumentation

The study used a sustainability reporting disclosure checklist (Appendix E) and a firm financial statements data collection sheet (Appendix J) as the main data collection instruments (Abdalla et al., 2025). These instruments were structured to reflect the variables of interest and to capture relevant information on financial performance, firm size, and sustainability disclosure from published annual reports, sustainability reports, and integrated reports of firms listed on the Nairobi Securities Exchange (NSE). The sustainability disclosure checklist, developed in line with the Global Reporting Initiative (GRI) guidelines, was used to capture governance, environmental, and social sustainability disclosure data. It comprised 77 disclosure items, where environmental disclosures consisted of 30 items, social disclosures 38 items, and corporate governance disclosures 9 items.

Sustainability disclosure items were scored using a three-point Likert scale, where 0 = no disclosure, 1 = partial disclosure without financial indicators, and 2 = full disclosure with financial indicators. This scoring approach has been widely applied in prior studies (Zhou et al., 2024; Smith et al., 2024; Anifowose et al., 2020). Financial performance was measured using Return on Assets (ROA), while firm size was proxied by the natural logarithm of total net assets.

After data were obtained, they were consolidated into a single structured data sheet to enhance consistency, facilitate coding, and improve the accuracy of subsequent analysis. The consolidated dataset contained sustainability disclosure indices, ROA, and firm characteristics across firms and study years. The use of standardized data collection

instruments ensured consistency, reliability, and comparability of data across firms and throughout the study period.

3.6.2 Data Collection Procedures

The study relied exclusively on secondary data obtained from audited annual reports, sustainability reports, and integrated reports of firms listed on the Nairobi Securities Exchange (NSE) for the period 2012–2023. The period was selected in line with prior empirical studies (Masila et al., 2024; Muchiri et al., 2022) and reflects a phase of notable fluctuations in the financial performance of NSE-listed firms.

Data were collected through a structured review of firm-year reports using the sustainability reporting disclosure checklist (Appendix E) and the firm financial statements data collection sheet (Appendix J). Each report was systematically examined, and sustainability disclosures covering environmental, social, and governance aspects were coded using a standardized 0–2 scale, consistent with prior ESG measurement studies (Zhou et al., 2024; Smith et al., 2024; Anifowose et al., 2020).

Financial performance was measured using Return on asset (ROA), while firm size was proxied by the natural logarithm of total assets, in line with established empirical approaches (Nogueira et al., 2024; Hae-Young, 2024; Tapang et al., 2021; Ismail, 2024). These variables were extracted from audited financial statements and, where necessary, cross-verified using the Nairobi Securities Exchange Handbook to ensure completeness.

Finally, all extracted data were consolidated into a single dataset for consistency and ease of analysis. The dataset was carefully checked for accuracy, completeness, and uniformity across firms and time periods before proceeding to analysis.

3.7 Operationalization of the Study Variables

Operationalization of study variables involves translating theoretical constructs into measurable indicators suitable for empirical analysis. In this study, all variables were operationalized using standardized and widely accepted measures to ensure consistency, objectivity, and replicability of the findings. The operational definitions, measurement approaches, formulas, and notations for all variables are summarized in Table 2.2.

Sustainability disclosures were measured using three disclosure indices capturing the social, environmental, and governance dimensions of sustainability reporting, each constructed as a ratio of disclosed items to the total number of potential disclosure items. The GRI framework offers a structured and comprehensive set of disclosure indicators that facilitate consistent assessment of sustainability practices across firms and over time. Its widespread adoption in corporate reporting makes it particularly suitable for empirical studies examining sustainability disclosures within capital markets. While the three components were examined, a sustainability disclosure index was computed from the same.

Financial performance was measured using Return on Assets (ROA), calculated as the ratio of net income to total assets, while firm size was proxied by the natural logarithm of total assets and incorporated as a mediating variable in the analysis. These measurements provided consistent and comparable indicators for examining the relationships among sustainability disclosures, firm size, and financial performance across firms and over time.

Table 3.2*Measurement of Variables*

Variable	Variable Type	Measurement	Source
Financial performance	Dependent variable	Return on assets (ROA)	Aniebiet and Emenyi (2024)
ESG performance	Independent variables	Composite environmental, social, and governance disclosure indices	GRI (2025); Lambe et al. (2023)
Firm size	Mediating variable	Natural logarithm of total assets	Luo, et al. (2024); Vithana et al. (2021)
Firm age	Control variable	Years since incorporation	Zainudin, et al. (2024)
Firm leverage	Control variable	Debt-to-equity ratio	Arhinful and Radmehr (2023)

Source: Researcher 2025

3.8 Data Analysis

Data analysis involves organizing, transforming, and examining collected data in order to address the study objectives and test the stated hypotheses (Bisaria et al., 2026). In this study, data analysis was conducted after data cleaning and verification to ensure accuracy, completeness, and consistency of firm-year observations. The analysis followed a structured sequence comprising variable construction, descriptive analysis, diagnostic testing, and panel regression estimation.

3.8.1 Sustainability Disclosure Indices

Prior to econometric analysis, sustainability disclosure variables were constructed using a content analysis approach. Disclosure items were scored on a three-point scale, where 0 indicated no disclosure, 1 indicated partial disclosure, and 2 indicated full disclosure. The construction of the sustainability disclosure indices in this study was anchored on the Global

Reporting Initiative (GRI) framework of 2025, which provides internationally recognized guidelines for sustainability reporting. Guided by the GRI framework, sustainability disclosure items were identified and classified into social, governance, and environmental categories. These items formed the basis for the disclosure checklist used in the content analysis. The GRI framework thus provided the conceptual foundation for measuring the extent and depth of sustainability disclosures, ensuring that the resulting indices reflect internationally accepted reporting standards and enhance comparability across firms and reporting periods.

For each firm-year observation, disclosure scores were aggregated within the social, environmental, and governance dimensions. The aggregated scores were then normalized by the maximum possible score, defined as twice the total number of disclosure items within each dimension, to obtain standardized sustainability disclosure indices expressed as percentages. This normalization ensured comparability across firms and over time. The sustainability reporting disclosure checklist is detailed in Appendices E.

In that case, let S_{ijt}^S , S_{ijt}^G , and S_{ijt}^E denote the score for disclosure item j for firm i in year t under the Social (S), Governance (G) and Environmental (E), dimensions, respectively, where;

$S_{ijt} \in \{0,1,2\}$, (0 = no disclosure, 1 = partial disclosure, 2 = full disclosure)

Let N_S, N_G, N_E , be the total number of disclosure items in each dimension (as per the checklist).

(d) Social Sustainability Disclosure Index (SSDI)

$$SSDI_{it} = \frac{\sum_{j=1}^{N_S} S_{ijt}^S}{2N_S} \times 100\% \quad (1)$$

(e) Governance Sustainability Disclosure Index (GSDI)

$$GSDI_{it} = \frac{\sum_{j=1}^{N_G} S_{ijt}^G}{2N_G} \times 100\% \quad (2)$$

(f) Environmental Sustainability Disclosure Index (ESDI)

$$ESDI_{it} = \frac{\sum_{j=1}^{N_E} S_{ijt}^E}{2N_E} \times 100\% \quad (3)$$

Each component index ranges from 0 to 100, where 0 indicates no disclosure across all items and 100 indicates full disclosure across all items.

3.8.2 Descriptive, Trends and Correlation Analyses

Following variable construction, descriptive statistics were computed to summarize the characteristics of the study variables, including measures of central tendency and dispersion (mean, standard deviation, minimum and maximum). In addition, trend analysis was undertaken to examine the evolution of key study variables over the study period. Trends in sustainability disclosure indices, financial performance, and firm size were explored across the study years to identify temporal patterns, structural changes, and general movements in the variables of interest. Pearson correlation analysis was subsequently conducted to assess the direction and strength of associations among the variables and to provide preliminary insights into potential multicollinearity.

3.8.3 Inferential Statistics Analyses

Inferential analysis was undertaken to examine the causal relationships among sustainability disclosures, firm size, and financial performance in line with the study objectives. The study employed panel data regression techniques, which are appropriate for analyzing data that combine cross-sectional and time-series dimensions. Panel regression allows for control of

unobserved firm-specific heterogeneity and improves efficiency of parameter estimates by exploiting both within-firm and between-firm variations.

The choice between fixed-effects and random-effects estimation was guided by the Hausman specification test. Fixed-effects estimation was preferred where firm-specific effects were correlated with the explanatory variables, while random-effects estimation was adopted where such correlation was absent. All models were estimated using robust standard errors where necessary to account for potential violations of classical regression assumptions.

Objective 1: Social Sustainability Disclosure and Financial Performance

To address the first objective, the study examined the effect of social sustainability disclosure on the financial performance of firms listed on the Nairobi Securities Exchange. Financial performance was measured using ROA, while social sustainability disclosure was captured using the Social Sustainability Disclosure Index (SSDI). Consistent with prior empirical studies, firm age and firm leverage were included as control variables to account for firm-specific characteristics that may influence financial performance. The controlled panel regression model is specified as follows:

$$ROA_{it} = \beta_0 + \beta_1 SSDI_{it} + \beta_2 FA_{it} + \beta_3 LEV_{it} + \varepsilon_{it} \quad (4)$$

Where:

ROA_{it} denotes the return on assets of firm i in year t ;

$SSDI_{it}$ represents the social sustainability disclosure index;

FA_{it} denotes firm age;

LEV_{it} represents firm leverage;

β_0 , is the intercept;

β_1, β_2 , and β_3 are the estimated coefficients; and ε_{it} is the error term.

The coefficient β_1 captures the effect of social sustainability disclosure on financial performance after controlling for firm age and leverage.

Objective 2: Corporate Governance Sustainability Disclosure and Financial Performance

To address the second objective, the study examined the effect of corporate governance sustainability disclosure on the financial performance of firms listed on the Nairobi Securities Exchange. Financial performance was measured using ROA, while corporate governance sustainability disclosure was captured using the Governance Sustainability Disclosure Index (GSDI). In line with established empirical practice, firm age and firm leverage were included as control variables to account for firm-specific characteristics that may influence financial performance independently of governance disclosure practices.

The controlled panel regression model for the second objective is specified as follows:

$$ROA_{it} = \beta_0 + \beta_1 GSDI_{it} + \beta_2 FA_{it} + \beta_3 LEV_{it} + \varepsilon_{it} \quad (5)$$

Where: $GSDI_{it}$ denotes the governance sustainability disclosure index. The coefficient β_1 measures the effect of corporate governance sustainability disclosure on financial performance after controlling for firm age and leverage.

Objective 3: Environmental Sustainability Disclosure and Financial Performance

To address the third objective, the study examined the effect of environmental sustainability disclosure on the financial performance of firms listed on the Nairobi Securities Exchange. Financial performance was measured using ROA, while environmental sustainability disclosure was captured using the ESDI. Consistent with the preceding models, firm age and

firm leverage were included as control variables to account for firm-specific characteristics that may influence financial performance.

The controlled panel regression model for the third objective is specified as follows:

$$ROA_{it} = \beta_0 + \beta_1 ESDI_{it} + \beta_2 FA_{it} + \beta_3 LEV_{it} + \varepsilon_{it} \quad (6)$$

Where: $ESDI_{it}$ represents the environmental sustainability disclosure index. The coefficient β_1 captures the effect of environmental sustainability disclosure on financial performance after controlling for firm age and leverage.

Joint Model: Sustainability Disclosures and Financial Performance

After examining the individual effects of social, corporate governance, and environmental sustainability disclosures, the study estimated a joint model to assess the combined effect of sustainability disclosure on the financial performance of firms listed on the NSE. In this model, sustainability disclosures were used jointly.

Financial performance was measured using ROA. Consistent with the preceding models, firm age and firm leverage were included as control variables to account for firm-specific characteristics that may influence financial performance independently of sustainability disclosure practices.

The controlled panel regression model is specified as follows:

$$ROA_{it} = \beta_0 + \beta_1 SSDI_{it} + \beta_2 GSDI_{it} + \beta_3 ESDI_{it} + \beta_4 FA_{it} + \beta_5 LEV_{it} + \varepsilon_{it} \quad (7)$$

Where: $SSDI_{it}$, $GSDI_{it}$, $ESDI_{it}$ represent the sustainability disclosures index. The coefficient β_1 , β_2 , and β_3 captures the effect of sustainability disclosure on financial performance after controlling for firm age and leverage.

Objective 4: Mediating Role of Firm Size in the Relationship between Sustainability Disclosures and Financial Performance

The fourth objective examined whether firm size mediates the relationship between sustainability disclosures and financial performance of firms listed on the Nairobi Securities Exchange. Mediation analysis was employed to determine whether sustainability disclosure, and its corresponding components influences financial performance directly and indirectly through firm size. Firm size was proxied by the natural logarithm of total assets, consistent with prior empirical studies.

The mediation analysis followed the classical approach proposed by Baron and Kenny (1986), which involves estimating a sequence of regression models. To examine the mediating role of firm size in the relationship between sustainability disclosure and financial performance, the study followed a four-step mediation procedure consistent with the approach proposed by Baron and Kenny (1986). Firm age and firm leverage were included as control variables in all steps to mitigate omitted variable bias.

Step 1: Sustainability Disclosures and Financial Performance (Total Effect)

The first step involved estimating the total effect of sustainability disclosures on financial performance. This step established whether sustainability disclosure significantly influences financial performance before the inclusion of the mediator.

$$ROA_{it} = \beta_0 + \beta_1 SSDI_{it} + \beta_2 GSDI_{it} + \beta_3 ESDI_{it} + \beta_4 FA_{it} + \beta_5 LEV_{it} + \varepsilon_{it} \quad (8)$$

A statistically significant coefficient β_1 indicates that sustainability disclosure has a direct effect on financial performance.

Step 2: Sustainability Disclosures and Firm Size (Path a)

The second step examined whether sustainability disclosures significantly influence firm size, which is a necessary condition for mediation.

$$FS_{it} = \alpha_0 + \alpha_1 SSDI_{it} + \alpha_2 GSDI_{it} + \alpha_3 ESDI_{it} + \alpha_4 FA_{it} + \alpha_5 LEV_{it} + \varepsilon_{it} \quad (9)$$

Where:

FS_{it} represents firm size

A statistically significant coefficient α_1 , α_2 , and α_3 confirms the existence of path a.

Step 3: Firm Size and Financial Performance (Path b)

The third step assessed whether firm size significantly affects financial performance when sustainability disclosure is not included in the model.

$$ROA_{it} = \delta_0 + \delta_1 FS_{it} + \delta_2 FA_{it} + \delta_3 LEV_{it} + \varepsilon_{it} \quad (10)$$

A statistically significant coefficient δ_1 establishes path b, indicating that firm size is a meaningful predictor of financial performance.

Step 4: Sustainability Disclosures, Firm Size and Financial Performance (Path c')

The final step involved estimating a model that includes both sustainability disclosure and firm size to determine whether firm size mediates the relationship between sustainability disclosure and financial performance.

$$ROA_{it} = \sigma_0 + \sigma_1 SSDI_{it} + \sigma_2 GSDI_{it} + \sigma_3 ESDI_{it} + \sigma_4 FS_{it} + \sigma_5 FA_{it} + \sigma_6 LEV_{it} + \varepsilon_{it} \quad (11)$$

Mediation is inferred if firm size (σ_4) is statistically significant and the coefficients of the sustainability disclosure variables (σ_1 , σ_2 , and σ_3) are reduced in magnitude relative to their corresponding coefficients in Step 1 after including firm size in the model. Complete mediation occurs if the coefficients of the sustainability disclosure variables become

statistically insignificant after the inclusion of firm size, while partial mediation is inferred if the coefficients remain statistically significant but are reduced in magnitude.

Further, to address the sub hypotheses/objectives in the fourth objective, the study examined whether firm size mediates the relationship between sustainability disclosure components and financial performance of firms listed on the Nairobi Securities Exchange. Sustainability disclosure was decomposed into its three components (social, corporate governance, and environmental disclosures) and mediation analysis was conducted for each component using a unified modelling framework. Firm size was proxied by the natural logarithm of total assets, while firm age and firm leverage were included as control variables in all models.

3.8.3.1: Social Sustainability Disclosure and Financial Performance

Let $SSDI_{it}$, represent the Social Sustainability Disclosure Index for firm i in year t . The mediation analysis followed the four-step procedure proposed by Baron and Kenny (1986), as outlined below.

Step 1: Social Sustainability Disclosure and Financial Performance (Total Effect)

The first step examined whether social sustainability disclosure component has a significant effect on financial performance.

$$ROA_{it} = \beta_0 + \beta_1 SSDI_{it} + \beta_2 FA_{it} + \beta_3 LEV_{it} + \varepsilon_{it} \quad (12)$$

A statistically significant coefficient β_1 indicates that social sustainability disclosure has a direct effect on financial performance. In this step, β_1 represents the total effect of social sustainability disclosure on financial performance before the inclusion of the mediating variable.

Step 2: Social Sustainability Disclosure and Firm Size (Path a)

The second step assessed whether the social sustainability disclosure component significantly influences firm size.

$$FS_{it} = \alpha_0 + \alpha_1 SSDI_{it} + \alpha_2 FA_{it} + \alpha_3 LEV_{it} + \varepsilon_{it} \quad (13)$$

A statistically significant α_1 confirms the existence of path a, a necessary condition for mediation

Step 3: Firm Size and Financial Performance (Path b)

The third step examined whether firm size significantly affects financial performance in the absence of the sustainability disclosure component.

$$ROA_{it} = \delta_0 + \delta_1 FS_{it} + \delta_2 FA_{it} + \delta_3 LEV_{it} + \varepsilon_{it} \quad (14)$$

A statistically significant coefficient δ_1 establishes path b, indicating that firm size is a predictor of financial performance.

Step 4: Social Sustainability Disclosure, Firm Size and Financial Performance (Path c')

The final step involved estimating a model that included both the social sustainability disclosure component and firm size to test for mediation.

$$ROA_{it} = \sigma_0 + \sigma_1 SSDI_{it} + \sigma_2 FS_{it} + \sigma_3 FA_{it} + \sigma_4 LEV_{it} + \varepsilon_{it} \quad (15)$$

Mediation is inferred if firm size (σ_2) is statistically significant and the coefficient of social sustainability disclosure (σ_1) is reduced in magnitude relative to β_1 in Step 1 after the inclusion of firm size in the model. Complete mediation occurs if σ_1 becomes statistically insignificant, while partial mediation is inferred if σ_1 remains statistically significant but reduced in magnitude.

3.8.3.2: Corporate Governance Sustainability Disclosure and Financial Performance

Let $GSDI_{it}$, denote the Corporate Governance Sustainability Disclosure Index for firm i in year t .

The mediation analysis followed the four-step procedure proposed by Baron and Kenny (1986), as outlined below.

Step 1: Governance Sustainability Disclosure and Financial Performance (Total Effect)

The first step examined whether each governance sustainability disclosure component has a significant effect on financial performance.

$$ROA_{it} = \beta_0 + \beta_1 GSDI_{it} + \beta_2 FA_{it} + \beta_3 LEV_{it} + \varepsilon_{it} \quad (16)$$

A statistically significant coefficient β_1 indicates that governance sustainability disclosure has a direct effect on financial performance.

Step 2: Governance Sustainability Disclosure and Firm Size (Path a)

The second step assessed whether the governance sustainability disclosure component significantly influences firm size.

$$FS_{it} = \alpha_0 + \alpha_1 GSDI_{it} + \alpha_2 FA_{it} + \alpha_3 LEV_{it} + \varepsilon_{it} \quad (17)$$

A statistically significant α_1 confirms the existence of path a, a necessary condition for mediation

Step 3: Firm Size and Financial Performance (Path b)

The third step examined whether firm size significantly affects financial performance in the absence of the sustainability disclosure component.

$$ROA_{it} = \delta_0 + \delta_1 FS_{it} + \delta_2 FA_{it} + \delta_3 LEV_{it} + \varepsilon_{it} \quad (18)$$

A statistically significant coefficient δ_1 establishes path b, indicating that firm size is a predictor of financial performance.

Step 4: Governance Sustainability Disclosure, Firm Size and Financial Performance (Path c')

The final step involved estimating a model that included both the governance sustainability disclosure component and firm size to test for mediation.

$$ROA_{it} = \sigma_0 + \sigma_1 GSDI_{it} + \sigma_2 FS_{it} + \sigma_3 FA_{it} + \sigma_4 LEV_{it} + \varepsilon_{it} \quad (19)$$

Mediation is inferred if firm size (σ_2) is statistically significant, and, if the coefficient of governance sustainability disclosure component (σ_1) is reduced in magnitude relative to β_1 in Step 1. A complete mediation occurs if σ_1 becomes statistically insignificant, while partial mediation is inferred if σ_1 remains significant but attenuated.

3.8.3.3: Environmental Sustainability Disclosure and Financial Performance

Let $ESDI_{it}$, represent the environmental sustainability disclosure component for firm i in year t .

The mediation analysis followed the four-step procedure proposed by Baron and Kenny (1986), as outlined below.

Step 1: Environmental Sustainability Disclosure and Financial Performance (Total Effect)

The first step examined whether the environmental sustainability disclosure component has a significant effect on financial performance.

$$ROA_{it} = \beta_0 + \beta_1 ESDI_{it} + \beta_2 FA_{it} + \beta_3 LEV_{it} + \varepsilon_{it} \quad (20)$$

A statistically significant coefficient β_1 indicates that environmental sustainability disclosure has a direct effect on financial performance.

Step 2: Environmental Sustainability Disclosure and Firm Size (Path a)

The second step assessed whether the environmental sustainability disclosure component significantly influences firm size.

$$FS_{it} = \alpha_0 + \alpha_1 ESDI_{it} + \alpha_2 FA_{it} + \alpha_3 LEV_{it} + \varepsilon_{it} \quad (21)$$

A statistically significant α_1 confirms the existence of path a, a necessary condition for mediation.

Step 3: Firm Size and Financial Performance (Path b)

The third step examined whether firm size significantly affects financial performance in the absence of the sustainability disclosure component.

$$ROA_{it} = \delta_0 + \delta_1 FS_{it} + \delta_2 FA_{it} + \delta_3 LEV_{it} + \varepsilon_{it} \quad (22)$$

A statistically significant coefficient δ_1 establishes path b, indicating that firm size is a predictor of financial performance.

Step 4: Environmental Sustainability Disclosure, Firm Size and Financial Performance (Path c')

The final step involved estimating a model that included both the environmental sustainability disclosure component and firm size to test for mediation.

$$ROA_{it} = \sigma_0 + \sigma_1 ESDI_{it} + \sigma_2 FS_{it} + \sigma_3 FA_{it} + \sigma_4 LEV_{it} + \varepsilon_{it} \quad (23)$$

Mediation is inferred if firm size (σ_2) is statistically significant, and, if the coefficient of environmental sustainability disclosure component (σ_1) is reduced in magnitude relative to

β_1 in Step 1. A complete mediation occurs if σ_1 becomes statistically insignificant, while partial mediation is inferred if σ_1 remains significant but attenuated.

Objective 4: Mediating Role of Firm Size in the Relationship between Sustainability Disclosures and Financial Performance

The fourth objective examined whether firm size mediates the relationship between sustainability disclosures and financial performance of firms listed on the Nairobi Securities Exchange. Mediation analysis was employed to determine whether sustainability disclosure, and its corresponding components influences financial performance directly and indirectly through firm size. Firm size was proxied by the natural logarithm of total assets, consistent with prior empirical studies.

The mediation analysis followed the classical approach proposed by Baron and Kenny (1986), which involves estimating a sequence of regression models. To examine the mediating role of firm size in the relationship between sustainability disclosure and financial performance, the study followed a four-step mediation procedure consistent with the approach proposed by Baron and Kenny (1986). Firm age and firm leverage were included as control variables in all steps to mitigate omitted variable bias.

Step 1: Sustainability Disclosures and Financial Performance (Total Effect)

The first step involved estimating the total effect of sustainability disclosures on financial performance. This step established whether sustainability disclosure significantly influences financial performance before the inclusion of the mediator.

$$ROA_{it} = \beta_0 + \beta_1 SSDI_{it} + \beta_2 GSDI_{it} + \beta_3 ESDI_{it} + \beta_4 FA_{it} + \beta_5 LEV_{it} + \varepsilon_{it} \quad (24)$$

A statistically significant coefficient β_1, β_2 and β_3 indicates that sustainability disclosures has a direct effect on financial performance.

Step 2: Sustainability Disclosures and Firm Size (Path a)

The second step examined whether sustainability disclosures significantly influence firm size, which is a necessary condition for mediation.

$$FS_{it} = \alpha_0 + \alpha_1 SSDI_{it} + \alpha_2 GSDI_{it} + \alpha_3 ESDI_{it} + \alpha_4 FA_{it} + \alpha_5 LEV_{it} + \varepsilon_{it} \quad (25)$$

Where:

FS_{it} represents firm size

A statistically significant coefficient α_1, α_2 and α_3 confirms the existence of path a.

Step 3: Firm Size and Financial Performance (Path b)

The third step assessed whether firm size significantly affects financial performance when sustainability disclosure is not included in the model.

$$ROA_{it} = \delta_0 + \delta_1 FS_{it} + \delta_2 FA_{it} + \delta_3 LEV_{it} + \varepsilon_{it} \quad (26)$$

A statistically significant coefficient δ_1 establishes path b, indicating that firm size is a meaningful predictor of financial performance.

Step 4: Sustainability Disclosures, Firm Size and Financial Performance (Path c')

The final step involved estimating a model that includes both sustainability disclosure and firm size to determine whether firm size mediates the relationship between sustainability disclosure and financial performance.

$$ROA_{it} = \sigma_0 + \sigma_1 SSDI_{it} + \sigma_2 GSDI_{it} + \sigma_3 ESDI_{it} + \sigma_4 FS_{it} + \sigma_5 FA_{it} + \sigma_6 LEV_{it} + \varepsilon_{it} \quad (27)$$

Mediation is inferred if firm size (σ_4) is statistically significant, and, if the coefficient of sustainability disclosure σ_1, σ_2 , and σ_3 are reduced in magnitude relative to β_1, β_2 , and β_3

in Step 1 of the analysis. A complete mediation occurs if σ_1 , σ_2 , and σ_3 becomes statistically insignificant after the inclusion of the firm size in the model. Partial mediation is inferred if the coefficients remain statistically significant but reduced in magnitude.

Further, to address the sub hypotheses/objectives in the fourth objective, the study examined whether firm size mediates the relationship between sustainability disclosure components and financial performance of firms listed on the Nairobi Securities Exchange. Sustainability disclosure was decomposed into its three components (social, corporate governance, and environmental disclosures) and mediation analysis was conducted for each component using a unified modelling framework. Firm size was proxied by the natural logarithm of total assets, while firm age and firm leverage were included as control variables in all models.

3.9 Diagnostic Tests

Diagnostic tests were conducted to assess the suitability of the panel dataset and the robustness of the estimated regression models. Given the panel structure of the data and the use of transformed variables, the study focused on diagnostics that directly affect the consistency and efficiency of panel estimators. Specifically, the study examined multicollinearity, heteroskedasticity, serial correlation, unit root (stationarity), and model specification. Tests of normality and linearity were not emphasized, as the models incorporate logarithmic transformations and panel estimators that do not strictly require normally distributed variables.

3.9.1 Unit Root Test

To ensure the validity of panel regression results, the study assessed the stationarity properties of the variables. Phinyomark et al. (2014) define stationarity as the condition in which the statistical features of a signal remain constant throughout time. The opposing concept of stationary is unit root or non-stationarity. Non-stationary data may result in spurious regression outcomes. The study employed panel unit root tests, specifically the Levin–Lin–Chu unit root test, to examine whether the variables were stationary. The null hypothesis for these tests assumes the presence of a unit root. Variables found to be non-stationary at levels were differenced where appropriate to achieve stationarity prior to estimation.

3.9.2 Multicollinearity Test

Multicollinearity refers to a high degree of correlation among explanatory variables, which can inflate standard errors and undermine the statistical significance of estimated coefficients. Consequently, multicollinearity arises when the independent variables exhibit a significant level of correlation among themselves. According to Zweifel et al. (2004) multicollinearity interferes with the capacity of explanatory variables to describe and forecast response variables. To assess multicollinearity, the study employed the Variance Inflation Factor (VIF). A VIF value exceeding 10 was considered indicative of severe multicollinearity. Where necessary, model specifications were evaluated to ensure that explanatory variables did not exhibit excessive collinearity that could compromise inference.

3.9.3 Heteroscedasticity Test

Heteroskedasticity arises when the variance of the error term is not constant across observations, leading to inefficient estimates and biased standard errors. On the other hand, homoscedasticity suggests that the error remains consistent throughout all values of the independent variables (Al-Juaidi et al., 2018). Heteroscedasticity undermines the validity of inference, diminishes the statistical power of hypothesis tests, and compromises the precision of the confidence intervals for regression coefficients. The study tested for heteroskedasticity using the Breusch–Pagan test. The null hypothesis of this test assumes homoskedasticity. Where evidence of heteroskedasticity was detected, robust standard errors were employed to correct for potential bias in statistical inference.

3.9.4 Serial Correlation Test

Serial correlation, also referred to as autocorrelation, occurs when error terms are correlated across time within the same cross-sectional unit. Gujarati (2012) defines autocorrelation as the correlation among elements of a time-ordered series of observations. Autocorrelation invalidates the accuracy of the calculated values for t , F , and χ^2 . In panel data settings, serial correlation can lead to underestimated standard errors and misleading hypothesis tests. The study employed the Wooldridge test for autocorrelation in panel data, which tests the null hypothesis of no first-order serial correlation. Where serial correlation was detected, appropriate corrective measures were applied during estimation.

3.9.5 Model Specification Test

Model specification was assessed using the Ramsey Regression Specification Error Test (RESET) to evaluate whether the functional form of the estimated models was correctly

specified and whether relevant variables had been omitted. The null hypothesis of the RESET test assumes that the model is correctly specified. Consequently, we do not reject the null hypothesis if the p-value of the test exceeds .05. Failure to reject the null hypothesis indicates that the estimated models are free from major specification errors and are suitable for inference (Ramsey, 1969).

3.10 Ethical Considerations

The objective of ethical considerations is to guide the research in a manner that safeguards participant social security while simultaneously cultivating their trust. The confidentiality of participants and the purpose for which the collected data will be utilized represent the primary ethical considerations. This study, for the reasons outlined below, presented minimal ethical concerns. Initially, it is important to note that the research utilized publicly accessible data, which is inherently secondary in character. Consequently, there was no necessity for questionnaires or respondents. Furthermore, the data was readily available on the company's websites. Nevertheless, the study conformed to the subsequent principles. Initially, to guarantee the impartiality of the results, the data was gathered through an objective methodology as outlined in the data collection schedules. Subsequently, the researcher secured the requisite authorization from both the university and NACOSTI prior to embarking on the fieldwork for data collection.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Response Rate

Table 4.1 presents the response rate for firms listed on the Nairobi Securities Exchange that constituted the target population of the study. Out of the 62 listed firms across various sectors, usable data were obtained from 40 firms, translating to an overall response rate of 64.5 percent. The response rate varied across sectors, with full coverage achieved in sectors such as automobiles and accessories, construction and allied, telecommunication, and manufacturing and allied, while lower response rates were observed in sectors such as commercial and services and insurance.

Table 4.1

Response Rate

Sector	Target Firms	Responses	Percentage
Agricultural	6	5	83.3%
Automobiles & Accessories	1	1	100%
Banking	10	8	80%
Commercial & Services	13	6	46%
Construction & Allied	5	5	100%
Energy & Petroleum	4	3	75%
Insurance	6	4	66.67%
Investment	5	1	20%
Investment Services	1	0	0%
Manufacturing & Allied	8	6	75%
Telecommunication	1	1	100%
Real Estate Investment Trust	1	0	0%
Exchange Traded Funds	1	0	0%
Total	62	40	64.5%

Source: Research Data, 2026

Some sectors, including investment services, real estate investment trusts, and exchange traded funds, recorded no usable responses due to limited or unavailable sustainability disclosures over the study period. This reflects the uneven adoption of sustainability reporting practices across sectors within emerging capital markets, where disclosure requirements and reporting maturity vary significantly (Khan et al., 2021; Eccles & Klimenko, 2023).

An overall response rate exceeding 60 percent is generally considered adequate for empirical analysis in organizational and corporate disclosure studies. According to Hair et al. (2022), response rates above 50 percent are typically regarded as sufficient for statistical analysis and reliable inference in business and management research. Similarly, Sekaran and Bougie (2020) note that response rates above 60 percent are considered good and capable of supporting robust empirical conclusions.

In studies relying on secondary corporate disclosures, slightly lower coverage may still be acceptable because the data depend on the availability of published reports rather than direct survey participation (Eccles & Klimenko, 2023). The achieved response rate was therefore deemed sufficient to support robust panel data analysis and to allow meaningful inference regarding the relationship between sustainability disclosures and financial performance among firms listed at the Nairobi Securities Exchange.

4.2 Descriptive Statistics for Sustainability Disclosure

This section presents descriptive statistics for the sustainability disclosure variables examined in the study. Specifically, the analysis summarizes the distributional

characteristics of the social, governance, and environmental sustainability disclosure indices. The descriptive statistics provide an overview of the level, variability, and dispersion of sustainability disclosure practices among firms listed on the NSE over the study period and form a basis for subsequent trend, correlation, and inferential analyses.

4.2.1 Social Sustainability Disclosure

This section examines social sustainability disclosure as a key dimension of organizational sustainability, focusing on how institutions report their social responsibilities and impacts. It highlights disclosures relating to labour practices and work decency, human rights, society and product responsibility. Through such disclosure, organizations enhance transparency and accountability while demonstrating their contribution to social well-being and long-term sustainable development.

4.2.1.1 Labour Practices and Work Decency

The statistics in Table 4.2 clearly demonstrate generally low levels of disclosure on workforce structure and employment stability indicators. For instance, disclosure on total workforce size is skewed towards no-disclosure, with 39.38 percent of firms reporting no disclosure, compared to 30.00 percent providing full disclosure. Similarly, employee turnover information remains weakly reported, with 38.13 percent of firms providing no disclosure and only 30.83 percent offering full disclosure. Minimum notice periods regarding operational changes are also largely unreported, as 41.88 percent of firms provide no disclosure, indicating limited transparency on employment protection and labour adjustment practices. These patterns suggest that firms are reluctant to disclose information

that directly reflects workforce stability, job security, and internal human resource dynamics.

Table 4.2

Labour Practices and Work Decency

Indicator	No Disclosure	Partial Disclosure	Full Disclosure
Total workforce	189 (39.38%)	147 (30.63%)	144 (30.00%)
Total number and rate of employee turnover	183 (38.13%)	149 (31.04%)	148 (30.83%)
Benefits provided exclusively to full-time employees	201 (41.88%)	138 (28.75%)	141 (29.38%)
Percentage of employees covered by collective bargaining agreements.	179 (37.29%)	154 (32.08%)	147 (30.63%)
Minimum notice period(s) regarding operational changes	201 (41.88%)	141 (29.38%)	138 (28.75%)
Percentage of Workforce presented in formal joint management-worker health & safety committees	176 (36.67%)	147 (30.63%)	157 (32.71%)
Rates of injury, occupational diseases etc.	187 (38.96%)	141 (29.38%)	152 (31.67%)
Education, training, etc. to assist workforce.	172 (35.83%)	161 (33.54%)	147 (30.63%)
Health and safety topics	201 (41.88%)	144 (30.00%)	135 (28.13%)
Average hours of training per year	180 (37.50%)	162 (33.75%)	138 (28.75%)

per employee by employee by category.			
Programmes for skills management and lifelong learning	170 (35.42%)	162 (33.75%)	148 (30.83%)
Percentage of employees receiving regular performance and development review.	183 (38.13%)	162 (33.75%)	135 (28.13%)
Composition of governance bodies and breakdown of employees per category	189 (39.38%)	141 (29.38%)	150 (31.25%)
Current Ratio of basic salary of men to women by employee category.	194 (40.42%)	153 (31.88%)	133 (27.71%)

Source: Research Data 2026

In contrast, disclosure related to formal employee welfare and labour rights is comparatively stronger. Benefits provided exclusively to full-time employees show relatively higher transparency, with 29.38 percent of firms providing full disclosure, although a substantial 41.88 percent still report no disclosure. Coverage of employees by collective bargaining agreements records moderate disclosure, with 30.63 percent of firms reporting full disclosure. However, occupational health outcomes remain weakly disclosed. Rates of injury and occupational diseases show 38.96 percent no disclosure, indicating continued hesitation by firms to report workplace safety outcomes that may expose operational risks or regulatory noncompliance.

The results further reveal selective transparency in training and employee development. Education and training initiatives are moderately disclosed, with 30.63 percent of firms providing full disclosure, while programmes for skills management and lifelong learning record 30.83 percent full disclosure. However, quantitative indicators such as average hours of training per year per employee are poorly reported, with 37.50 percent of firms providing no disclosure, suggesting limitations in measurement systems or weak incentives to report the intensity of training investments. Finally, disclosure on performance management, governance, and equity related indicators remains uneven.

Composition of governance bodies and employee breakdown records 31.25 percent full disclosure, reflecting relatively stronger institutional pressure for governance transparency. In contrast, regular performance and development reviews and gender pay equity indicators are weakly disclosed, with 38.13 percent and 40.42 percent of firms respectively reporting no disclosure. The findings point to a pattern where firms are more willing to disclose structured and less sensitive labour practices, while avoiding disclosure of indicators that directly reveal employment risks, workplace safety outcomes, and equity concerns.

The overall pattern demonstrates that non-disclosure remained the dominant practice under this component of social sustainability disclosure. This suggests that employee-related sustainability reporting among NSE-listed firms was still at a relatively low level during the study period.

4.2.1.2 Human Rights

The results indicate generally low levels of disclosure on human rights–related indicators, with no-disclosure dominating across most categories. For instance, 37.08 percent of firms

report no disclosure on investment agreements that include human rights clauses, compared to 32.29 percent providing full disclosure. Similarly, screening of significant suppliers and contractors on human rights remains weak, with 39.79 percent of firms reporting no disclosure and only 30.00 percent offering full disclosure. Disclosure on employee training in human rights aspects is also limited, as 39.38 percent of firms provide no disclosure, suggesting inadequate transparency on internal capacity building for human rights compliance as presented in Table 4.3.

Table 4.3

Human Rights

Indicator	No Disclosure	Partial Disclosure	Full Disclosure
Investment agreements that include human rights clauses	178 (37.08%)	147 (30.63%)	155 (32.29%)
Percentage of significant suppliers and contractors (have undergone screening on human rights)	191 (39.79%)	145 (30.21%)	144 (30.00%)
Total hours of employee training on human rights aspects. 57	189 (39.38%)	155 (32.29%)	136 (28.33%)
Total number of incidents of discrimination and actions taken	200 (41.67%)	124 (25.83%)	156 (32.50%)
Operations identified (in freedom of association and	199 (41.46%)	142 (29.58%)	139 (28.96%)

collective bargaining)			
Operations identified of having risk (child labor)	191 (39.79%)	137 (28.54%)	152 (31.67%)
Operations identified of having risk (compulsory labor)	182 (37.92%)	150 (31.25%)	148 (30.83%)
Percentage of security personnel trained.	210 (43.75%)	139 (28.96%)	131 (27.29%)
Total number of incidents of violations involving rights of indigenous people and actions taken	193 (40.21%)	155 (32.29%)	132 (27.50%)

Source: Research Data, 2026

Incident reporting and remediation practices show mixed but generally weak disclosure. A relatively higher proportion of firms provide full disclosure on incidents of discrimination and actions taken, at 32.50 percent, although 41.67 percent still report no disclosure. Identified incidents related to freedom of association and collective bargaining are poorly reported, with 41.46 percent of firms providing no disclosure. Similarly, disclosure on operations identified as having child labour risk and compulsory labour risk remains limited, with no disclosure levels of 39.79 percent and 37.92 percent respectively. These patterns suggest firms are reluctant to disclose sensitive information that could expose labour rights risks within their operations or supply chains.

Disclosure on preventive and remedial systems is particularly weak. Training of security personnel on human rights records the highest level of non-disclosure, at 43.75 percent, while only 27.29 percent of firms provide full disclosure. Likewise, incidents involving

rights of indigenous people and actions taken are largely unreported, with 40.21 percent of firms providing no disclosure and just 27.50 percent offering full disclosure. The findings point to selective transparency in human rights reporting, where firms are more willing to disclose policy-oriented commitments than concrete evidence of implementation, monitoring, and incident management.

4.2.1.3 Society

The results in Table 4.4 reveal generally low to moderate levels of disclosure on society related indicators, with no disclosure remaining prominent across most dimensions. Disclosure on the nature, scope, and effectiveness of community programmes shows 39.79 percent of firms reporting no disclosure, compared to 32.29 percent providing partial disclosure and 27.29 percent offering full disclosure. Similarly, reporting on the number of business units analyzed for corruption is weak, with 40.63 percent of firms providing no disclosure and only 31.67 percent providing full disclosure. These patterns indicate limited transparency in firms' engagement with community development and internal anti-corruption risk assessment processes.

Disclosure on anti-corruption training and response mechanisms is relatively balanced but still modest. Training of employees on anti-corruption records 38.54 percent non-disclosure, while 30.63 percent of firms provide partial disclosure and 30.83 percent provide full disclosure. Actions taken in response to corruption incidents follow a similar pattern, with 38.96 percent of firms reporting no disclosure and 30.42 percent providing full disclosure. Public policy positions and participation in public policy development and lobbying are among the weakest areas, with 42.71 percent of firms reporting no disclosure

and only 26.25 percent providing full disclosure, suggesting reluctance to disclose politically sensitive engagements.

Table 4.4

Disclosure Indicators on Society

Indicator	No Disclosure	Partial Disclosure	Full Disclosure
Nature, scope, and effectiveness of any programmes	191 (39.79%)	158 (32.92%)	131 (27.29%)
Percentage and total number of business units analyzed for corruption.	195 (40.63%)	133 (27.71%)	152 (31.67%)
Percentage of employees trained in anticorruption	185 (38.54%)	147 (30.63%)	148 (30.83%)
Actions taken in response to incidents of corruption.	187 (38.96%)	147 (30.63%)	146 (30.42%)
Public policy positions and participation in public policy development and lobbying	205 (42.71%)	149 (31.04%)	126 (26.25%)
Total value of financial and in-kind contributions (political)	201 (41.88%)	138 (28.75%)	141 (29.38%)
Total number of legal actions for anti-competitive behavior	199 (41.46%)	133 (27.71%)	148 (30.83%)
Monetary fines and non-monetary sanctions for non-compliance with laws etc.	201 (41.88%)	127 (26.46%)	152 (31.67%)

Source: Research Data 2026

Financial and legal compliance related indicators also show uneven disclosure. The total value of financial and in-kind political contributions is poorly reported, with 41.88 percent of firms providing no disclosure and 29.38 percent providing full disclosure. Disclosure on legal actions for anti-competitive behavior remains limited, as 41.46 percent of firms report no disclosure. In contrast, monetary fines and non-monetary sanctions for no compliance with laws record relatively higher full disclosure at 31.67 percent, although non-disclosure remains high at 41.88 percent. Thus, the findings suggest selective transparency in society related disclosures, where firms are more inclined to report less contentious compliance outcomes while avoiding detailed disclosure on corruption risks, political engagement, and community impact are central to societal trust and ethical business conduct.

4.2.1.4 Product Responsibility

The results in Table 4.5 indicate generally low to moderate disclosure levels on product responsibility indicators, with non-disclosure remaining substantial across most dimensions. Reporting on life cycle stages in which health and safety impacts of products and services are assessed shows 37.71 percent of firms providing no disclosure, compared to 31.04 percent offering partial disclosure and 31.25 percent providing full disclosure. Similarly, disclosure on incidents of non-compliance with health and safety standards records 38.33 percent non-disclosure, while 31.67 percent of firms provide full disclosure. These findings suggest limited transparency regarding systematic assessment and management of product related health and safety risks.

Table 4.5

Product Responsibility

Indicator	No Disclosure	Partial Disclosure	Full Disclosure
Life cycle stages in which health & safety impacts of products and services are assessed for improvement	181 (37.71%)	149 (31.04%)	150 (31.25%)
Total number of incidents of non-compliance, health and safety impacts	184 (38.33%)	144 (30.00%)	152 (31.67%)
Product and service information required by procedures	181 (37.71%)	147 (30.63%)	152 (31.67%)
Total number of incidents of non-compliance with laws (products & services)	204 (42.50%)	147 (30.63%)	129 (26.88%)
Practices related to customer satisfaction	186 (38.75%)	158 (32.92%)	136 (28.33%)
Programs for adherence to laws, standards etc. related to marketing communications	185 (38.54%)	159 (33.13%)	136 (28.33%)
Incidents of non-compliance with regulations (marketing communications)	189 (39.38%)	154 (32.08%)	137 (28.54%)
Substantiated complaints regarding breaches of customer privacy & losses of customer data)	199 (41.46%)	143 (29.79%)	138 (28.75%)
Fines for non-compliance with	201 (41.88%)	150 (31.25%)	129 (26.88%)

Disclosure related to product information, compliance, and customer protection remains uneven. Information on products and services required by procedures is not fully transparent, with 37.71 percent of firms reporting no disclosure and 31.67 percent providing full disclosure. Non-compliance with product and service laws is among the weakest areas, as 42.50 percent of firms report no disclosure and only 26.88 percent provide full disclosure. Practices related to customer satisfaction also show modest transparency, with 38.75 percent of firms providing no disclosure, indicating that firms are reluctant to report feedback mechanisms and outcomes that directly reflect customer experience.

Marketing and data protection related indicators are similarly underreported. Disclosure on adherence to laws and standards governing marketing communications records 38.54 percent non-disclosure, while incidents of non-compliance with marketing regulations show 39.38 percent non-disclosure. Substantiated complaints regarding breaches of customer privacy and losses of customer data are also poorly disclosed, with 41.46 percent of firms reporting no disclosure and only 28.75 percent providing full disclosure. Therefore, the findings reveal selective transparency in product responsibility reporting, where firms tend to disclose general policy commitments but avoid detailed reporting on compliance failures, customer grievances, and data protection incidents.

4.2.2 Corporate Governance Disclosure

This section examines corporate governance disclosure as a key dimension of organizational sustainability. It highlights disclosures relating to financial, risk and

governance, and social economic impact. Through such disclosure, organizations enhance transparency and accountability while demonstrating their contribution to social well-being and long-term sustainable development.

4.2.2.1 Financial, Risk and Governance

The results in Table 4.6 show low to moderate levels of disclosure on financial, risk, and governance indicators, with no disclosure remaining prevalent across most items. Reporting on direct economic value generated and distributed records 40.00 percent of firms providing no disclosure, compared to 29.58 percent offering partial disclosure and 30.42 percent providing full disclosure. Similarly, disclosure on the financial implications and other risks and opportunities related to climate change remains uneven, with 37.50 percent of firms reporting no disclosure and 33.96 percent providing full disclosure. This suggests that many firms are still reluctant to transparently report on value creation and climate related financial exposures.

Table 4.6*Financial, Risk and Governance*

Indicator	No Disclosure	Partial Disclosure	Full Disclosure
Direct economic value generated and distributed	192 (40.00%)	142 (29.58%)	146 (30.42%)
Financial implications and other risks & opportunities due to climate change	180 (37.50%)	137 (28.54%)	163 (33.96%)
Coverage of org defined benefit plan obligations	177 (36.88%)	142 (29.58%)	161 (33.54%)
Significant financial assistance received from govt.	186 (38.75%)	141 (29.38%)	153 (31.88%)

Source: Research Data, 2026

Disclosure on organizational obligations and government support shows a comparable pattern. Coverage of organization defined benefit plan obligations records 36.88 percent of firms with no disclosure, while 33.54 percent provide full disclosure. Information on significant financial assistance received from government is also weakly reported, with 38.75 percent of firms providing no disclosure and 31.88 percent offering full disclosure. Thus, the findings indicate selective transparency in financial, risk, and governance reporting, where firms are more inclined to disclose general financial information than detailed exposure to risks, obligations, and public support, pointing to gaps in comprehensive accountability and risk communication.

4.2.2.2 Social Economic Impact

Disclosure on worker training in occupational health and safety shows 39.17 percent of firms providing no disclosure, while 30.42 percent report partial disclosure and 30.42 percent provide full disclosure. Similarly, reporting on the ratio of standard entry level wage compared to the local minimum wage remains uneven, with 38.13 percent of firms providing no disclosure and 31.04 percent offering full disclosure, suggesting limited transparency on fair wage practices as shown in Table 4.7 below.

Table 4.7

Social Economic Impact

Indicator	No Disclosure	Partial Disclosure	Full Disclosure
Worker training on occupational health and safety	188 (39.17%)	146 (30.42%)	146 (30.42%)
Range of ratios of standard entry level wage compared to local minimum wage	183 (38.13%)	148 (30.83%)	149 (31.04%)
Policy, practices and proportion of spending on locally based suppliers	181 (37.71%)	142 (29.58%)	157 (32.71%)
Procedures for local hiring and proportion of senior mgt. hired from local community	182 (37.92%)	140 (29.17%)	158 (32.92%)
Development and impact of infrastructure investments and services (for public benefit)	198 (41.25%)	156 (32.50%)	126 (26.25%)

Source: Research Data, 2026

Disclosure related to local economic participation and employment practices shows relatively stronger reporting but remains inconsistent. Policies and practices on local procurement record 37.71 percent no disclosure, compared to 32.71 percent full disclosure. Procedures for local hiring and the proportion of senior management hired from the local community perform slightly better, with 32.92 percent of firms providing full disclosure, although 37.92 percent still report no disclosure. These patterns suggest that while firms acknowledge the importance of local economic engagement, comprehensive reporting on implementation remains limited.

Disclosure on development and impact of infrastructure investments and services for public benefit is among the weakest areas. A substantial 41.25 percent of firms provide no disclosure, while only 26.25 percent offer full disclosure. The findings reveal selective transparency in social economic impact reporting, where firms tend to disclose general commitments to local development but provide limited detail on outcomes, scale, and effectiveness of their socio economic.

4.2.3 Environmental Sustainability Disclosure

This section discusses the Environmental Sustainability Disclosure (ESD) as one of the major areas of sustainability disclosure. This review is organized based on three major areas which include resource efficiency and conservation, biodiversity and habitat management, and environmental impact mitigation, which combined together represents the activities of firms to use natural resources in a responsible manner, preserve ecosystems, and reduce or address negative environmental impacts resulting due to their activities.

4.2.3.1 Resource Efficiency and Conservation

The results in Table 4.8 show generally low to moderate disclosure on resource efficiency and conservation indicators, with no disclosure remaining widespread across most measures. Reporting on materials used by weight or volume is limited, as 47.92 percent of firms provide no disclosure, while 31.25 percent offer partial disclosure and only 26.25 percent provide full disclosure. Similarly, disclosure on the proportion of recycled input materials remains weak, with 43.33 percent of firms reporting no disclosure and 30.21 percent providing full disclosure. These patterns indicate that firms are reluctant to disclose detailed information on material use and recycling practices.

Table 4.8*Resource Efficiency and Conservation*

Indicator	No Disclosure	Partial Disclosure	Full Disclosure
Materials used by weight or volume.	230 (47.92%)	124 (25.83%)	126 (26.25%)
Percentage of materials used that are recycled input materials.	208 (43.33%)	127 (26.46%)	145 (30.21%)
Direct energy consumption by primary energy source	195 (40.63%)	147 (30.63%)	138 (28.75%)
Indirect energy consumption by primary energy source.	219 (45.63%)	131 (27.29%)	130 (27.08%)
Energy saved due to conservation and efficiency improvements	219 (45.63%)	132 (27.50%)	129 (26.88%)
Initiatives to provide energy efficient products and services	192 (40.00%)	130 (27.08%)	158 (32.92%)
Initiatives to reduce indirect energy consumption	196 (40.83%)	124 (25.83%)	160 (33.33%)
Total water withdrawal by source.	219 (45.63%)	123 (25.63%)	138 (28.75%)
Water sources significantly affected by withdrawal of water.	198 (41.25%)	131 (27.29%)	151 (31.46%)
Percentage and total volume of water recycled and reused	208 (43.33%)	150 (31.25%)	122 (25.42%)

Source: Research Data, 2026

Energy related indicators are among the weakest areas of reporting. Direct energy consumption by primary energy source records 40.63 percent no disclosure, while indirect energy consumption shows an even higher no disclosure rate of 45.63 percent. Disclosure on energy saved through conservation and efficiency improvements is also limited, with 45.63 percent of firms providing no disclosure and only 26.88 percent offering full disclosure. This suggests that firms face challenges in measuring and reporting energy use and efficiency outcomes, or may be unwilling to disclose performance related data.

Disclosure on initiatives aimed at improving efficiency and conserving water is uneven. Initiatives to provide energy efficient products and services show relatively stronger reporting, with 32.92 percent of firms providing full disclosure, although 40.00 percent still report no disclosure. Initiatives to reduce indirect energy consumption record 33.33 percent full disclosure, while water related indicators remain weakly disclosed. Total water withdrawal by source and sources significantly affected by water withdrawal record no disclosure levels above 41 percent, and the percentage and total volume of water recycled has the lowest level of full disclosure at 25.42 percent. Thus, the findings reveal selective transparency in resource efficiency and conservation reporting, with firms more willing to disclose policy-oriented initiatives than detailed quantitative performance metrics.

4.2.3.2 Biodiversity and Habitat Management

The results in Table 4.9 indicate low levels of disclosure on biodiversity and habitat management indicators, with no disclosure dominating across all measures. Reporting on the location and size of land in protected areas or areas of high biodiversity shows 43.75 percent of firms providing no disclosure, while only 27.71 percent offer full disclosure.

Similarly, disclosure on significant impacts of activities on biodiversity remains limited, with 40.63 percent of firms reporting no disclosure and 29.79 percent providing full disclosure.

Information on habitats protected or restored is also weakly reported, as 43.13 percent of firms provide no disclosure, suggesting limited transparency on direct ecological impacts and conservation outcomes. Furthermore, disclosure on biodiversity management strategies and affected species follows a comparable pattern. Strategies, current actions, and future plans for managing biodiversity impacts record the highest level of no disclosure at 44.38 percent, with 30.42 percent of firms providing full disclosure.

Table 4.9*Biodiversity and Habitat Management*

Indicator	No Disclosure	Partial Disclosure	Full Disclosure
Location and size of land (in protected areas & areas of high biodiversity)	210 (43.75%)	137 (28.54%)	133 (27.71%)
Description of significant impacts of activities on biodiversity.	195 (40.63%)	142 (29.58%)	143 (29.79%)
Habitats protected or restored.	207 (43.13%)	137 (28.54%)	136 (28.33%)
Strategies, current actions, and future plans for managing impacts on biodiversity.	213 (44.38%)	121 (25.21%)	146 (30.42%)
Number of IUCN Red List species and national conservation list species affected by operations.	210 (43.75%)	122 (25.42%)	148 (30.83%)

Source: Research Data 2026

Reporting on the number of IUCN Red List species and national conservation list species affected by operations is similarly limited, with 43.75 percent of firms providing no disclosure and 30.83 percent offering full disclosure. The findings reveal selective and generally weak biodiversity reporting, where firms are more inclined to disclose broad policy statements than detailed, location specific, and outcome-oriented information on biodiversity and habitat management.

4.2.3.3 Environmental Impact Mitigation

The findings in Table 4.10 point to generally weak disclosure on environmental impact mitigation, with no disclosure prevailing across most emissions related indicators. Information on total direct and indirect greenhouse gas emissions by weight is largely absent, as 45.21 percent of firms provide no disclosure and only 24.79 percent report full disclosure. A similar pattern is observed for other relevant indirect greenhouse gas emissions, where 40.00 percent of firms report no disclosure. This suggests that comprehensive measurement and transparent reporting of emissions remain limited among firms.

Table 4.10

Environmental Impact Mitigation

Indicator	No Disclosure	Partial Disclosure	Full Disclosure
Total direct and indirect greenhouse gas emissions by weight	217 (45.21%)	144 (30.00%)	119 (24.79%)
Other relevant indirect greenhouse gas emissions by weight	192 (40.00%)	144 (30.00%)	144 (30.00%)
Initiatives to reduce greenhouse gas emissions and reductions achieved	201 (41.88%)	139 (28.96%)	140 (29.17%)
Emissions of ozone depleting substances by weight.	201 (41.88%)	144 (30.00%)	135 (28.13%)
CO ₂ , NO, SO, and other significant emissions by type and weight.	215 (44.79%)	142 (29.58%)	123 (25.63%)

Total water discharge by quality and destination.	198 (41.25%)	149 (31.04%)	133 (27.71%)
Total weight of waste by type and disposal method.	214 (44.58%)	120 (25.00%)	146 (30.42%)
Total number and volume of significant spills.	216 (45.00%)	132 (27.50%)	132 (27.50%)
Weight of transported waste deemed hazardous	205 (42.71%)	139 (28.96%)	136 (28.33%)
Identity, size, protected status, and biodiversity value of water bodies and related habitats affected by organization.	203 (42.29%)	155 (32.29%)	122 (25.42%)
Initiatives to mitigate environmental impacts	217 (45.21%)	124 (25.83%)	139 (28.96%)
Percentage of products sold and their packaging materials that are reclaimed by category.	206 (42.92%)	128 (26.67%)	146 (30.42%)
Monetary fines and non-monetary sanctions for non-compliance with environmental laws & regulations	226 (47.08%)	122 (25.42%)	132 (27.50%)
Environmental impacts of transporting.	219 (45.63%)	125 (26.04%)	136 (28.33%)
Total environmental protection	196 (40.83%)	138 (28.75%)	146 (30.42%)

expenditures and
investments by type,
materials used by
weight or volume.

Source: Research Data, 2026

Disclosure relating to mitigation initiatives and emissions performance is also inconsistent. Initiatives to reduce greenhouse gas emissions and the reductions achieved show 41.88 percent no disclosure, while reporting on ozone depleting substances records the same level of non-reporting. Other significant air emissions such as carbon dioxide nitrogen oxides and Sulphur dioxide are even less transparent, with 44.79 percent of firms providing no disclosure. These patterns indicate reluctance to disclose detailed quantitative emissions data that could expose environmental risks or regulatory scrutiny.

Water pollution and waste management indicators exhibit similarly low transparency. Reporting on total water discharge by quality and destination shows 41.25 percent no disclosure, while the total number and volume of significant spills records 45.00 percent no disclosure. Information on the transport of hazardous waste is also weakly disclosed, with 42.71 percent of firms reporting no disclosure. In addition, identification of affected water bodies and habitats remains limited, reflecting gaps in reporting on ecological impacts and environmental incidents.

Disclosure on mitigation actions recycling compliance and environmental expenditure remains selective. Initiatives to mitigate environmental impacts show 45.21 percent no disclosure, although reporting on product and packaging material recovery performs relatively better. Information on monetary fines and non-monetary sanctions for non-compliance with environmental laws is among the poorest disclosed indicators, with 47.08

percent no disclosure. Environmental impacts of transportation and total environmental protection expenditures also remain weakly reported. The results suggest that firms are more willing to disclose broad mitigation initiatives than detailed outcomes incidents and compliance related information, highlighting persistent shortcomings in environmental impact mitigation reporting.

4.3 Descriptive Statistics for Financial Performance, Firm Size, Age and Leverage

Descriptive statistics in Table 4.11 indicate that the overall mean of financial performance (ROA) is .0790, implying that, on average, firms listed at the Nairobi Securities Exchange recorded positive returns on assets during the study period. The minimum value of .0100 and the maximum value of .1735 reveal noticeable dispersion in performance outcomes across firms and years. Although all values remain positive, the spread between the minimum and maximum suggests meaningful variation in profitability levels within the sample. The standard deviation of .0336 further confirms the presence of variability in financial performance both across firms (between variation of .0082) and over time (within variation of .0326), supporting the relevance of panel estimation techniques.

The positive mean value of return on assets further suggests that, on average, firms listed on the Nairobi Securities Exchange maintained profitable operations during the study period. This indicates that the sampled firms were generally able to utilize their asset bases efficiently in generating earnings. The observed dispersion between the minimum and maximum values reflects heterogeneity in operational efficiency and resource utilization across firms. Such variation in financial outcomes is consistent with the argument that firm-level strategic decisions, including sustainability practices, corporate governance mechanisms, and financial policies, can significantly influence profitability.

From a theoretical perspective, this observation resonates with the triple bottom line framework, which posits that organizations that effectively balance economic, social, and environmental considerations are more likely to achieve sustainable financial outcomes. Firms that integrate sustainability considerations into their operational strategies may enhance operational efficiency, improve stakeholder relationships, and reduce long-term risks, thereby strengthening financial performance.

Empirically, these observations align with findings by Singh and Chakraborty (2021), Nogueira et al. (2024) and Zhou et al. (2024) who documented a generally positive relationship between sustainability practices and firm financial performance. Similarly, Gathoni and Muiru (2023) found that sustainability-related disclosures among firms listed at the Nairobi Securities Exchange were associated with improved financial outcomes. However, the variability observed across firms also reflects the mixed results reported in the literature, where some studies have found insignificant or context-dependent relationships between sustainability initiatives and financial performance. This heterogeneity underscores the importance of examining firm-specific factors that may influence the sustainability-performance nexus.

With regard to sustainability disclosure, the findings show that corporate governance sustainability disclosure recorded the highest overall mean (46.44), followed closely by social sustainability disclosure (45.04), while environmental sustainability disclosure had a comparatively lower mean (42.66). These averages suggest that firms tend to place slightly greater emphasis on governance-related reporting relative to environmental dimensions, although all three indices reflect moderate levels of disclosure overall.

Table 4.11

Descriptive Statistics for Sustainability Disclosure, Financial Performance, Firm Size, Age and Leverage

Variable	Dimension	Mean	Std. Dev.	Min	Max	Observations
ROA	Overall	.079001	.033611	.010000	.173512	<i>N</i> = 480
	Between		.008238	.065621	.099125	<i>n</i> = 40
	Within		.032609	-.002788	.164016	<i>T</i> = 12
SSDI	Overall	45.04427	17.5209	2.5000	81.2500	<i>N</i> = 480
	Between		4.463323	38.64583	58.4375	<i>n</i> = 40
	Within		16.95636	.8776042	79.6276	<i>T</i> = 12
GSDI	Overall	46.43519	21.66485	0	94.44444	<i>N</i> = 480
	Between		5.651864	35.64815	59.72222	<i>n</i> = 40
	Within		20.93217	-	92.73148	<i>T</i> = 12
ESDI	Overall	42.66319	18.80281	0	80	<i>N</i> = 480
	Between		5.090088	30.55556	53.88889	<i>n</i> = 40
	Within		18.11716	-	83.21875	<i>T</i> = 12
Firm Size	Overall	17.24797	2.41679	10.86559	22.03489	<i>N</i> = 480
	Between		2.354396	12.77533	21.08944	<i>n</i> = 40
	Within		.6519109	11.48598	19.09731	<i>T</i> = 12
Firm Age	Overall	45.05	13.59593	15	74	<i>N</i> = 480
	Between		13.30307	20.5	68.5	<i>n</i> = 40
	Within		3.455654	39.55	50.55	<i>T</i> = 12
Leverage	Overall	3.390512	26.01921	-	568.1991	<i>N</i> = 480
	Between		8.352826	-2.70551	53.33918	<i>n</i> = 40

Within	24.67451	-	518.2504	$T = 12$
			53.14714	

Source: Research Data, 2026

The observed ranges across the indices such as SSDI (2.50 to 81.25), GSDI (0 to 94.44), and ESDI (0 to 80) demonstrate considerable differences in reporting intensity among firms. This dispersion implies that sustainability reporting practices are not uniform across NSE-listed firms, reflecting varying strategic priorities, regulatory compliance levels, and stakeholder pressures. The considerable variation observed across the sustainability disclosure indices further suggests that firms differ significantly in their commitment to sustainability reporting. Such disparities may arise from differences in organizational resources, managerial priorities, industry characteristics, and stakeholder expectations. Firms operating in environmentally sensitive industries or those facing greater scrutiny from regulators and investors may be more inclined to disclose sustainability information to demonstrate accountability and responsible business conduct.

This pattern is consistent with legitimacy theory, which posits that organizations disclose sustainability information in order to maintain societal approval and legitimacy. Firms facing stronger stakeholder pressure may adopt more extensive sustainability reporting practices as a strategic mechanism to align organizational activities with societal expectations and safeguard their reputational standing.

Empirical studies provide support for this argument. For instance, Aydoğmuş et al. (2022) found that sustainability disclosures are influenced by stakeholder pressures and institutional environments. Similarly, Zhou et al. (2024) reported that firms operating in

highly visible industries tend to adopt stronger sustainability disclosure practices as a means of enhancing legitimacy and stakeholder trust.

However, the wide dispersion in disclosure practices also suggests that sustainability reporting frameworks in emerging markets remain largely voluntary and unevenly implemented. As noted by Serem et al. (2024), firms in developing economies often demonstrate heterogeneous sustainability disclosure patterns due to differences in corporate governance structures, regulatory oversight, and managerial awareness of sustainability reporting standards.

The relatively higher mean value for governance sustainability disclosure compared to social and environmental disclosure suggests that firms listed on the Nairobi Securities Exchange prioritize governance-related transparency more strongly than other sustainability dimensions. This pattern may reflect the increasing regulatory emphasis on corporate governance practices, as well as investor demand for greater accountability, board effectiveness, and transparency in managerial decision-making. Governance disclosures often provide stakeholders with signals regarding the quality of oversight mechanisms within firms, which can influence investor confidence and market valuation.

This finding can be interpreted through the lens of agency theory, which argues that enhanced disclosure mechanisms reduce information asymmetry between managers and shareholders. By strengthening governance transparency, firms signal their commitment to monitoring managerial actions and safeguarding shareholder interests. Such disclosures can therefore reduce agency conflicts and improve corporate accountability.

Empirical evidence supports this observation. Studies such as Wanjau (2019) and Sarpong-Danquah (2022) have shown that governance disclosure is often more developed than environmental or social reporting in emerging markets, largely due to stronger regulatory frameworks and investor pressure. Similarly, Wu et al. (2022) found that governance structures significantly strengthen the relationship between sustainability practices and financial performance by enhancing monitoring and accountability mechanisms within firms.

Nevertheless, the moderate levels of environmental disclosure relative to governance disclosure also reflect challenges commonly observed in developing markets, where environmental reporting frameworks are still evolving. Studies such as Aniebiet and Emenyi (2024), and Komara et al. (2024) have similarly observed that firms often lag in environmental disclosure due to higher compliance costs, lack of standardized reporting guidelines, and limited regulatory enforcement. These dynamics suggest that while sustainability reporting is gradually gaining prominence among NSE-listed firms, the adoption of comprehensive environmental reporting practices remains uneven.

In the case of firm characteristics, the average firm size of 17.25 (log of total assets) suggests that most firms in the sample are relatively large and established entities. The range between 10.87 and 22.03 indicates notable variation in scale, capturing structural differences across firms. The relatively large average firm size observed among the sampled firms suggests that the companies listed on the NSE are well-established entities with substantial asset bases. Larger firms typically possess greater financial and organizational resources, which enable them to adopt more comprehensive sustainability reporting practices and implement sustainability initiatives more effectively.

The influence of firm size on sustainability disclosure can be explained through both legitimacy theory and resource availability perspectives. Larger firms tend to attract greater public scrutiny due to their visibility and market influence. As a result, they often face stronger expectations from regulators, investors, and civil society organizations to demonstrate responsible corporate behavior. Consequently, such firms may adopt more extensive sustainability reporting practices to maintain legitimacy and reinforce their corporate reputation.

Empirical evidence supports this argument. Dremptetic et al. (2020) found that larger firms tend to report higher ESG scores because they possess the necessary resources and institutional capabilities to implement sustainability initiatives. Similarly, Mukiri and Muathe (2020) observed that firm size positively influences environmental disclosure among firms listed on the Nairobi Securities Exchange. These findings suggest that organizational scale plays a crucial role in shaping sustainability disclosure practices and corporate transparency.

The mean firm age of 45.05 years, with a range between 15 and 74 years, shows that the sampled firms are generally mature and experienced organizations. The relatively high average firm age indicates that most of the sampled firms are mature organizations with long operational histories. Mature firms often accumulate significant organizational knowledge, managerial experience, and institutional legitimacy over time, which can influence their strategic orientation toward sustainability practices.

Older firms may have more established governance structures and reporting systems, enabling them to integrate sustainability disclosure into their corporate reporting

frameworks more effectively. Furthermore, experienced firms may face stronger stakeholder expectations to maintain reputational capital, which can motivate them to adopt responsible business practices and transparent reporting mechanisms.

This observation is consistent with findings by Schreck and Raithel (2018), who argued that firms with longer operational histories tend to exhibit stronger sustainability engagement due to accumulated experience and institutional learning. Mature firms may also be more responsive to evolving stakeholder expectations regarding environmental and social responsibility.

Conversely, leverage presents a mean of 3.39 but with a remarkably wide range from -11.78 to 568.20, indicating substantial variation in capital structure decisions across firms and time. The wide dispersion in leverage values indicates substantial differences in capital structure decisions across firms. Such variation suggests that firms adopt diverse financing strategies depending on their operational needs, risk tolerance, and access to financial markets. Firms with higher leverage levels tend to rely more heavily on debt financing, which may expose them to increased financial obligations and monitoring from creditors. This monitoring can influence managerial decision-making and strategic investments as firms seek to maintain their ability to meet debt obligations and sustain financial stability (Arhinful & Radmehr, 2023; Tian et al., 2024).

From an agency theory perspective, leverage can function as a governance mechanism that constrains managerial opportunism by imposing financial discipline through mandatory interest and principal repayments. According to Jensen and Meckling (1976), debt obligations reduce the free cash flow available to managers and thereby limit the potential

for opportunistic behavior or inefficient resource allocation. Similarly, Jensen (1986) argues that debt financing can mitigate agency costs by forcing managers to commit to efficient investment decisions in order to avoid financial distress.

However, excessive leverage may also increase financial risk and limit a firm's capacity to allocate resources toward long-term strategic investments such as sustainability initiatives. Highly indebted firms may prioritize short-term financial obligations over discretionary expenditures associated with environmental or social sustainability programs. This argument is supported by Arhinful and Radmehr (2023), who notes that highly leveraged firms may experience investment constraints due to debt overhang problems, which can discourage long-term strategic investments.

Empirical evidence regarding the relationship between leverage and sustainability practices remains mixed. Some studies suggest that highly leveraged firms may be reluctant to engage in sustainability initiatives due to financial constraints and the prioritization of debt servicing obligations (Schreck & Raithel, 2018). Conversely, other studies argue that creditor monitoring may encourage greater transparency and improved disclosure practices, including sustainability reporting, as firms seek to signal financial credibility and reduce information asymmetry (Drempetic et al., 2020). Consequently, the inclusion of leverage as a control variable in this study is theoretically justified, as capital structure decisions may influence both sustainability disclosure behaviour and financial performance outcomes.

4.4 Trend Analysis

This section will include a trend analysis of the study variables in an attempt to determine how they are moving over time. The analysis will consider the trend in terms of financial

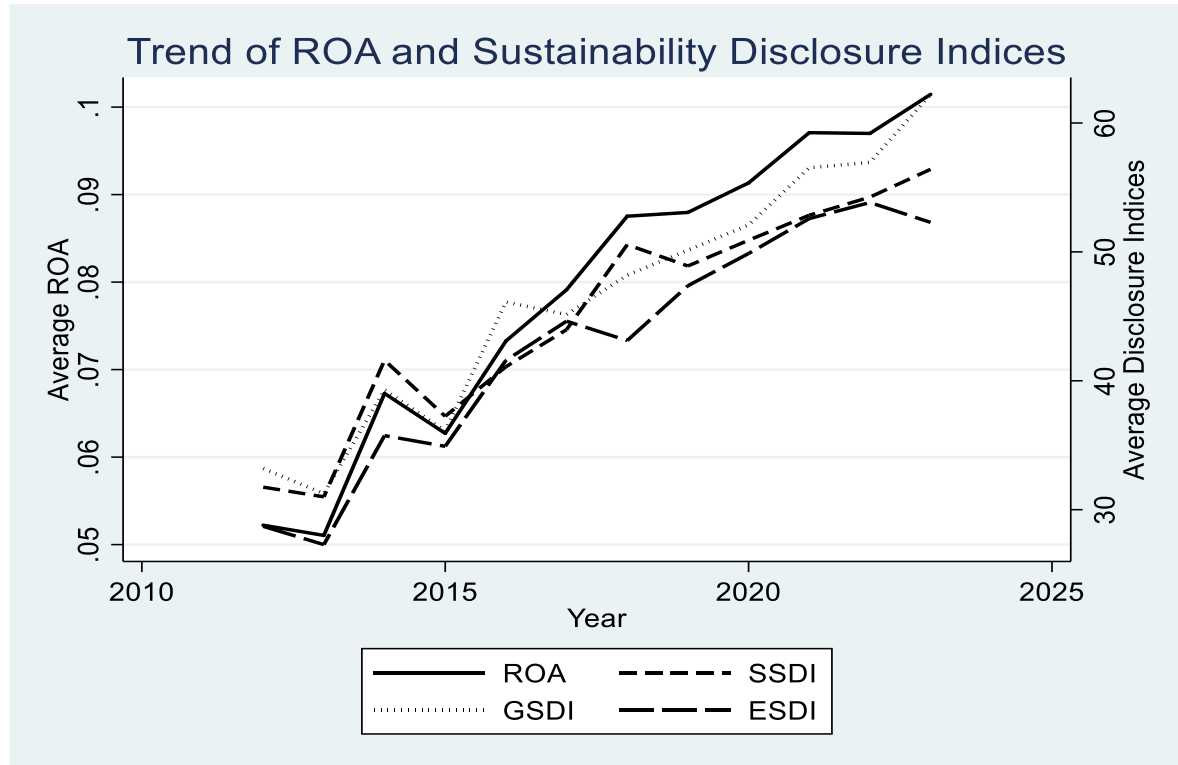
performance and sustainability disclosures to determine the way in which the results of firms and their reporting practices have changed throughout the period of the study. Moreover, some trends are analyzed concerning the size of firms, the age of firms, and leverage to give a background on how these firm characteristics and financial structures change with time, which in turn help in shaping a better picture of the dynamics behind the next stage of empirical research.

4.4.1 Trend Analysis for Financial Performance and Sustainability Disclosure

The trend analysis of the 2012-2023 period as shown in Figure 4.4 indicates how both the internal firm dynamics and significant economic shock affect the financial performance as well as the sustainability disclosure.

Figure 4.1

Trend Analysis for Financial Performance and Sustainability Disclosures



Source: Research Data, 2026

In Figure 4.4, the period from approximately 2013 to 2016 is characterized by a gradual upward trend in ROA, indicating improving profitability among firms listed at the Nairobi Securities Exchange. During the same period, the sustainability disclosure indices (SSDI, GSDI, and ESDI) also exhibit a steady increase, though at a more moderate pace in the earlier years. This parallel movement suggests that as firms enhanced their social, governance, and environmental reporting practices, financial performance also improved. This observed co-movement between sustainability disclosures and financial performance is consistent with the triple bottom line framework, which posits that firms integrating economic, social, and environmental considerations into their strategic operations are more

likely to achieve sustainable financial outcomes. According to Elkington (1997), organizations that balance profit objectives with social responsibility and environmental stewardship are better positioned to enhance long-term firm value through improved stakeholder relations and operational efficiency.

From 2017 to 2019, both ROA and the disclosure indices continue to rise more strongly, reflecting a phase in which sustainability reporting became more pronounced while profitability reached higher levels. The co-movement of ROA and the sustainability indices during these years visually supports the positive association established in the regression results. The strengthening of sustainability disclosures alongside improved profitability during this period is consistent with empirical findings reported in the sustainability-performance literature. For instance, Sroufe and Gopalakrishna-Remani (2019) documented that firms adopting stronger sustainability practices tend to achieve improved financial outcomes due to enhanced stakeholder engagement and improved operational efficiencies. Similarly, Singh and Chakraborty (2021) found that firms that expand sustainability disclosure practices experience improvements in profitability and market reputation.

Around 2020, ROA shows a slight moderation followed by some fluctuations, while sustainability disclosure indices remain consistently on an upward trajectory. The divergence between the temporary moderation in financial performance and the continued growth in sustainability disclosures may reflect the influence of external economic disruptions that affected firm profitability while disclosure practices continued to expand. During periods of uncertainty, firms may intensify sustainability reporting as a mechanism to maintain legitimacy and reassure stakeholders. This interpretation aligns with legitimacy

theory, which argues that firms disclose social and environmental information to maintain societal approval and protect their reputational standing during periods of heightened scrutiny (Spanuth & Urbano, 2024).

Between 2021 and 2023, ROA recovers and reaches its highest levels in the series, and SSDI, GSDI, and ESDI remain elevated. The sustained increase in sustainability disclosure during this period suggests that sustainability reporting may have become increasingly institutionalized among firms listed on the NSE. Once sustainability reporting practices become embedded within corporate governance and reporting systems, firms tend to maintain or expand such disclosures as part of routine corporate communication with stakeholders. Similar observations have been reported by Aydoğmuş et al. (2022), who found that firms increasingly integrate sustainability disclosure into their strategic governance structures in order to strengthen transparency and stakeholder confidence.

4.4.2 Trend Analysis for Firm Size, Firm Age and Leverage

Further, in Figure 4.5, the trend analysis for the period 2012 to 2019 shows relatively stable movements in firm size alongside a steady increase in firm age, reflecting gradual asset growth and the natural maturation of firms listed on the NSE as illustrated in Figure 4.5.

The stability observed in firm size suggests that most firms maintained relatively consistent asset bases during this period, indicating stable operational capacity and investment patterns. In contrast, the steady increase in firm age reflects the natural progression of firms as they continue operating within the market over time. Mature firms often accumulate greater managerial experience, institutional knowledge, and established governance structures, which may enhance their ability to implement long-term strategic initiatives such as sustainability reporting.

Empirical evidence supports this observation. Schreck and Raithel (2018) argue that firms with longer operational histories are more likely to adopt sustainability practices due to accumulated organizational capabilities and reputational considerations. Similarly, Kansal et al. (2019) find that mature firms are more inclined to engage in sustainability disclosure as part of broader corporate accountability mechanisms.

In the early period from 2012 to 2014, leverage declines markedly, pointing to deliberate deleveraging as firms adjusted their capital structures in response to tighter credit conditions or rising borrowing costs. The decline in leverage during this early period may reflect strategic adjustments in corporate financing structures as firms sought to reduce reliance on debt financing. Firms often engage in deleveraging during periods of financial uncertainty in order to strengthen their balance sheets and reduce exposure to financial distress.

Modigliani and Miller in 1958 asserted that firms continuously adjust their capital structures in response to changing financial conditions in order to maintain an optimal balance between debt and equity financing. From an agency theory perspective as indicated by Jensen and Meckling in 1976, leverage can also act as a governance mechanism that constrains managerial opportunism by imposing financial discipline through mandatory debt obligations. However, when borrowing costs rise or credit conditions tighten, firms may strategically reduce leverage in order to preserve financial flexibility and safeguard long-term investment capacity.

Between 2015 and 2019, leverage levels stabilize with only minor fluctuations, suggesting more cautious and balanced financing behaviour under relatively stable macroeconomic

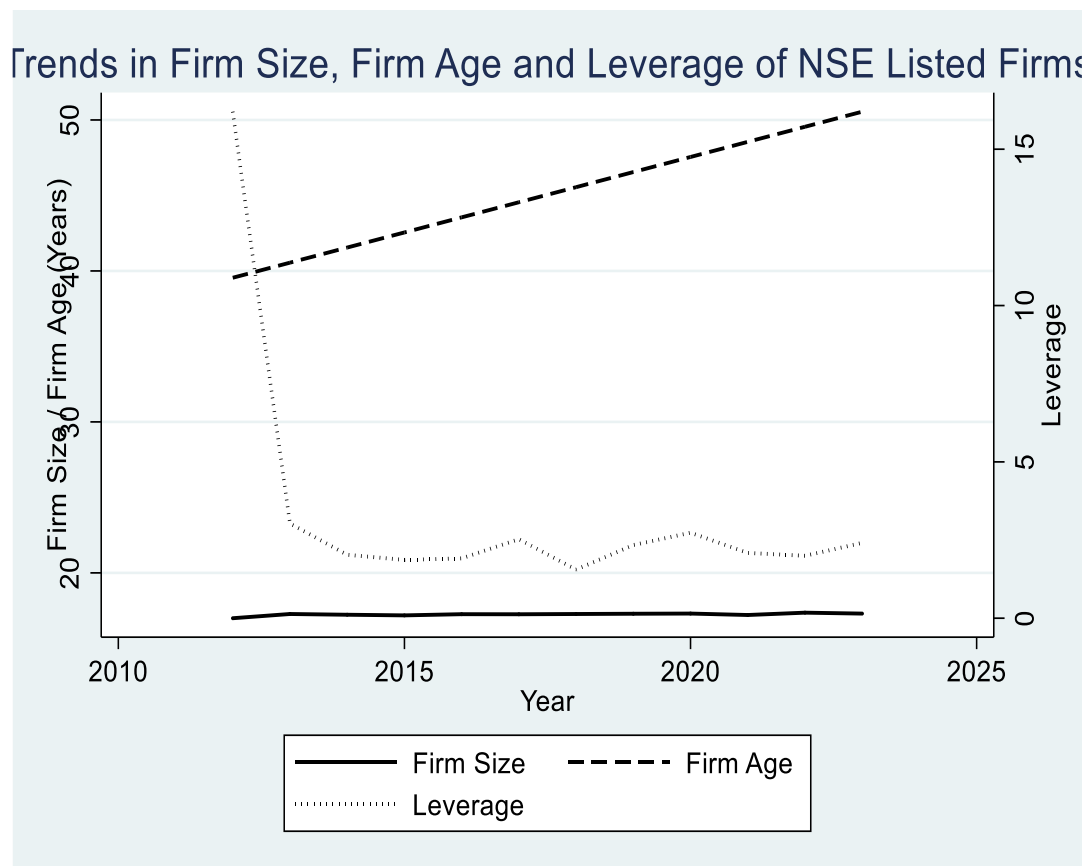
conditions. The stabilization of leverage during this period suggests that firms may have reached relatively balanced capital structures, enabling them to maintain stable financing strategies while supporting operational activities. When macroeconomic conditions are relatively stable, firms tend to adopt conservative financing strategies that avoid excessive dependence on debt while maintaining sufficient capital to support growth and strategic investments.

Financial stability during this period may also have provided firms with greater capacity to allocate resources toward sustainability initiatives and corporate governance improvements. Drempetic et al. (2020) note that firms with stronger financial stability are better positioned to invest in sustainability reporting and ESG initiatives because they possess the necessary financial resources and institutional capabilities. Over the same period, firm size remains largely constant, while firm age continues to rise steadily, reflecting the natural progression of firms operating within the market.

From 2020 to 2023, leverage becomes notably more volatile, coinciding with major economic disruptions associated with the COVID-19 pandemic and the subsequent recovery period characterized by inflationary pressures and higher interest rates. The increased volatility in leverage during this period likely reflects firms' responses to the unprecedented economic disruptions associated with the COVID-19 pandemic and the subsequent macroeconomic adjustments. During periods of economic shock, firms often adjust their capital structures in order to manage liquidity constraints, stabilize operations, and respond to uncertainty in financial markets.

Figure 4.2

Trend Analysis for Firm Size, Firm Age and Leverage



Source: Research Data, 2026

Some firms may increase borrowing to support operational continuity, while others may reduce debt exposure in order to limit financial risk. Despite these financing adjustments, the relatively stable trend in firm size suggests that many NSE-listed firms maintained operational resilience during this challenging period. Similar observations have been reported by Aydoğmuş et al. (2022), who found that firms tend to adjust financing structures dynamically in response to macroeconomic disruptions while maintaining long-term strategic commitments.

Thus, the trends indicate that leverage was the most responsive variable to changing economic conditions, reflecting firms' dynamic adjustments in capital structure in response to evolving financial environments. In contrast, firm size and firm age exhibited relatively

stable trajectories over time, suggesting that the structural characteristics of NSE-listed firms evolved gradually and were less sensitive to short-term economic fluctuations.

4.5 Diagnostic Test Results

The following diagnostic tests were carried out to inform further analysis for the panel data.

4.5.1 Panel Unit Root Test Results

Prior to estimation, the study assessed the stationarity properties of the panel data to ensure that subsequent regression results were not affected by spurious relationships. Given the balanced panel structure of the dataset, the Levin–Lin–Chu (LLC) panel unit root test was employed to examine the stationarity properties of the variables prior to estimation. The LLC test is appropriate for balanced panels because it assumes a common unit root process across cross-sectional units while allowing for individual fixed effects and time trends.

The null hypothesis of the LLC test assumes that all panels contain a unit root, while the alternative hypothesis assumes that the panels are stationary. The decision rule for the LLC test is based on the probability value associated with the adjusted t-statistic. If the p-value is less than the conventional significance threshold of 5%, the null hypothesis of a unit root is rejected, indicating that the variable is stationary.

The results presented in Table 4.12 indicate that all key variables used in the econometric estimation are stationary. Specifically, financial performance (ROA), sustainability disclosure indices (SSDI, GSDI, and ESDI), firm age, firm size, and leverage record negative and statistically significant adjusted t-statistics, with p-values of 0.0000. Since the p-values for all variables are below the 5 percent significance level, the null hypothesis that all panels contain unit roots is rejected.

Table 4.12*Panel Unit Root Test Results*

Variable	Adjusted t* Statistic	p-value
ROA	-13.0299	.0000
SSDI	-14.2627	.0000
GSDI	-15.2264	.0000
ESDI	-13.5212	.0000
Firm Size	-19.0375	.0000
Leverage	-92.5818	.0000

H₀: All panels contain a unit root
H₁: Panels are stationary
Decision rule: Reject H₀ if p-value < .05

Source: Research Data, 2026

The results indicate that shocks to these variables are transitory rather than permanent, implying that their stochastic processes revert to stable long-run means over time. In econometric terms, the variables are integrated of order zero, $I(0)$, meaning they are stationary in levels. Consequently, the stationarity condition required for panel regression analysis is satisfied. The absence of unit roots ensures that the estimated relationships among variables will not be spurious, thereby supporting the validity of the subsequent fixed-effects and random-effects estimations.

4.5.2 Multicollinearity Test Results

The Variance Inflation Factor (VIF) measures the extent to which the variance of an estimated regression coefficient is increased due to multicollinearity. A commonly accepted rule of thumb is that VIF values exceeding 10 indicate severe multicollinearity, while values between 5 and 10 suggest moderate correlation among explanatory variables.

The VIF results presented in Table 4.13 indicate that firm size recorded relatively high VIF

values ranging from 13.20 to 14.16 across the SSDI, GSDI, and ESDI models, while firm age exhibited VIF values between 11.28 and 11.45. The sustainability disclosure variables (SSDI, GSDI, and ESDI) recorded moderate VIF values ranging from 5.21 to 7.12, and leverage consistently showed very low VIF values of about 1.02 to 1.03. The mean VIF values ranged from 7.68 to 8.44 across the models, remaining below the commonly accepted critical threshold of 10. Although firm size and firm age exhibit comparatively higher VIF values slightly above the threshold of 10, the overall mean VIF values remain below the critical level, suggesting that the degree of multicollinearity present in the model is moderate rather than severe. These results imply that multicollinearity was not a serious concern in the estimated models and that the explanatory variables were sufficiently independent, thereby ensuring that the regression coefficients were reliable and not materially distorted by linear dependence.

Table 4.13*Variance Inflation Factor Results (Before Differencing)*

Variable	SSDI Model	GSDI Model	ESDI Model
Firm Size	14.16	13.20	13.66
Firm Age	11.45	11.28	11.29
SSDI / GSDI / ESDI	7.12	5.21	5.92
Leverage	1.02	1.03	1.02
Mean VIF	8.44	7.68	7.97

Source: Research Data, 2026

The relatively high VIF values observed for firm size and firm age may be attributed to the inherent relationship between firm maturity and asset accumulation, as older firms often tend to possess larger asset bases. Table 4.14 presents the VIF results after applying first-difference transformations to selected variables in order to reduce the degree of linear dependence identified in the initial models. The findings indicate a substantial reduction in VIF values across all explanatory variables. This reduction suggests that the transformations effectively minimized the shared variance among the explanatory variables, thereby improving the stability of the regression estimates.

Firm size (first difference) recorded very low VIF values ranging from 1.01 to 1.04 across the SSDI, GSDI, and ESDI models, suggesting that multicollinearity involving firm size was effectively eliminated. Firm age exhibited moderate VIF values between 4.82 and 6.03, remaining below the critical threshold of 10. Similarly, the sustainability disclosure variables (SSDI, GSDI, and ESDI) recorded VIF values ranging from 4.64 to 5.99, indicating moderate but acceptable levels of correlation. Leverage showed low VIF values of approximately 1.48

to 1.49 across the models, confirming minimal multicollinearity concerns.

Table 4.14

Variance Inflation Factor Results (After Differencing)

Variable	SSDI Model	GSDI Model	ESDI Model
Firm Size(<i>d</i>)	1.03	1.01	1.04
Firm Age	6.03	4.82	5.29
SSDI / GSDI / ESDI	5.99	4.64	5.20
Leverage	1.49	1.48	1.48
Mean VIF	3.63	2.99	3.25

Source: Research Data, 2026

The mean VIF values declined significantly to 3.63 for the SSDI model, 2.99 for the GSDI model, and 3.25 for the ESDI model, all well below the commonly accepted threshold of 10. These results demonstrate that differencing successfully reduced the degree of linear dependence among the explanatory variables. Thus, the post-transformation diagnostics confirm that multicollinearity is no longer a concern in the estimated models.

4.5.3 Heteroscedasticity Test Results

The results of the Modified Wald test for group-wise heteroscedasticity indicate the presence of heteroscedasticity across all the estimated fixed effects models. The Modified Wald test is commonly used in panel data analysis to detect group-wise heteroscedasticity in fixed effects models. The null hypothesis of the test assumes homoscedasticity, meaning that the variance of the error terms is constant across cross-sectional units. Specifically, the test statistics for the SSDI, GSDI, and ESDI models are statistically significant, with chi

square values of 82.37, 71.36, and 116.70 respectively, and corresponding p -values below the five percent significance level. This leads to rejection of the null hypothesis of homoscedasticity, implying that the variance of the error terms differs across firms. The presence of heteroscedasticity implies that conventional standard errors may be inefficient and could lead to unreliable statistical inference. Consequently, the study employed robust standard errors clustered at the firm level to account for heteroscedasticity and ensure that the estimated coefficients and statistical inferences are reliable as presented in Table 4.15. In panel regression analysis, the use of robust standard errors is widely recommended to correct for heteroscedasticity and ensure consistent estimation of standard errors (Đalić & Terzić, 2021).

Table 4.15

Heteroscedasticity Test Results

Model	Test Applied	Chi-square (χ^2)	Prob $>\chi^2$	Conclusion
SSDI	Modified Wald test	82.37	.0055	Heteroscedasticity present
GSDI	Modified Wald test	71.36	.0017	Heteroscedasticity present
ESDI	Modified Wald test	116.70	.0000	Heteroscedasticity present

Source: Research Data, 2026

4.5.4 Autocorrelation Test Results

Serial correlation (autocorrelation) arises when the error terms in a regression model are correlated across time within the same cross-sectional unit. In panel data models, the

presence of serial correlation can lead to inefficient estimators and biased standard errors, thereby affecting the reliability of statistical inference. To examine the presence of first-order autocorrelation in the panel data, the study employed the Wooldridge test for autocorrelation in panel data, which is widely recommended for fixed-effects models. The null hypothesis of the Wooldridge test states that there is no first-order autocorrelation in the panel data, while the alternative hypothesis indicates the presence of serial correlation. The results of the test are presented in Table 4.16.

Table 4.16

Wooldridge Test for Autocorrelation in Panel Data

Model	<i>F</i> Statistic	Prob > <i>F</i>	Conclusion
SSDI Model	1.742	.1875	No autocorrelation
GSDI Model	1.528	.2163	No autocorrelation
ESDI Model	1.964	.1612	No autocorrelation

Source: Research Data, 2026

The results indicate that the Wooldridge test statistics for the SSDI, GSDI, and ESDI models are not statistically significant at the conventional five percent level. Specifically, the probability values of .1875, .2163, and .1612 respectively exceed the critical threshold of .05. Consequently, the null hypothesis of no first-order autocorrelation cannot be rejected. This suggests that the residuals from the estimated panel regression models are not serially correlated across time.

The absence of autocorrelation implies that the error terms are independently distributed

over time within each firm, thereby satisfying one of the key assumptions required for reliable panel regression estimation. Therefore, the estimated models are unlikely to suffer from biased statistical inference arising from serial correlation.

4.5.5 Correlation Analysis

To examine the preliminary relationships among the study variables, the study computed Pearson pairwise correlation coefficients. Correlation analysis provides an initial indication of the direction and strength of association between variables before conducting multivariate regression analysis. The Pearson correlation coefficient ranges between -1 and $+1$, where positive values indicate a direct relationship and negative values indicate an inverse relationship. Statistical significance is evaluated at the 5 percent level, which serves as the decision threshold for determining whether the observed correlations are statistically significant.

Table 4.17 presents the pairwise correlation coefficients among financial performance, sustainability disclosure measures, and firm-specific characteristics. The results show that ROA is positively and statistically significantly associated with social sustainability disclosure (SSDI) ($r = .8356^*$), governance sustainability disclosure (GSDI) ($r = .6404^*$), and environmental sustainability disclosure (ESDI) ($r = .8258^*$). These results indicate that firms exhibiting higher levels of sustainability disclosure across social, governance, and environmental dimensions tend to record superior financial performance. The strong positive associations suggest that increased transparency in sustainability practices may be linked with improved profitability outcomes among firms listed on the Nairobi Securities Exchange.

The correlation structure among the sustainability disclosure variables further reveals positive and statistically significant interrelationships. Social Sustainability Disclosure (SSDI) is positively correlated with Governance Sustainability Disclosure (GSDI) ($r = .5977^*$) and Environmental Sustainability Disclosure (ESDI) ($r = .7190^*$), while governance and environmental disclosures are also positively related ($r = .5827^*$). These correlations are expected because firms that actively disclose sustainability information in one dimension are often likely to engage in disclosure across other sustainability dimensions as well. However, although these relationships are moderately strong, they remain below the commonly cited multicollinearity threshold of .90, suggesting that each sustainability dimension captures a related but distinct component of corporate sustainability disclosure.

Table 4.17

Pearson's' Pairwise Correlation Analysis

Variables	ROA	SSDI	GSDI	ESDI	Firm size	Firm age	Leverage
ROA	1.0000						
SSDI	.8356*	1.0000					
GSDI	.6404*	.5977*	1.0000				
ESDI	.08258*	.7190*	.5827*	1.0000			
Firm size	-.0361	.0073	-.0523	.0408	1.0000		
Firm age	.1227*	.1163*	.0666	.1041*	.1253*	1.0000	
Leverage	-.0075	-.0325	-.0952*	.0123	.0531	.0308	1.0000

Source: Research Data, 2026

With respect to firm characteristics, firm size shows weak and statistically insignificant correlations with financial performance ($r = -.0361$) and the sustainability disclosure variables. This suggests that the scale of firm assets alone does not strongly influence

disclosure practices or profitability within the sample. Firm age demonstrates small but statistically significant positive correlations with ROA ($r = .1227^*$), SSDI ($r = .1163^*$), ESDI ($r = .1041^*$), and firm size ($r = .1253^*$), indicating that older firms may possess greater institutional experience that slightly enhances both disclosure practices and financial outcomes.

Leverage exhibits generally weak correlations with the main study variables, with only a small negative and statistically significant association with governance sustainability disclosure ($r = -.0952^*$). This suggests that firms with higher debt levels may be slightly less inclined to emphasize governance-related sustainability disclosures, although the relationship is relatively weak.

Importantly, none of the correlation coefficients among the explanatory variables exceed conventional thresholds that signal severe multicollinearity. According to Kyriazos and Poga (2023), correlation coefficients exceeding .80 may signal potential multicollinearity concerns among explanatory variables. Since the observed coefficients remain below these critical thresholds, the explanatory variables can be jointly included in the regression models without raising serious multicollinearity concerns.

4.5.6 Model Specification Test

To examine whether the estimated regression models suffer from omitted variable bias or functional form misspecification, the study conducted the Ramsey Regression Equation Specification Error Test (RESET). The Ramsey RESET test is widely used in econometric analysis to determine whether important explanatory variables have been omitted from a model or whether the functional form of the regression equation is incorrectly specified.

The null hypothesis of the Ramsey RESET test states that the model is correctly specified and does not suffer from omitted variables. The alternative hypothesis suggests that the model is mis-specified due to omitted variables or an incorrect functional form. The results of the Ramsey RESET test are presented in Table 4.18.

Table 4.1

Ramsey RESET Test Results

Ho:	Model has No Omitted Variables
	$F(3, 475) = .34$
	Prob > F = .7953

Source: Research Data, 2026

The results indicate that the Ramsey RESET test statistic is $F(3, 475) = .34$ with a corresponding p -value of .7953. Since the p -value exceeds the 5 percent significance level, the null hypothesis that the model has no omitted variables cannot be rejected. This implies that there is no statistical evidence of omitted variable bias or functional form misspecification in the estimated model. Consequently, the results suggest that the regression model is correctly specified and that the included explanatory variables adequately capture the systematic variation in financial performance among firms listed at the NSE. Therefore, the estimated model provides a reliable basis for subsequent panel regression analysis and hypothesis testing.

4.6 Sustainability Disclosure and Financial Performance of Listed Firms at NSE

The study sought to establish the relationship between sustainability disclosures and financial

performance of listed firms. To test the hypothesis, the study utilized Return on Asset (ROA) as the dependent variable representing financial performance, while the independent variable (sustainability disclosure) was operationalized through three main components: SSDI, GSDI and ESDI. Accordingly, the following specific hypotheses were tested:

H₀₁: Social sustainability disclosures have no significant effect on the financial performance of firms listed at the Nairobi Securities Exchange.

H₀₂: Corporate governance sustainability disclosures have no significant effect on the financial performance of firms listed in the Nairobi Security exchange.

H₀₃: *Environmental sustainability disclosures have no significant effect on the financial performance of firms listed in the NSE.*

H₀₄: *Firm size had no significant mediating effect on the relationship between sustainability disclosures and financial performance of firms listed at the Nairobi Securities Exchange.*

H_{04a}: *Firm size had no mediating effect on the relationship between social sustainability disclosures and financial performance of firms listed at the NSE.*

H_{04b}: *Firm size had no mediating effect on the relationship between corporate governance sustainability disclosures and financial performance of firms listed at the NSE*

H_{04c}: *Firm size had no mediating effect on the relationship between environmental sustainability disclosures and financial performance of firms listed at the NSE.*

Panel regression analysis using fixed and random effects estimators was employed to examine the relationship between sustainability disclosure and financial performance. The findings are as shown in Table 4.19.

Table 4.19*Regression Analysis between Sustainability Disclosures and Financial Performance*

Robust Models Variable	Model 1- (SSDI & ROA)		Model 2- (GSDI & ROA)		Model 3- (ESDI & ROA)		Model 4- (Joint Nexus)	
	β	p-value	β	p-value	β	p-value	β	p-value
Social Sustainability Disclosure Index (SSDI)	.0015 (29.88)	.000					.00088(1 6.00)	.000
Governance Sustainability Disclosure Index (GSDI)			.0008 (14.88)	.000			.00019(4 .51)	.000
Environmental Sustainability Disclosure Index (ESDI)					.0014 (25.61)	.000	.00076 (11.77)	.000
Firm Age	.0014 (5.26)	.000	.0025 (7.16)	.000	.0014 (5.15)	.000	.000042 (0.92)	.355
Leverage	.000020 (3.31)	.002	.000066 (12.61)	.000	- .000019 (-5.03)	.000	.000017(3.90)	.000
Constant	-.0492 (-4.59)	.000	-.0747 (-5.14)	.000	-.0407 (-3.75)	.001	-.0035 (-1.39)	.165
Model selection statistics	Hausman Chi2= 27.97 Prob>chi2= .0000		Hausman Chi2= 67.62 Prob>chi2= .0000		Hausman Chi2=25.71 Prob>chi2= .0000		Hausman Chi2=6.84 Prob>chi2= .2329	
Model Fitness statistics	Fixed-effects (within) regression Number of obs = 480 R-squared: .5070 F (3,39) = 499.65 Prob > F= .0000		Fixed-effects (within) regression Number of obs = 480 R-squared: .1566 F (3,39) = 289.38 Prob > F= .0000		Fixed-effects (within) regression Number of obs = 480 R-squared: .5012 F (3,39) = 441.72 Prob > F= .0000		Random-effects GLS regression Number of obs = 480 R-squared: .8116 Wald chi2(3) = 3472.80 Prob>chi2= .0000	

*Robust test statistics in parentheses:**Source: Research Findings, 2026*

4.6.1 Social Sustainability Disclosure and Financial Performance of Firms Listed in NSE

Model 1 examined the effect of social sustainability disclosure on the financial performance of firms listed at the Nairobi Securities Exchange. The Hausman specification test supported the fixed-effects estimator ($\chi^2 = 27.97, p = .000$), indicating that the individual firm effects were correlated with the explanatory variables, thereby supporting the use of the fixed-effects estimator. The results presented in Table 4.19 show that the Social Sustainability Disclosure Index (SSDI) had a positive and statistically significant effect on financial performance ($\beta = .0015, t = 29.88, p = .000$). This implies that higher levels of social sustainability disclosure were associated with improved return on assets, suggesting that firms that engage more actively in social sustainability practices such as employee welfare, community engagement, and corporate social responsibility initiatives tend to exhibit higher levels of financial performance.

The positive and significant relationship between social sustainability disclosure and financial performance is consistent with the predictions of agency theory, which posits that firms that effectively manage relationships with key stakeholders such as employees, communities, and customers are more likely to achieve improved organizational performance. Agency theory suggests that increased disclosure reduces information asymmetry between managers and stakeholders, thereby enhancing transparency, accountability, and stakeholder confidence. According to Alam et al. (2024), organizations that address the expectations of their stakeholders enhance trust, reputation, and legitimacy, which ultimately contributes to superior financial outcomes. By disclosing information related to employee welfare, community engagement, and corporate social responsibility

activities, firms signal their commitment to responsible corporate behavior, thereby strengthening stakeholder confidence, reducing agency conflicts, and enhancing long-term business sustainability.

The findings are also consistent with legitimacy theory, which suggests that firms disclose social responsibility activities to demonstrate alignment with societal expectations and maintain their legitimacy within the broader social environment (Suchman, 1995). Through increased transparency in social sustainability practices, firms can enhance their corporate image and reputation, which may translate into increased investor confidence, customer loyalty, and ultimately improved financial performance.

The findings are supported by recent empirical evidence demonstrating that social sustainability practices contribute positively to firm performance. For instance, Sroufe and Gopalakrishna-Remani (2019) found that social sustainability practices significantly improve financial performance by enhancing stakeholder confidence and corporate reputation. Similarly, Singh and Chakraborty (2021) reported that firms that provide extensive social sustainability disclosures tend to achieve higher profitability due to improved transparency and stakeholder confidence. Zhou et al. (2024) also documented that social sustainability disclosure positively influences financial performance by reducing information asymmetry between firms and investors.

Furthermore, recent studies have emphasized that social sustainability initiatives enhance organizational performance through improved stakeholder relationships and reputational benefits. For example, Nogueira et al. (2024) observed that firms engaging in social sustainability practices tend to improve organizational performance due to stronger

stakeholder support and employee engagement. Likewise, Driss and Jaballah (2025) found that sustainability disclosure positively affects financial performance by strengthening corporate legitimacy and stakeholder confidence.

However, some studies suggest that the financial benefits of social sustainability initiatives may depend on how effectively such initiatives are integrated into the firm's strategic objectives. For instance, Hardiningsih et al. (2020) argue that sustainability initiatives can generate financial benefits when they are strategically aligned with the firm's operational and competitive strategies. When poorly integrated, however, such initiatives may impose additional costs without necessarily improving financial outcomes.

Nevertheless, the positive relationship observed in this study suggests that firms listed at the Nairobi Securities Exchange are increasingly integrating social sustainability practices into their strategic operations. By investing in employee development, community engagement, and socially responsible initiatives, these firms appear to strengthen their stakeholder relationships and enhance their corporate reputation, which ultimately contributes to improved financial performance.

Regarding the control variables, firm age was positive and statistically significant ($\beta = .0014$, $t = 5.26$, $p = .000$), implying that older firms exhibited better financial performance, possibly reflecting accumulated organizational experience, stronger market positioning, and greater operational maturity. Leverage was positive and statistically significant ($\beta = .000020$, $t = 3.31$, $p = .002$), indicating that firms utilizing debt financing more effectively tended to record higher financial performance. The constant term was negative and statistically significant ($\beta = -.0492$, $p = .000$). However, in fixed-effects estimation the constant primarily captures the

average intercept after controlling for firm-specific effects and therefore has limited substantive interpretation.

Generally, the model was statistically significant ($F(3, 39) = 499.65, p = .000$) with a substantial explanatory power ($R^2 = .5070$) based on 480 observations, indicating that the model provides a satisfactory fit for explaining variations in financial performance. The estimated model is expressed as:

$$FP_{it} = -0.0492 + 0.0015SSDI_{it} + 0.0014FA_{it} + 0.000020LEV_i \quad (28)$$

On this basis, the null hypothesis that social sustainability disclosure has no significant effect on the financial performance of firms listed at the NSE was rejected, and it was concluded that social sustainability disclosure significantly influenced financial performance among listed firms.

4.6.2 Corporate Governance Sustainability Disclosure, and Financial Performance of Firms Listed at the NSE

Model 2 examined the effect of corporate governance sustainability disclosure on the financial performance of firms listed at the Nairobi Securities Exchange (NSE). The Hausman specification test supported the fixed-effects estimator ($\chi^2 = 67.62, p = .000$), indicating that the unobserved firm-specific effects were correlated with the explanatory variables, thereby supporting the use of the fixed-effects estimator. The results presented in Table 4.19 show that the Governance Sustainability Disclosure Index (GSDI) had a positive and statistically significant effect on financial performance ($\beta = .0008, t = 14.88, p = .000$).

This finding suggests that firms exhibiting stronger governance sustainability disclosure practices such as transparency in board structure, accountability mechanisms, ethical

conduct, and risk management systems tend to record higher returns on assets. The magnitude and statistical significance of the coefficient suggest that governance disclosure plays a critical role in enhancing firm performance by strengthening oversight structures and boosting investor confidence.

The positive and significant relationship between corporate governance sustainability disclosure and financial performance is consistent with the propositions of agency theory, which emphasizes the role of governance mechanisms in reducing conflicts of interest between managers and shareholders. According to Jensen and Meckling's agency theory, effective governance structures enhance monitoring and accountability, thereby minimizing managerial opportunism and improving firm efficiency. By disclosing governance-related sustainability practices such as board transparency, accountability frameworks, ethical conduct, and risk management mechanisms firms signal stronger internal control systems and improved oversight, which can enhance investor confidence and ultimately support improved financial performance.

Recent empirical studies provide further support for this relationship. For example, Wanjau (2019) found that governance-related sustainability disclosures significantly improve firm performance by strengthening corporate transparency and accountability. Similarly, Aydoğmuş et al. (2022) reported that governance sustainability practices are positively associated with firm profitability and market valuation, as they improve oversight structures and enhance stakeholder confidence.

In addition, Sarpong-Danquah et al. (2022) found that firms with stronger governance disclosure frameworks tend to achieve better financial performance due to improved

monitoring of managerial actions and reduced agency costs. Likewise, Choi et al. (2024) observed that corporate governance sustainability disclosure contributes positively to financial performance by enhancing transparency and reducing information asymmetry between firms and investors.

The findings also align with evidence from emerging markets. For instance, Wu et al. (2022) reported that firms with stronger governance disclosure practices are better positioned to enhance firm value through improved ownership monitoring and governance incentives, which ultimately improves financial outcomes. Strong governance structures enhance organizational accountability and facilitate more efficient decision-making processes within firms.

Nevertheless, some studies suggest that governance mechanisms alone may not guarantee improved financial performance unless they are effectively implemented. For example, Kyere and Ausloos (2021) argue that some governance mechanisms may not significantly improve financial performance if they are not properly aligned with firm strategy and organizational context. Therefore, the effectiveness of governance disclosure largely depends on how governance practices are integrated into corporate decision-making processes.

Regarding the control variables, firm age was positive and statistically significant ($\beta = .0025$, $t = 7.16$, $p = .000$), indicating that older firms tended to perform better financially, possibly reflecting accumulated organizational experience, established market presence, and institutional stability. Leverage was positive and statistically significant ($\beta = .000066$, $t = 12.61$, $p = .000$), suggesting that firms that utilized debt financing effectively tended to achieve improved financial performance. The constant term was negative and statistically

significant ($\beta = -.0747$, $p = .000$). However, in fixed-effects models the intercept mainly captures the average constant after controlling for firm-specific effects and therefore has limited substantive interpretation. Therefore, the model was statistically significant ($F(3, 39) = 289.38$, $p = .000$) with an R^2 of .1566 based on 480 observations, confirming acceptable model fit. The estimated model is expressed as:

$$FP_{it} = -0.0747 + 0.0008GSD_{it} + 0.0025FA_{it} + 0.000066LEV_{it} \quad (29)$$

Based on these results, the null hypothesis (H_{02}) that corporate governance sustainability disclosure has no significant effect on the financial performance of firms listed at the NSE was rejected.

4.6.3 Environmental Sustainability Disclosure and Financial Performance of Firms Listed at the NSE

Model 3 examined the effect of environmental sustainability disclosure on the financial performance of firms listed at the Nairobi Securities Exchange (NSE). The Hausman specification test supported the fixed-effects estimator ($\chi^2 = 25.71$, $p = .000$), indicating that the unobserved firm-specific effects were correlated with the explanatory variables and therefore the fixed-effects model was appropriate for estimation. The results reported in Table 4.19 show that the Environmental Sustainability Disclosure Index (ESDI) had a positive and statistically significant effect on financial performance ($\beta = .0014$, $t = 25.61$, $p = .000$).

This finding suggests that firms exhibiting higher levels of environmental sustainability disclosure covering aspects such as environmental compliance, resource efficiency, waste management, and conservation initiatives tend to achieve higher returns on assets. The

strong statistical significance of the coefficient suggests that environmental sustainability practices contribute meaningfully to firm profitability, possibly through operational efficiencies, improved stakeholder trust, and enhanced corporate reputation.

The positive and statistically significant relationship between environmental sustainability disclosure and financial performance supports the propositions of legitimacy theory, which posits that firms seek to align their operations with societal expectations in order to maintain legitimacy and ensure continued support from stakeholders. By disclosing environmental practices such as environmental compliance, resource conservation, pollution control, and waste management initiatives, firms demonstrate responsible environmental stewardship and reinforce their legitimacy within society.

The findings are also consistent with the Triple Bottom Line Theory, which argues that firms that respond effectively to the environmental concerns of stakeholders including regulators, communities, customers, and environmental advocacy groups are more likely to achieve improved financial outcomes. The theory emphasizes integrating environmental responsibility with economic and social performance in organizational operations. Environmental sustainability disclosure enhances transparency and signals corporate commitment to environmental responsibility, which may strengthen stakeholder trust and corporate reputation.

Recent empirical evidence supports the positive relationship between environmental sustainability practices and financial performance. For example, Ye et al. (2023) found that environmental sustainability disclosure positively influences firm performance through green innovation and enhanced operational efficiency. Similarly, Lin and Qamruzzaman

(2023) reported that firms with stronger environmental disclosure practices tend to experience improved sustainability and financial performance due to enhanced transparency and governance support.

Additionally, Li et al. (2023) found that environmental sustainability initiatives improve firm performance by enhancing green technology innovation and operational efficiency associated with environmental responsibility practices. Likewise, Zhou et al. (2025) documented that high-quality carbon disclosure positively affects firm profitability, stock returns, and firm value by improving corporate reputation and strengthening stakeholder trust. These findings also resonate with the Porter hypothesis, which suggests that environmentally responsible practices can enhance firm competitiveness by encouraging innovation and improving resource efficiency. Environmental investments may initially require additional resources, but they often lead to cost savings, improved operational efficiency, and stronger market competitiveness.

However, some studies have reported mixed evidence regarding the financial benefits of environmental sustainability initiatives. For example, Yang et al. (2022) argue that the financial impact of environmental disclosure may vary depending on industry characteristics, institutional conditions, and the strategic integration of sustainability initiatives within firms. Similarly, Mondal and Bauri (2025) found that climate-related disclosure negatively affected firm value among Indian firms, suggesting that environmental disclosures may sometimes expose environmental risks and compliance costs that influence investor perceptions negatively.

With regard to the control variables, firm age was positive and statistically significant ($\beta =$

.0014, $t = 5.15$, $p = .000$), possibly reflecting accumulated operational experience, stronger institutional capacity, and greater market stability. Conversely, leverage was negative and statistically significant ($\beta = -.000019$, $t = -5.03$, $p = .000$), suggesting that higher debt levels adversely affected financial performance in this model. The constant term was negative and statistically significant ($\beta = -.0407$, $p = .001$). However, in fixed-effects estimation the intercept primarily captures the average constant after accounting for firm-specific effects and therefore has limited substantive interpretation. Therefore, the model was statistically significant ($F(3, 39) = 441.72$, $p = .000$) with an R^2 of .5012 based on 480 observations, confirming acceptable model fit for interpretation. The estimated model is expressed as:

$$FP_{it} = -0.0407 + 0.0014ESDI_{it} + 0.0014FA_{it} - 0.000019LEV_i \quad (30)$$

Based on these results, the null hypothesis (H_{03}) that environmental sustainability disclosure has no significant effect on the financial performance of firms listed at the NSE was rejected.

4.6.4 Sustainability Disclosures on the Financial Performance of Firms Listed in NSE

Model 4 examined the joint effect of sustainability disclosures on the financial performance of firms listed at the Nairobi Securities Exchange (NSE). The Hausman specification test supported the random-effects estimator ($\chi^2 = 6.84$, $p = .2329$), indicating that the unobserved firm-specific effects were not systematically correlated with the explanatory variables and therefore the random-effects GLS estimator was appropriate for estimation. The results presented in Table 4.19 show that the Social Sustainability Disclosure Index (SSDI) had a positive and statistically significant effect on financial performance ($\beta = .00088$, $t = 16.00$, $p = .000$). Similarly, the Corporate Governance Sustainability Disclosure Index (GSDI) was positive and statistically significant ($\beta = .00019$, $t = 4.51$, $p = .000$), while the Environmental

Sustainability Disclosure Index (ESDI) also exhibited a positive and statistically significant influence ($\beta = .00076$, $t = 11.77$, $p = .000$). This implies that higher levels of integrated sustainability disclosure across social, governance, and environmental dimensions were associated with improved return on assets, suggesting that comprehensive sustainability reporting enhances firm profitability.

Regarding the control variables, firm age was positive but statistically insignificant ($\beta = .000042$, $t = .92$, $p = .355$), indicating that once sustainability disclosure dimensions were jointly considered, organizational maturity did not exert a statistically significant independent influence on financial performance once the sustainability disclosure dimensions were jointly considered. In contrast, leverage was positive and statistically significant ($\beta = .000017$, $t = 3.90$, $p = .000$), implying that firms that effectively utilized debt financing tended to record improved financial performance in the joint model. The constant term was negative and statistically insignificant ($\beta = -.0035$, $p = .165$). The constant term was negative but statistically insignificant ($\beta = -.0035$, $p = .165$). In the random-effects specification, the intercept represents the average constant across firms after accounting for the explanatory variables and therefore has limited substantive interpretation.

Thus, the joint model was statistically significant (Wald $\chi^2 = 3472.80$, $p = .000$) with substantial explanatory power ($R^2 = .8116$) based on 480 observations, indicating that the joint model provides a strong overall fit for explaining variations in financial performance.

The estimated model is expressed as:

$$FP_{it} = -0.0035 + 0.00088SSDI_{it} + 0.00019GSDI_{it} + 0.00076ESDI_{it} + 0.000042FA_{it} + 0.000017LEV_{it} \quad (31)$$

Based on these results, the null hypothesis that sustainability disclosures have no significant

effect on the financial performance of firms listed at the NSE was rejected.

4.7 Sustainability Disclosure, Firm Size and Financial Performance of Listed Firms at NSE

The fourth objective of the study examined the mediating role of firm size in the relationship between sustainability disclosure and financial performance of firms listed at the Nairobi Securities Exchange. Firm size was provided using the natural logarithm of total assets. The mediation analysis was conducted to determine whether firm size acts as an intervening mechanism through which sustainability disclosure influences financial performance among listed firms. The study adopted the mediation framework proposed by Baron and Kenny (1986), which requires a sequence of conditions to be satisfied in order to establish mediation. Specifically, four conditions must be satisfied to establish mediation: (i) sustainability disclosure must significantly influence financial performance; (ii) sustainability disclosure must significantly influence firm size; (iii) firm size must significantly influence financial performance; and (iv) when firm size is included in the sustainability disclosure financial performance model, the magnitude or significance of the sustainability disclosure coefficient should decrease.

Consistent with the earlier inferential analysis, the study first confirmed that sustainability disclosure had a statistically significant effect on financial performance of firms listed at the Nairobi Securities Exchange. The analysis then examined whether sustainability disclosure significantly influenced firm size, and whether firm size, in turn, significantly affected financial performance. Finally, sustainability disclosure and firm size were jointly included in the financial performance model to assess the presence of any intervening effect.

The mediation results are summarized in Table 4.20 - 4.28. To enhance analytical clarity and align with the study objectives, the following null sub-hypotheses, which are examined subsequently:

***H₀₁:** Social sustainability disclosures had no significant effect on the financial performance of firms listed in the NSE.*

***H₀₂:** Corporate governance disclosures had no significant effect on the financial performance of firms listed in NSE.*

***H₀₃:** Environmental sustainability disclosures had no significant effect on the financial performance of firms listed in the NSE.*

***H₀₄:** Firm size had no significant mediating effect on the relationship between sustainability disclosures and financial performance of firms listed at the Nairobi Securities Exchange.*

***H_{04a}:** Firm size did not significantly mediate the relationship between social sustainability disclosures and financial performance of firms listed at the NSE.*

***H_{04b}:** Firm size did not significantly mediate the relationship between corporate governance sustainability disclosures and financial performance of firms listed at the NSE*

***H_{04c}:** Firm size did not significantly mediate the relationship between environmental sustainability disclosures and financial performance of firms listed at the NSE.*

Following the mediation framework proposed by Baron and Kenny (1986), the study estimated four sequential panel regression models. In the first step, a baseline model was estimated to determine whether sustainability disclosure significantly affected financial

performance. In the second step, a model was estimated to assess whether sustainability disclosure significantly influenced the intervening variable, firm size. In the third step, firm size was regressed on financial performance to establish whether the intervening variable significantly affected the dependent variable. In the fourth step, sustainability disclosure and firm size were jointly included in the financial performance model to assess the presence of mediation.

4.7.1 Social Sustainability Disclosure, Firm Size and Financial Performance of Firms Listed at NSE

This subsection assessed the mediating role of firm size in the relationship between social sustainability disclosure and the financial performance of firms listed at the Nairobi Securities Exchange. The analysis was undertaken in line with the null sub-hypothesis H_{04a} , which stated that the relationship between social sustainability disclosure and financial performance of listed firms at the NSE is not significantly mediated by firm size.

Following the Baron and Kenny (1986) mediation framework, the analysis was conducted using a stepwise panel regression approach, with the results presented in Table 4.20. In Step 1, the total effect of social sustainability disclosure on financial performance was estimated. The results show that Social Sustainability Disclosure Index (SSDI) had a positive and statistically significant effect on return on assets ($\beta = .0015$, $t = 29.88$, $p = .000$). The Hausman test supported the fixed-effects specification ($\chi^2 = 27.97$, $p = .000$), confirming the robustness of the estimated relationship. This satisfies the first condition for mediation, indicating that social sustainability disclosure significantly influences financial performance.

Table 4.20*Panel Regression Analysis between Social Sustainability Disclosure, Firm Size and Financial Performance*

	Step 1-(ROA)		Step 2-(FS)		Step 3-(ROA)		Step 4-(ROA)	
Variable	Model 1- (SSDI&ROA)		Model 2- (SSDI&FS)		Model 3- (FS&ROA)		Model 4- (SSDI, FS&ROA)	
	β	P-Value	B	P-Value	β	P-Value	β	P-Value
Social sustainability disclosure (SSDI)	.0015 (29.88)	.000	-.0074 (-3.72)	.000	-	-	.0014 (27.68)	.000
Firm Size ^d (FS)	-	-	-	-	-.0130 (-2.56)	.014	-.0078 (-4.31)	.000
Firm Age	.0014 (5.26)	.000	.00097 (.73)	.466	.00497 (10.22)	.000	.0015 (4.91)	.000
Leverage	.000020 (3.31)	.002	.0254 (2.22)	.026	.00001 2 (1.02)	.316	-.00035 (-.61)	.549
Constant	-.0492 (-4.59)	.000	.2710 (2.50)	.013	.0787(. 94)	.355	-.0492 (-3.77)	.001
Model selection statistics	Hausman Chi2= 27.97 Prob>chi2= .0000		Hausman Chi2= .87 Prob>chi2= .8322		Hausman Chi2= 119.77 Prob>chi2=.0000		Hausman Chi2= 29.76 Prob>chi2= .0000	
Model Fitness statistics	Fixed-effects (within) regression Number of obs = 480 R-squared: .5070 F (3,39) = 499.65 Prob > F= .0000		Random-effects GLS regression Number of obs = 440 R-squared: .0365 Wald chi2(3) = 16.51 Prob>chi2= .0009		Fixed-effects GLS regression Number of obs = 480 R-squared: .0177 F (3,39) =39.95 Prob > F= .0000		Fixed-effects GLS regression Number of obs = 440 R-squared: .4894 F (3,39) =416.97 Prob > F= .0000	

*Robust test statistics in parentheses**Source: Research Findings, 2026*

In Step 2, the study examined whether social sustainability disclosure significantly predicted the intervening variable, firm size. The Hausman test favored the random-effects GLS model ($\chi^2 = .87, p = .8322$). The coefficient on social sustainability disclosure was negative and statistically significant ($\beta = -.0074, t = -3.72, p = .000$), indicating that higher levels of social sustainability disclosure were associated with a slight reduction in firm size. This satisfies the second condition for mediation, as the independent variable significantly influences the mediator. In Step 3, the effect of firm size on financial performance was estimated. The Hausman test supported the fixed-effects model ($\chi^2 = 119.77, p = .000$). The results show that firm size had a negative and statistically significant effect on financial performance ($\beta = -.0130, t = -2.56, p = .014$). This satisfies the third condition for mediation, as the mediator significantly influences the dependent variable.

In Step 4, both social sustainability disclosure and firm size were included in the model to assess whether mediation occurred. The Hausman test supported the fixed-effects specification ($\chi^2 = 29.76, p = .000$). The results indicate that social sustainability disclosure remained positive and statistically significant ($\beta = .0014, t = 27.68, p = .000$), while firm size also remained negative and statistically significant ($\beta = -.0078, t = -4.31, p = .000$). Although the coefficient on SSDI slightly reduced from .0015 in Step 1 to .0014 in Step 4, it remained statistically significant, indicating partial mediation rather than full mediation.

According to the mediation framework proposed by Baron and Kenny (1986), mediation is established when the independent variable significantly affects the mediator, the mediator significantly affects the dependent variable, and the effect of the independent variable on the dependent variable reduces upon inclusion of the mediator. Since these conditions were satisfied and the direct effect remained statistically significant but reduced in magnitude, the

results indicate the presence of partial mediation. Based on the mediation results reported in Table 4.20. The findings indicate that while social sustainability disclosure has a statistically significant direct effect on financial performance, part of this effect operates indirectly through firm size among firms listed at the NSE.

Table 4.21

Mediation Path Coefficients for Social Sustainability Disclosure

Dependent Variable	Independent Variable	Path	Coefficient (β)	t-statistic	p-value
ROA	SSDI	c	.0015	29.88	.000
Firm Size	SSDI	a	-.0074	-3.72	.000
ROA	Firm Size	b	-.0130	-2.56	.014
ROA	SSDI (with FS)	c'	.0014	27.68	.000
-	-	a×b	.0000962	-	-

Source: Research Findings, 2026

Model/Step 1 fitness statistics – Hausman $\chi^2 = 27.97$, p -value = .0000, $R^2 = .5070$, $F(3,39) = 499.65$, Prob $>F = .0000$

Model/Step 2 fitness statistics – Hausman $\chi^2 = .87$, $p = .8322$, $R^2 = .0365$, Wald $\chi^2(3) = 16.51$, Prob $>\chi^2 = .0009$

Model/Step 3 fitness statistics – Hausman $\chi^2 = 119.77$, $p = .0000$, $R^2 = .0177$, $F(3,39) = 39.95$, Prob $>F = .0000$

Model/Step 4 fitness statistics – Hausman $\chi^2 = 29.76$, $p = .0000$, $R^2 = .4894$, $F(3,39) = 416.97$, Prob $>F = .0000$

The model fitness statistics reported that the regression models were jointly statistically significant, confirming the robustness of the estimated relationships. In Step 1, the fixed-effects specification was supported by the Hausman test ($\chi^2 = 27.97, p = .0000$), with a strong explanatory power ($R^2 = .5070$) and a highly significant F-statistic ($\text{Prob} > F = .0000$), indicating that social sustainability disclosure meaningfully explains variations in financial performance. In Step 2, the random-effects GLS model was appropriate ($\chi^2 = .87, p = .8322$), and the Wald χ^2 statistic confirmed that the mediator model was jointly significant ($\text{Prob} > \chi^2 = .0009$), although with comparatively lower explanatory power ($R^2 = .0365$). Step 3 maintained statistical significance under the fixed-effects specification ($\chi^2 = 119.77, p = .0000$), confirming that firm size significantly explains variations in ROA. Finally, Step 4 demonstrated that the full model remained statistically significant ($\chi^2 = 29.76, p = .0000$), with substantial explanatory strength ($R^2 = .4894$) and a significant F-statistic ($\text{Prob} > F = .0000$).

Therefore, the statistical significance of the path coefficients and the consistent joint statistical significance of the regression models provide empirical support for partial mediation. The robustness of the fixed-effects and random-effects specifications across the sequential regression steps strengthens confidence in the robustness of the findings. Thus, both the coefficient-level evidence and the overall model fitness statistics indicate that firm size partially mediates the relationship between social sustainability disclosure and financial performance among firms listed at the Nairobi Securities Exchange.

The findings of this study provide empirical evidence that firm size partially mediates the relationship between social sustainability disclosure and financial performance among firms listed at the Nairobi Securities Exchange. This suggests that while social sustainability

initiatives directly enhance firm profitability, part of their influence on financial performance operates indirectly through firm-level structural characteristics such as organizational scale. The results are consistent with recent empirical studies that highlight the role of firm characteristics in shaping the effectiveness of sustainability practices. For instance, Ting (2021) found that firms with stronger CSR disclosure practices tend to experience improved financial performance, while firm size significantly influenced the extent and effectiveness of disclosure practices. Similarly, Vithana et al. (2021) reported that larger firms disclose more substantive employee-related information due to stronger organizational capacity and governance structures, suggesting that firm size enhances the effectiveness of social sustainability disclosure practices.

The mediation effect observed in this study aligns well with the propositions of the Triple Bottom Line Theory. The theory emphasizes that firms are expected to balance economic, social, and environmental responsibilities in order to achieve sustainable organizational performance. Larger firms are often better positioned to implement and communicate social sustainability initiatives effectively because they possess greater organizational capacity, visibility, and stakeholder exposure. As a result, firm size may enhance the ability of firms to translate social sustainability practices into improved financial outcomes through stronger stakeholder relationships, enhanced corporate reputation, and increased operational legitimacy.

4.7.2 Governance Sustainability Disclosure, Firm Size and Financial Performance of Firms Listed at NSE

This subsection assessed the mediating role of firm size in the relationship between corporate governance sustainability disclosure and the financial performance of firms listed at the Nairobi Securities Exchange. The analysis was undertaken in line with the null sub-hypothesis H_{04b} , which stated that the relationship between corporate governance sustainability disclosure and financial performance of listed firms at the NSE is not significantly mediated by firm size.

Following the Baron and Kenny (1986) mediation framework, the analysis was conducted using a stepwise panel regression approach, with the results presented in Table 4.22 In Step 1, the total effect of corporate governance sustainability disclosure on financial performance was estimated. The results show that the Governance Sustainability Disclosure Index (GSDI) had a positive and statistically significant effect on return on assets ($\beta = .0008$, $t = 14.88$, $p = .000$). The Hausman test supported the fixed-effects specification ($\chi^2 = 67.62$, $p = .000$), confirming the robustness of the estimated relationship. This satisfies the first condition for mediation, indicating that governance sustainability disclosure significantly influences financial performance.

Table 4.22

Panel Regression Analysis between Governance Sustainability Disclosure, Firm Size and Financial Performance

Robust Models	Step 1-(ROA)		Step 2-(FS)		Step 3-(ROA)		Step 4-(ROA)	
Variable	Model 1- (GSDI & ROA)		Model 2- (GSDI & FS)		Model 3- (FS & ROA)		Model 4- (GSDI, FS & ROA)	
	β	<i>p</i> -Value	β	<i>p</i> -Value	β	<i>p</i> -Value	β	<i>p</i> -Value
Governance Sustainability Disclosure (GSDI)	.0008 (14.88)	.000	-.0019 (-1.28)	.201	-	-	.00080 (14.92)	.000
Firm Size ^d (FS)	-	-	-	-	-.0130 (-2.56)	.014	-.0116 (-3.37)	.002
Firm Age	.0023 (5.10)	.000	.00018 (.13)	.893	.0050 (10.22)	.000	.0024 (5.78)	.000
Leverage	.000059 (8.68)	.000	.0246 (1.97)	.048	.000012 (1.02)	.316	-.00032 (-.78)	.442
Constant	-.0301 (-1.59)	.121	.0558 (.66)	.509	.0787 (.94)	.355	-.0639 (-3.58)	.001
Model selection statistics	Hausman Chi2= 67.62 Prob>chi2= .0000		Hausman Chi2= 0.53 Prob>chi2= .9131		Hausman Chi2= 119.77 Prob>chi2=.0000		Hausman Chi2= 39.65 Prob>chi2=.0000	
Model Fitness statistics	Fixed-effects (within) regression Number of obs = 480 R-squared: .1566 F (3,39) = 289.38 Prob > F= .0000		Random-effects GLS regression Number of obs = 440 R-squared: .0126 Wald chi2(4) = 4.79 Prob>chi2= .1874		Fixed-effects GLS regression Number of obs = 480 R-squared: .0177 F (3,39) = 39.95 Prob > F= .0000		Fixed-effects GLS regression Number of obs = 440 R-squared: .1896 F (3,39) = 147.18 Prob > F= .0000	

Robust test statistics in parentheses

Source: Research Findings, 2026

In Step 2, the study examined whether corporate governance sustainability disclosure significantly predicted the intervening variable, firm size. The Hausman test favored the random-effects GLS model ($\chi^2 = .53, p = .9131$). The coefficient on governance sustainability disclosure was negative but statistically insignificant ($\beta = -.0019, t = -1.28, p = .201$), indicating that governance sustainability disclosure did not significantly explain variations in firm size. This implies that differences in governance sustainability disclosure across firms were not associated with systematic differences in firm size during the study period.

According to the mediation framework proposed by Baron and Kenny (1986), a necessary condition for mediation is that the independent variable must significantly affect the mediator. Since the independent variable does not significantly influence the mediator in Step 2, the necessary condition for mediation is not satisfied. Consequently, the mediation pathway cannot be established. Consequently, firm size cannot be considered an intervening variable in the relationship between corporate governance sustainability disclosure and financial performance. Although Step 3 indicated that firm size had a negative and statistically significant effect on financial performance ($\beta = -.0130, t = -2.56, p = .014$), this alone does not establish mediation because the independent variable must first significantly influence the mediator. Step 4 indicated that governance sustainability disclosure remained positive and statistically significant in the joint model ($\beta = .00080, t = 14.92, p = .000$), the absence of a significant relationship between governance sustainability disclosure and firm size in Step 2 means that mediation is not established.

Based on the mediation results, the null hypothesis H_{04b} that firm size does not significantly mediate the relationship between governance sustainability disclosure and financial performance was not rejected. The findings indicate that while corporate governance

sustainability disclosure has a statistically significant direct effect on financial performance, this relationship is not mediated by firm size among firms listed at the Nairobi Securities Exchange. The effect of governance sustainability disclosure on firm performance operates directly rather than through variations in firm size.

Table 4.23

Mediation Path Coefficients for Governance Sustainability Disclosure

Dependent Variable	Independent Variable	Path	Coefficient (β)	t-statistic	p-value
ROA	GSDI	c	.0008	14.88	.000
Firm Size	GSDI	a	-.0019	-1.28	.201
ROA	Firm Size	b	-.0130	-2.56	.014
ROA	GSDI (with FS)	c'	.00080	14.92	.000
-	-	a×b	.0000247	-	-

Source: Research Findings 2026

Model/Step 1 fitness statistics – Hausman $\chi^2 = 67.62$, p -value = .0000, $R^2 = .1566$, $F(3,39) = 289.38$, Prob $>F = .0000$

Model/Step 2 fitness statistics – Hausman $\chi^2 = .53$, $p = .9131$, $R^2 = .0126$, Wald $\chi^2(4) = 4.79$, Prob $>\chi^2 = .1874$

Model/Step 3 fitness statistics – Hausman $\chi^2 = 119.77$, $p = .0000$, $R^2 = .0177$, $F(3,39) = 39.95$, Prob $>F = .0000$

Model/Step 4 fitness statistics – Hausman $\chi^2 = 39.65$, $p = .0000$, $R^2 = .1896$, $F(3,39) = 147.18$, Prob $>F = .0000$

The results in Table 4.23 indicate that governance sustainability disclosure (GSDI) has a positive and statistically significant effect on financial performance ($\beta = .0008$, $p < .001$),

confirming the presence of a direct relationship between governance disclosure and return on assets. However, governance sustainability disclosure does not significantly predict firm size ($\beta = -.0019, p = .201$), failing to satisfy the second condition of the Baron and Kenny (1986) mediation framework. Although firm size significantly influences financial performance ($\beta = -.0130, p = .014$), the insignificance of the a-path (GSDI $\rightarrow$ Firm Size) prevents the establishment of a mediation mechanism. When both governance disclosure and firm size were included in the full model, governance disclosure remained positive and statistically significant ($\beta = .00080, p < .001$), indicating that its effect operates primarily through a direct channel rather than indirectly through firm size.

The model fitness statistics further support the robustness of these findings. The Hausman tests consistently favored the fixed-effects specification in the ROA models, and all main models were jointly significant as indicated by the F-statistics ($\text{Prob} > F = .0000$). While the explanatory power of the mediator model was relatively low ($R^2 = .0126$), the overall financial performance models demonstrated meaningful explanatory strength ($R^2 = .1566$ and $.1896$). The insignificant sustainability disclosure–firm size path, combined with the strong and persistent direct effect, confirms that firm size does not mediate the relationship between governance sustainability disclosure and financial performance. Accordingly, the null sub-hypothesis relating to mediation is not rejected, and governance sustainability disclosure influences financial performance primarily through direct channels rather than through firm size.

From a theoretical perspective, the relationship between governance sustainability disclosure and financial performance can be explained through agency theory, which emphasizes the importance of governance mechanisms in reducing conflicts of interest between managers

and shareholders. Agency theory suggests that governance structures such as board independence, transparency in reporting, and accountability mechanisms improve monitoring efficiency and align managerial decisions with shareholder interests. When firms disclose governance-related sustainability information, they reduce information asymmetry between internal management and external stakeholders, thereby strengthening corporate oversight and improving decision-making processes.

Closely related to this perspective is legitimacy theory, which posits that firms create long-term value when they maintain transparent and accountable relationships with multiple stakeholders, including investors, regulators, and society. Governance disclosure signals that firms are committed to ethical management practices, compliance with regulatory standards, and responsible leadership structures. Such transparency strengthens stakeholder trust and may improve investor confidence, which can translate into improved financial outcomes regardless of firm size. In this context, governance disclosure mechanisms influence performance primarily through institutional credibility and improved managerial discipline rather than through structural characteristics such as asset base or organizational scale.

Empirical evidence from recent studies supports the positive relationship between governance sustainability disclosure and financial performance. For example, Wanjau (2019) found that governance-related sustainability practices significantly improve firm performance by strengthening monitoring systems and improving managerial accountability. Similarly, Sarpong-Danquah et al. (2022) report that firms with stronger governance transparency experience improved financial performance due to better strategic decision-making and reduced agency costs associated with managerial opportunism.

Further empirical evidence also highlights that governance disclosure influences firm performance independently of firm structural characteristics. Kyere and Ausloos (2021) found that governance sustainability reporting positively affects firm profitability primarily through improved regulatory compliance and internal control mechanisms rather than through firm expansion. Likewise, Choi et al. (2024) observed that governance disclosure enhances investor trust and corporate reputation, both of which contribute to stronger financial outcomes among listed firms.

Additional studies focusing on sustainability disclosure in emerging markets provide similar insights. Wu et al. (2022) reported that governance transparency improves firm performance through enhanced corporate credibility and improved stakeholder relationships. In addition, El-Chaarani et al. (2022) found that governance disclosure strengthens board effectiveness and corporate oversight, which in turn enhances firm value and profitability.

4.7.3 Environmental Sustainability Disclosure, Firm Size and Financial Performance of Listed Firms at NSE

This subsection assessed the mediating role of firm size in the relationship between environmental sustainability disclosure and the financial performance of firms listed at the Nairobi Securities Exchange. The analysis was undertaken in line with the null sub-hypothesis H_{04c} , which stated that the relationship between environmental sustainability disclosure and financial performance of listed firms at the NSE is not significantly mediated by firm size.

Following the Baron and Kenny (1986) mediation framework, the analysis was conducted using a stepwise panel regression approach, with the results presented in Table 4.24. In Step

1, the total effect of environmental sustainability disclosure on financial performance was estimated. The results show that the Environmental Sustainability Disclosure Index (ESDI) had a positive and statistically significant effect on return on assets ($\beta = .0014, t = 25.61, p = .000$). The Hausman test supported the fixed-effects specification ($\chi^2 = 25.71, p = .000$), confirming the robustness of the estimated relationship. This satisfies the first condition for mediation, indicating that environmental sustainability disclosure significantly influences financial performance.

Table 4.24

Panel Regression Analysis between Environmental Sustainability Disclosure, Firm Size and Financial Performance

Robust Models Variable	Step 1-(ROA) Model 1- (ESDI & ROA)		Step 2-(FS) Model 2- (ESDI & FS)		Step 3-(ROA) Model 3- (FS & ROA)		Step 4-(ROA) Model 4- (ESDI, FS & ROA)	
	β	<i>p</i> -value	β	<i>p</i> -value	β	<i>p</i> -value	β	<i>p</i> -value
Environmental Sustainability Disclosure (ESDI)	.0014 (25.61)	.000	-.0086 (-4.25)	.000	-	-	.0013 (25.06)	.000
Firm Size ^d (FS)	-	-	-	-	-.0130 (-2.56)	.014	-.0066 (-2.93)	.006
Firm Age	.0014 (5.15)	.000	.00092 (.72)	.473	.0050 (10.22)	.000	.0015 (4.19)	.000
Leverage	-.000019 (-5.03)	.000	.0252 (2.14)	.032	.000012 (1.02)	.316	.00016 (.62)	.541
Constant	-.0407 (-3.75)	.001	.3058 (3.07)	.002	.0787 (.94)	.355	-.0427 (-2.81)	.008
Model selection statistics	Hausman Chi2=25.71 Prob>chi2= .0000 Fixed-effects (within) regression		Hausman Chi2= 1.91 Prob>chi2= .5915 Random-effects GLS regression		Hausman Chi2= 119.77 Prob>chi2=.0000 Fixed-effects GLS regression		Hausman Chi2= 20.60 Prob>chi2= .0004 Fixed-effects GLS regression	
Model Fitness statistics	Number of obs = 480 R-squared: .5070 F (3,39) = 499.65 Prob > F= .0000		Number of obs = 440 R-squared: .0502 Wald chi2(3) = 23.41 Prob>chi2= .0000		Number of obs = 480 R-squared: .0177 F (3,39) = 39.95 Prob > F= .0000		Number of obs = 440 R-squared: .4936 F (3,39) = 256.04 Prob > F= .0000	

Robust test statistics in parentheses

Source: Research Findings 2026

In Step 2, the study examined whether environmental sustainability disclosure significantly predicted the intervening variable, firm size. The Hausman test favored the random-effects GLS model ($\chi^2 = 1.91, p = .5915$). The coefficient on environmental sustainability disclosure was negative and statistically significant ($\beta = -.0086, t = -4.25, p = .000$), indicating that higher levels of environmental sustainability disclosure were associated with a slight decline in firm size. This satisfies the second condition for mediation, as the independent variable significantly influences the mediator.

In Step 3, the effect of firm size on financial performance was estimated. The Hausman test supported the fixed-effects model ($\chi^2 = 119.77, p = .000$). The results show that firm size had a negative and statistically significant effect on financial performance ($\beta = -.0130, t = -2.56, p = .014$). This satisfies the third condition of the Baron and Kenny (1986) mediation framework.

In Step 4, both environmental sustainability disclosure and firm size were included in the model to assess whether mediation occurred. The Hausman test supported the fixed-effects specification ($\chi^2 = 20.60, p = .0004$). The results indicate that environmental sustainability disclosure remained positive and statistically significant ($\beta = .0013, t = 25.06, p = .000$), while firm size remained negative and statistically significant ($\beta = -.0066, t = -2.93, p = .006$). Although the coefficient on ESDI reduced slightly from .0014 in Step 1 to .0013 in Step 4, it remained statistically significant, indicating partial mediation rather than full mediation.

According to the mediation framework proposed by Baron and Kenny (1986), mediation is established when the independent variable significantly affects the mediator, the mediator

significantly affects the dependent variable, and the effect of the independent variable on the dependent variable reduces upon inclusion of the mediator. Since these conditions were satisfied and the direct effect remained statistically significant but reduced in magnitude, firm size partially mediates the relationship between environmental sustainability disclosure and financial performance. Based on the mediation results reported in Table 4.24, the null hypothesis H_{04c} was rejected. The findings indicate that while environmental sustainability disclosure has a statistically significant direct effect on financial performance, part of this effect operates indirectly through firm size among firms listed at the Nairobi Securities Exchange.

Table 4.25

Mediation Path Coefficients for Environmental Sustainability Disclosure

Dependent Variable	Independent Variable	Path	Coefficient (β)	<i>t</i> -statistic	<i>p</i> -value
ROA	ESDI	c	.0014	25.61	.000
Firm Size	ESDI	a	-.0086	-4.25	.000
ROA	Firm Size	b	-.0130	-2.56	.014
ROA	ESDI (with FS)	c'	.0013	25.06	.000
-	-	a×b	.0001118	-	-

Source: Research Findings, 2026

Model/Step 1 fitness statistics – Hausman $\chi^2 = 25.71$, *p*-value = .0000, $R^2 = .5070$, $F(3,39) = 499.65$, Prob >*F* = .0000

Model/Step 2 fitness statistics – Hausman $\chi^2 = 1.91$, *p* = .5915, $R^2 = .0502$, Wald $\chi^2(3) = 23.41$, Prob > $\chi^2 = .0000$

Model/Step 3 fitness statistics – Hausman $\chi^2 = 119.77, p = .0000, R^2 = .0177, F(3,39) = 39.95$,
Prob > F = .0000

Model/Step 4 fitness statistics – Hausman $\chi^2 = 20.60, p = .0004, R^2 = .4936, F(3,39) = 256.04$,
Prob > F = .0000

The results in Table 4.25 show that environmental sustainability disclosure (ESDI) has a positive and statistically significant effect on financial performance ($\beta = .0014, p < .001$), satisfying the first condition of the Baron and Kenny (1986) mediation framework. ESDI also significantly predicts firm size ($\beta = -.0086, p < .001$), fulfilling the second condition of the Baron and Kenny (1986) mediation framework. In Step 3, firm size significantly influences financial performance ($\beta = -.0130, p = .014$), thereby satisfying the third mediation condition. When both environmental sustainability disclosure and firm size were included in the full model, ESDI remained positive and statistically significant ($\beta = .0013, p < .001$), although slightly reduced in magnitude compared to Step 1. This reduction, coupled with the continued significance of both the mediator and the independent variable, confirms the presence of partial mediation rather than full mediation.

The model fitness statistics further affirm the robustness of these findings. The Hausman tests supported the fixed-effects specification in the ROA models, while the mediator model appropriately adopted the random-effects GLS specification. All models were jointly significant, as indicated by the F-statistics and Wald χ^2 values (Prob > F < .001). The explanatory power was substantial in the financial performance models ($R^2 = .5070$ and $.4936$), indicating that the included variables meaningfully explain variations in ROA. Although the mediator model exhibited lower explanatory strength ($R^2 = .0502$), its statistical

significance indicates that environmental sustainability disclosure significantly influences firm size. The results therefore indicate that firm size partially mediates the relationship between environmental sustainability disclosure and financial performance among firms listed at the Nairobi Securities Exchange.

From a theoretical perspective, the relationship between environmental sustainability disclosure and financial performance can be explained through legitimacy theory, which posits that firms seek to ensure that their operations are perceived as legitimate within the broader social and institutional environment. According to legitimacy theory, organizations disclose environmental information in order to demonstrate that their activities align with societal expectations, environmental regulations, and responsible corporate behavior. Environmental sustainability disclosure therefore serves as a mechanism through which firms communicate their commitment to environmental stewardship and regulatory compliance, thereby strengthening their social license to operate.

Environmental disclosure practices can enhance firm legitimacy by reducing stakeholder concerns regarding environmental impacts and corporate responsibility. When firms publicly disclose environmental initiatives such as resource conservation, emissions reduction, waste management, and environmental compliance, they signal accountability and transparency to regulators, investors, and society. This transparency may improve stakeholder confidence and enhance corporate reputation, which can translate into improved financial outcomes. The partial mediating role of firm size observed in this study suggests that although environmental disclosure directly enhances financial performance, part of its influence may operate through organizational structural characteristics such as asset base and operational scale.

Empirical evidence from recent studies supports the positive relationship between environmental sustainability disclosure and financial performance. For instance, Cui et al. (2020) found that environmental disclosure significantly improves firm value and performance by enhancing transparency and strengthening relationships with external stakeholders, particularly in settings where disclosure is mandated and investor attention is high. Similarly, Zhang et al. (2022) reported that firms engaging in comprehensive environmental reporting experience improved market-based financial performance due to increased investor confidence and stronger corporate reputation in capital markets.

Further empirical studies also indicate that environmental disclosure can influence financial outcomes through firm-level structural mechanisms. Hossain et al. (2023) found that environmental sustainability initiatives contribute to improved firm performance, particularly among firms with stronger organizational capacity and disclosure systems to implement environmental practices effectively. Likewise, Lu and Zhang (2023) observed that environmental sustainability strategies often require financial and organizational resources, which are more readily available among larger firms, thereby linking environmental practices with structural firm characteristics such as firm size and scale economies in disclosure implementation.

Additional evidence from emerging markets highlights the importance of environmental disclosure in shaping financial outcomes. Gerged (2020) reported that firms that actively disclose environmental sustainability practices tend to achieve better financial performance due to improved stakeholder trust and enhanced corporate legitimacy. Similarly, Şendur and Coşkun (2019) found that environmental transparency strengthens firm reputation and

contributes to improved financial outcomes by signaling responsible environmental management to investors and regulatory institutions

4.7.4 Sustainability Disclosures, Firm Size and Financial Performance of Listed Firms at NSE

This subsection assessed the mediating role of firm size in the relationship between overall sustainability disclosures and the financial performance of firms listed at the Nairobi Securities Exchange. The analysis was undertaken in line with the null sub-hypothesis H_{04} , which stated that the relationship between sustainability disclosures and financial performance of listed firms at the NSE is not significantly mediated by firm size. Following the Baron and Kenny (1986) mediation framework, the analysis was conducted using a stepwise panel regression approach, with the results presented in Table 4.26.

Table 4.26

Panel Regression Analysis between Sustainability Disclosures, Firm Size and Financial Performance

Robust Models Variable	Step 1-(ROA)		Step 2-(FS)		Step 3-(ROA)		Step 4-(ROA)	
	Model 1- (SDs & ROA)		Model 2- (SDs& FS)		Model 3- (FS & ROA)		Model 4- (SDs, FS & ROA)	
	β	p-Value	β	p-Value	β	p-Value	β	p-Value
Social Sustainability Disclosure (SSDI)	.00088 (16.00)	.000	-.0037 (-1.15)	.250	-	-	.00085 (16.29)	.000
Governance Sustainability Disclosure (GSDI)	.00019 (4.51)	.000	0.0042 (2.14)	.032	-	-	.00020 (4.91)	.000
Environmental Sustainability Disclosure (ESDI)	.00076 (11.77)	.000	-0.0089 (-2.80)	.005	-	-	.00071 (1.78)	.000
Firm Size ^d (FS)	.000042 (.92)	.355	-	-	-.0130 (-2.56)	.014	-.0065 (-3.69)	.000
Firm Age	.000017 (3.90)	.000	.00010 (.78)	.436	.004974 (10.22)	.000	.000042 (0.95)	.342
Leverage	-.0035 (-1.39)	.165	.0253 (2.16)	.031	.000012 (1.02)	.316	.00015 (.61)	.541
Constant	.00088 (16.00)	.000	.2887 (2.83)	.005	.078693 (.94)	0.355	- (-.19)	.846
Model selection statistics	Hausman Chi2= 6.84 Prob>chi2= .2329		Hausman Chi2= 2.51 Prob>chi2= .7752		Hausman Chi2= 119.77 Prob>chi2=.0000		Hausman Chi2= 8.79 Prob>chi2= .1859	
Model Fitness statistics	Random-effects GLS regression Number of obs = 480 R-squared: .8116		Random-effects GLS regression Number of obs = 440 R-squared: .0593		Fixed-effects GLS regression Number of obs = 480 R-squared: .0177 F (3,39) = 39.95		Random-effects GLS regression Number of obs = 440 R-squared: .8230	

Wald chi2(3) =	Wald chi2(3) =	Prob > F= .0000	Wald chi2(3) =
3472.80	30.06		4099.60
Prob>chi2= .0000	Prob>chi2=		Prob>chi2=
	.0000		.0000

In Step 1, the total effect of sustainability disclosures on financial performance was estimated. The results indicate that Social Sustainability Disclosure (SSDI) ($\beta = .00088$, $p = .000$), Governance Sustainability Disclosure (GSDI) ($\beta = .00019$, $p = .000$), and Environmental Sustainability Disclosure (ESDI) ($\beta = .00076$, $p = .000$) all have positive and statistically significant effects on return on assets. The Hausman test supported the random-effects GLS specification ($\chi^2 = 6.84$, $p = .2329$). The model was jointly significant as indicated by the Wald χ^2 statistic (Wald $\chi^2 = 3472.80$, $p = .000$), suggesting that sustainability disclosures significantly explain variations in financial performance among listed firms.

In Step 2, the relationship between sustainability disclosures and the mediating variable, firm size, was examined. The Hausman test again favored the random-effects GLS specification ($\chi^2 = 2.51$, $p = .7752$). The results indicate that Social Sustainability Disclosure had a negative but statistically insignificant effect on firm size ($\beta = -.0037$, $p = .250$). In contrast, Governance Sustainability Disclosure had a positive and statistically significant effect on firm size ($\beta = .0042$, $p = .032$), while Environmental Sustainability Disclosure had a negative and statistically significant effect ($\beta = -.0089$, $p = .005$). The overall model was jointly significant (Wald $\chi^2 = 30.06$, $p = .000$), indicating that sustainability disclosure variables collectively explain variations in firm size.

In Step 3, firm size was regressed on financial performance to determine whether the mediator significantly influences the dependent variable. The Hausman test supported the fixed-effects GLS specification ($\chi^2 = 119.77$, $p = .000$). The results show that firm size has a

negative and statistically significant effect on financial performance ($\beta = -.0130, p = .014$). The model was jointly significant ($F(3,39) = 39.95, p = .000$), indicating that firm size significantly explains variations in return on assets among the listed firms.

In Step 4, sustainability disclosures and firm size were jointly included in the financial performance model. The Hausman test supported the random-effects GLS specification ($\chi^2 = 8.79, p = .1859$). The results show that Social Sustainability Disclosure ($\beta = .00085, p = .000$), Governance Sustainability Disclosure ($\beta = .00020, p = .000$), and Environmental Sustainability Disclosure ($\beta = .00071, p = .000$) remained positive and statistically significant predictors of financial performance. Firm size also remained negative and statistically significant ($\beta = -.0065, p = .000$). The model was jointly significant as indicated by the Wald χ^2 statistic (Wald $\chi^2 = 4099.60, p = .000$), confirming the robustness of the estimated relationships.

The comparison between Step 1 and Step 4 indicates that the coefficients of the sustainability disclosure variables reduced slightly after the inclusion of firm size in the model, suggesting that part of the relationship between sustainability disclosures and financial performance operates through firm size. However, the sustainability disclosure variables remained statistically significant even after controlling for firm size, indicating that the majority of the effect occurs through direct channels rather than through the mediating mechanism of firm size. Based on the mediation results reported in Table 4.27, the null hypothesis H_{04} was rejected. The findings indicate that while sustainability disclosures have statistically significant direct effects on financial performance, part of these effects operates indirectly through firm size among firms listed at the Nairobi Securities Exchange.

Table 4.27*Mediation Joint Path Statistics¹ for Sustainability Disclosures (Joint Model)*

Dependent Variable	Independent Variable	Path	Statistic	<i>p</i> -value
ROA	SDs	c	Wald $\chi^2(3) = 3472.80$	.000
Firm Size	SDs	a	Wald $\chi^2(3) = 30.06$	.000
ROA	Firm Size	b	$F(3,39) = 39.95$	.000
ROA	Composite SDs (with FS)	c'	Wald $\chi^2(3) = 4099.60$	.000

Source: Research Findings, 2026

The mediation path statistics summarizing the four regression steps are presented in Table 4.27. The results indicate that sustainability disclosures significantly influence financial performance (Path c) as evidenced by the Wald χ^2 statistic of 3472.80 ($p = .000$). This confirms the existence of a statistically significant total effect between sustainability disclosures and return on assets among firms listed at the Nairobi Securities Exchange.

The results further show that sustainability disclosures significantly explain variations in firm size (Path a), as indicated by the overall model statistic Wald $\chi^2 = 30.06$ ($p = .000$). This suggests that sustainability disclosure practices collectively influence firm structural characteristics such as asset base and operational scale. The third condition of mediation is also satisfied. Firm size significantly influences financial performance (Path b), as evidenced

¹Note: The statistics reported in this table represent the overall model significance obtained from the corresponding regression models in Table 4.26. SDs represent the joint sustainability disclosure variables included in the model, namely Social Sustainability Disclosure (SSDI), Governance Sustainability Disclosure (GSDI), and Environmental Sustainability Disclosure (ESDI).

by the model statistic $F(3,39) = 39.95$ ($p = .000$). This finding implies that firm size plays a statistically significant role in explaining variations in return on assets among the listed firms.

In the final step of the mediation analysis, sustainability disclosures and firm size were jointly included in the financial performance model. The results show that sustainability disclosures remained statistically significant even after controlling for firm size, as indicated by the Wald χ^2 statistic of 4099.60 ($p = .000$) for Path c'. The continued significance of sustainability disclosures after the inclusion of the mediator indicates that part of the influence of sustainability disclosures on financial performance operates through firm size, while another portion occurs through direct mechanisms.

According to the mediation framework proposed by Baron and Kenny (1986), partial mediation occurs when the independent variable significantly influences the mediator, the mediator significantly influences the dependent variable, and the effect of the independent variable on the dependent variable remains statistically significant after the inclusion of the mediator. Since these conditions are satisfied based on the overall model statistics, firm size partially mediates the relationship between sustainability disclosures and financial performance of firms listed at the Nairobi Securities Exchange.

Consequently, the null hypothesis H_{04} , which stated that the relationship between sustainability disclosures and financial performance of listed firms at the NSE is not significantly mediated by firm size, is rejected. The findings therefore indicate that sustainability disclosure practices influence financial performance both directly and indirectly through the structural characteristics of firms, particularly firm size.

The finding that firm size partially mediates the relationship between sustainability disclosures and financial performance can be interpreted within the context of legitimacy theory. The posits that firms create value not only for shareholders but also for a broad range of stakeholders, including employees, communities, regulators, and investors. Sustainability disclosures serve as a mechanism through which firms communicate their social, environmental, and governance commitments to these stakeholders. Larger firms often possess greater visibility, resource capacity, and stakeholder exposure, which encourages more structured sustainability practices and disclosures. In this context, firm size may influence how sustainability initiatives are implemented and how effectively they translate into financial outcomes, thereby partially transmitting the effects of sustainability disclosure on firm performance.

From agency perspective, sustainability disclosure practices enhance transparency and legitimacy, which may strengthen stakeholder trust and improve a firm's access to resources such as capital, strategic partnerships, and market opportunities. Larger firms typically face stronger institutional pressures and public scrutiny, which encourages them to adopt more comprehensive sustainability reporting practices. As a result, firm size may act as a structural mechanism through which sustainability disclosure practices influence organizational outcomes, including financial performance. The partial mediation observed in this study therefore suggests that while sustainability disclosures directly enhance financial performance, part of their impact is also channeled through firm structural characteristics such as firm size.

Empirical literature increasingly demonstrates that firm size is a critical structural factor in shaping the relationship between sustainability reporting and firm performance. In this regard, Gerged (2020) provides robust evidence that larger firms consistently disclose higher levels of environmental information, largely due to heightened visibility, stronger stakeholder pressure, and greater access to organizational resources. This implies that firm size not only influences the extent of sustainability disclosure but also conditions how such disclosures are recognized and rewarded in terms of financial outcomes.

Similarly, Raimo et al. (2022) establish that ESG disclosure effectiveness is contingent on firm-level characteristics, with firm size emerging as a significant determinant of the strength of the disclosure–performance relationship. Their findings suggest that larger firms possess more developed governance and reporting systems, which enable them to better integrate sustainability practices into corporate strategies, thereby enhancing the financial implications of disclosure.

Complementary evidence is provided by Hossain et al. (2023), who demonstrate that firms with larger asset bases are more capable of embedding sustainability considerations into managerial decision-making processes. This enhanced organizational capacity facilitates more comprehensive sustainability reporting, which in turn contributes to improved sustainability and financial performance outcomes.

In addition, Zhang et al. (2023) highlight that firm size strengthens the effectiveness of sustainability reporting by improving the quality, scope, and credibility of disclosures across environmental and social dimensions. Larger firms are better positioned to institutionalize sustainability practices through formal governance structures and dedicated reporting

mechanisms, thereby increasing the likelihood that sustainability efforts translate into measurable performance gains.

Collectively, these studies underscore that firm size functions as a key moderating and enabling factor in the sustainability disclosure–performance nexus, shaping both the extent of disclosure and the efficiency with which such disclosures are converted into financial performance outcomes.

4.8 Summary of Hypotheses Tested

The summary of research objectives, hypotheses tested, and key findings is presented in Table 4.28. The results indicate that sustainability disclosure significantly influences the financial performance of firms listed at the Nairobi Securities Exchange. All three sustainability dimensions namely social, corporate governance, and environmental disclosures were found to have positive and statistically significant effects on financial performance. Consequently, the null hypotheses stating that these disclosure dimensions have no significant effect on financial performance were rejected. This confirms that sustainability reporting is positively associated with improved profitability among NSE listed firms.

With respect to social sustainability disclosure, the findings reveal a strong and consistent positive relationship with financial performance. Firms that reported extensively on employee welfare, labour practices, stakeholder engagement, and community involvement achieved higher levels of Return on Assets. Corporate governance sustainability disclosure was also found to significantly enhance financial performance, highlighting the importance of transparency, accountability, and effective governance structures in strengthening firm

profitability. Environmental sustainability disclosure likewise exhibited a positive and statistically significant effect, although the magnitude of its impact was comparatively moderate relative to social and governance disclosures.

Table 4.28

Summary of Study Findings

Objectives	Hypotheses	Findings	Interpretation
Examine the effect of social sustainability disclosure on financial performance	H ₀₁ : Social sustainability disclosure has no significant effect on financial performance	H ₀₁ was rejected	Social sustainability disclosure has a positive and statistically significant effect on financial performance of listed firms at the NSE.
Examine the effect of governance sustainability disclosure on financial performance	H ₀₂ : Governance sustainability disclosure has no significant effect on financial performance	H ₀₂ was rejected	Governance disclosure positively and significantly influences financial performance of listed firms at the NSE.
Examine the effect of environmental sustainability disclosure on financial performance	H ₀₃ : Environmental sustainability disclosure has no significant effect on financial performance	H ₀₃ was rejected	Environmental disclosure has a positive and statistically significant effect on financial performance of listed firms at the NSE.
	H ₀₄ : Sustainability disclosures jointly have no significant effect on financial performance	H ₀₄ was rejected	Sustainability disclosures jointly have a statistically significant effect on financial performance of listed firms at the NSE.
Assess whether firm size mediates social disclosure–performance relationship	H _{04a} : Firm size does not mediate the social disclosure–performance relationship	H _{04a} was rejected	Firm size partially mediates the relationship between social disclosure and financial performance of listed firms at the NSE.

Assess whether firm size mediates governance disclosure–performance relationship	H _{04b} : Firm size does not mediate the governance disclosure–performance relationship	H _{04b} was not rejected	Firm size does not mediate the governance disclosure–performance relationship of listed firms at the NSE.
Assess whether firm size mediates environmental disclosure–performance relationship	H _{04c} : Firm size does not mediate the environmental disclosure–performance relationship	H _{04c} was rejected	Firm size partially mediates the relationship between environmental disclosure and financial performance.
	H ₀₄ : Firm size does not mediate the relationship between sustainability disclosures and financial performance of listed firms at the NSE	H ₀₄ was rejected	Firm size partially mediates the relationship between sustainability disclosures and financial performance of listed firms at the NSE

Source: Research Findings 2026

The mediation analysis further clarifies the mechanisms through which sustainability disclosure influences financial performance. The results indicate that firm size partially mediates the relationship between social sustainability disclosure and financial performance as well as between environmental sustainability disclosure and financial performance. In both cases sustainability disclosure significantly influenced firm size and firm size significantly predicted financial performance, with the direct effects of disclosure remaining significant but reduced in magnitude. This suggests that part of the financial benefit associated with social and environmental disclosures operates indirectly through firm size while a substantial portion remains direct.

In contrast firm size did not mediate the relationship between governance sustainability disclosure and financial performance. Governance disclosure did not significantly influence firm size although it maintained a strong direct effect on financial performance. Thus, the results demonstrate that sustainability disclosure enhances firm profitability primarily through direct channels with additional indirect effects through firm size in selected dimensions. These findings underscore the strategic importance of sustainability reporting as a value enhancing mechanism within the Nairobi Securities Exchange context.

When sustainability disclosures were considered jointly, the results also revealed evidence of partial mediation. The overall sustainability disclosure model showed that sustainability disclosures significantly influenced financial performance and that firm size significantly predicted financial performance, while the direct effect of sustainability disclosures remained significant after the inclusion of firm size. This indicates that firm size partially transmits the influence of combined sustainability disclosure practices on financial performance, suggesting that sustainability reporting contributes to firm profitability both directly and indirectly through firm structural characteristics.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the Findings of the Study

The descriptive analysis revealed generally low to moderate levels of sustainability disclosure among firms listed at the Nairobi Securities Exchange, with notable variation across disclosure dimensions and over time. Social and corporate governance disclosures recorded relatively higher levels of reporting compared to environmental disclosures, which remained comparatively weaker across most indicators. This suggests that while firms increasingly recognize the importance of sustainability reporting, environmental transparency remains less developed relative to other sustainability dimensions.

Financial performance, measured using Return on Assets (ROA), exhibited noticeable fluctuations during the study period, reflecting changing macroeconomic conditions, industry-specific dynamics, and firm-level operational factors. The diagnostic tests confirmed the suitability of panel data estimation techniques for the analysis. Model selection was guided by the Hausman specification test, while robustness was enhanced through the use of clustered standard errors to control for potential heteroskedasticity and serial correlation within the panel data structure.

Thus, the joint regression analysis revealed that sustainability disclosures collectively have a positive and statistically significant effect on the financial performance of firms listed at the Nairobi Securities Exchange. When the three sustainability dimensions (social sustainability disclosure, governance sustainability disclosure, and environmental sustainability disclosure) were examined simultaneously, the results indicated that sustainability reporting significantly

explains variations in financial performance among listed firms. The model fitness statistics further confirmed the robustness of the relationship, with the joint sustainability disclosure model demonstrating strong explanatory power and statistical significance. These findings suggest that firms that adopt broader sustainability reporting practices tend to experience improved financial performance, highlighting the strategic importance of integrated sustainability disclosure within corporate reporting frameworks.

5.1.1 Social Sustainability Disclosure and Financial Performance of Firms Listed at NSE

The analysis revealed a positive and statistically significant relationship between social sustainability disclosure and firm financial performance. Firms that provided more comprehensive disclosure on labour practices, employee welfare, occupational health and safety, human rights, and community engagement recorded higher levels of Return on Assets. The regression results indicated that the Social Sustainability Disclosure Index had a positive and statistically significant effect on financial performance among firms listed at the Nairobi Securities Exchange.

These findings suggest that stronger social transparency enhances stakeholder relationships, improves employee motivation, and strengthens corporate legitimacy, which in turn contributes to improved profitability. The consistent statistical significance of the SSDI coefficient across the regression models confirms the robustness of the relationship. Based on these results, the null hypothesis stating that social sustainability disclosure has no significant effect on financial performance was rejected.

5.1.2 Governance Sustainability Disclosure and Financial Performance of Firms

Listed at NSE

The findings indicate that governance sustainability disclosure has a positive and statistically significant effect on the financial performance of firms listed at the Nairobi Securities Exchange. Firms that reported more extensively on governance structures, board composition, accountability mechanisms, risk management frameworks, and ethical standards achieved higher levels of Return on Assets. The regression results demonstrated that the Governance Sustainability Disclosure Index (GSDI) had a positive and statistically significant influence on firm profitability.

These results imply that improved governance transparency strengthens investor confidence, enhances accountability within corporate structures, and reduces agency conflicts between management and shareholders. Consequently, firms with stronger governance disclosure practices tend to experience better financial performance. The findings therefore led to the rejection of the null hypothesis that governance sustainability disclosure has no significant effect on firm financial performance.

5.1.3 Environmental Sustainability Disclosure and Financial Performance of Firms

Listed at NSE

The findings relating to environmental sustainability disclosure indicate a positive and statistically significant association with firm financial performance. Firms that disclosed information on environmental impact mitigation, resource efficiency, waste management, and environmental compliance tended to record higher levels of Return on Assets. The regression results consistently showed that Environmental Sustainability Disclosure Index

(ESDI) had a positive and significant effect on financial performance, suggesting that improvements in environmental transparency are associated with enhanced profitability. This implies that environmental disclosure strengthens firm reputation, enhances stakeholder confidence, and may improve operational efficiency, thereby contributing to better financial outcomes.

Further analysis revealed that the effect of environmental disclosure remained statistically significant even when firm size was introduced into the model, although the magnitude of the coefficient reduced slightly. This indicates partial mediation, meaning that environmental disclosure influences financial performance both directly and indirectly through firm size. The persistence of statistical significance in the joint model confirms the robustness of the relationship. Thus, the results demonstrate that environmental sustainability disclosure is an important determinant of firm performance among NSE-listed firms, reinforcing the strategic value of integrating environmental reporting into corporate governance and long-term business strategy.

5.1.4 Sustainability Disclosures, Firm Size and Financial Performance of Listed Firms at NSE

The final objective of the study examined the mediating role of firm size in the relationship between sustainability disclosures and financial performance among firms listed at the Nairobi Securities Exchange. The mediation analysis was conducted using the framework proposed by Baron and Kenny (1986), which evaluates whether an intervening variable transmits part of the effect of the independent variable to the dependent variable.

The results indicate that sustainability disclosures collectively have a statistically significant influence on financial performance, while firm size also significantly predicts financial performance among the listed firms. When firm size was incorporated into the joint regression model, the coefficients of the sustainability disclosure variables reduced slightly but remained statistically significant. This pattern indicates the presence of partial mediation, suggesting that firm size transmits part of the influence of sustainability disclosures on financial performance while a substantial portion of the relationship remains direct.

Further examination of the mediation relationships across individual sustainability dimensions revealed that firm size partially mediates the relationship between social sustainability disclosure and financial performance as well as between environmental sustainability disclosure and financial performance. In contrast, firm size did not mediate the relationship between governance sustainability disclosure and financial performance, indicating that governance transparency influences financial outcomes primarily through direct mechanisms.

5.2 Conclusions of the Study

This study concludes that sustainability disclosure is a statistically significant determinant of financial performance among firms listed at the Nairobi Securities Exchange. The empirical findings demonstrate that firms that disclose more comprehensive sustainability information tend to achieve superior financial performance as measured by Return on Assets. The results show that sustainability transparency contributes to improved firm outcomes by strengthening stakeholder relationships, enhancing corporate legitimacy, and supporting more efficient organizational practices.

With regard to social sustainability disclosure, the study concludes that social sustainability disclosure has a positive and statistically significant effect on financial performance among firms listed at the Nairobi Securities Exchange. Firms that report extensively on employee welfare, labour practices, stakeholder engagement, community involvement, and human rights issues are more likely to experience improved profitability. These findings suggest that transparent social reporting strengthens stakeholder trust, enhances workforce commitment, and improves corporate reputation, thereby contributing to stronger financial outcomes.

The study further concludes that governance sustainability disclosure has a positive and statistically significant influence on firm financial performance. Firms that maintain strong governance reporting practices relating to board structures, accountability mechanisms, risk management systems, and ethical standards are more likely to achieve superior financial outcomes. These results highlight the importance of governance transparency in strengthening investor confidence, reducing agency conflicts, and promoting effective corporate decision-making within firms listed at the Nairobi Securities Exchange.

The findings also confirm that environmental sustainability disclosure has a positive and statistically significant effect on financial performance. Firms that actively report environmental initiatives such as resource efficiency, waste management practices, environmental compliance, and sustainability initiatives tend to achieve better financial outcomes. These results demonstrate that environmental responsibility contributes to corporate value creation through improved reputation, regulatory compliance, and more efficient resource utilization.

Finally, the study concludes that firm size plays a partial mediating role in the relationship between sustainability disclosures and financial performance. The results indicate that social and environmental sustainability disclosures influence financial performance both directly and indirectly through firm size. However, governance sustainability disclosure primarily exerts a direct and statistically significant effect on financial performance rather than operating through firm size. Thus, the findings confirm that sustainability disclosure functions as a strategic corporate practice that significantly enhances financial performance both independently and, in certain cases, through firm structural characteristics among firms listed at the Nairobi Securities Exchange.

5.3 Recommendations of the Study

This section presents recommendations derived from the empirical findings of the study. The recommendations are structured to inform theory, policy, and managerial practice with the aim of enhancing the effectiveness of sustainability disclosure in improving firm financial performance. By aligning sustainability reporting practices with regulatory expectations, strategic decision-making, and theoretical development, these recommendations seek to support firms and stakeholders in strengthening the sustainability–performance nexus within the Nairobi Securities Exchange context.

5.3.1 Theoretical Implications

The findings of this study provide strong empirical support for Agency Theory, which served as the primary theoretical foundation of the research. Agency theory posits that governance mechanisms and transparency reduce information asymmetry, align managerial actions with shareholder interests, and minimize agency costs. The statistically significant positive effect

of governance sustainability disclosure on financial performance confirms this theoretical proposition by demonstrating that enhanced transparency, accountability structures, and board oversight mechanisms contribute directly to improved firm profitability. The study contributes to Agency Theory by providing empirical evidence that sustainability disclosures, particularly governance disclosures, serve as effective monitoring and accountability mechanisms that reduce agency conflicts and enhance shareholder value within publicly listed firms in emerging capital markets such as Kenya.

The study also contributes to Legitimacy Theory by demonstrating that sustainability disclosures generate measurable financial benefits rather than merely fulfilling symbolic legitimacy requirements. Legitimacy theory suggests that firms disclose environmental and social information to align with societal expectations and maintain their license to operate. The statistically significant positive relationships between social and environmental sustainability disclosures and financial performance indicate that legitimacy-seeking behavior enhances corporate reputation, strengthens stakeholder trust, and improves investor confidence. This study extends Legitimacy Theory by providing empirical evidence that legitimacy-building through ESG disclosure not only strengthens societal acceptance but also translates into improved financial performance within the context of firms listed at the Nairobi Securities Exchange.

Finally, the findings provide empirical validation of the Triple Bottom Line (TBL) Theory, which emphasizes the integration of economic, social, and environmental dimensions of corporate performance. The statistically significant positive effects of social and environmental sustainability disclosures on financial performance support the TBL

proposition that responsible management of social and environmental factors contributes to long-term economic success. The study contributes to the Triple Bottom Line framework by demonstrating that sustainability dimensions' function as complementary drivers of profitability rather than as competing objectives. By providing empirical evidence from an emerging market setting, the study strengthens the applicability of the TBL framework within developing capital markets and demonstrates that integrated sustainability practices can generate both societal and financial value.

5.3.2 Policy Implication

The findings of this study provide important insights for policymakers and regulators responsible for overseeing corporate reporting and capital market development in Kenya. The statistically significant positive relationship between sustainability disclosures and financial performance indicates that ESG reporting contributes not only to transparency but also to improved firm profitability. This suggests that sustainability disclosure should be strengthened as a core component of corporate reporting frameworks within the Kenyan capital market. Regulatory bodies such as the Capital Markets Authority (CMA) and the Nairobi Securities Exchange (NSE) can utilize these findings to further strengthen sustainability disclosure guidelines, promote standardized ESG reporting frameworks, and enhance enforcement mechanisms to ensure consistent and comparable sustainability reporting across listed firms.

The results also highlight the importance of integrating sustainability reporting within broader corporate governance and financial disclosure regulations. Policymakers may consider aligning existing sustainability reporting guidelines with internationally recognized

standards such as the Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), and emerging global sustainability disclosure standards. Strengthening ESG reporting frameworks would enhance transparency, reduce information asymmetry in the capital market, and enable investors to make more informed decisions. Such policy initiatives would also position the Nairobi Securities Exchange more competitively within global financial markets where sustainability reporting has increasingly become an important investment criterion.

The empirical findings further suggest that sustainability disclosure contributes to financial performance across social, governance, and environmental dimensions, with governance disclosure exhibiting particularly strong direct effects. This indicates that regulatory institutions should continue to strengthen corporate governance disclosure requirements within sustainability reporting frameworks. Enhancing governance transparency through clearer reporting standards on board structures, risk management systems, ethical practices, and accountability mechanisms can further improve investor confidence and strengthen market discipline among listed firms.

Additionally, the partial mediating role of firm size suggests that firms with greater organizational capacity may be better positioned to implement comprehensive sustainability reporting practices. Policymakers should therefore design supportive mechanisms that enable smaller and medium-sized listed firms to adopt sustainability disclosure practices effectively. Such support could include technical guidance, ESG reporting templates, training programs, and incentive mechanisms aimed at reducing the costs associated with sustainability reporting. By promoting inclusive sustainability reporting across firms of different sizes,

regulators can strengthen corporate accountability while supporting long-term stability and competitiveness within the Kenyan capital market.

5.3.3 Managerial Implication

The findings of this study indicate that sustainability disclosure should be treated as a strategic management practice rather than merely a regulatory or reporting obligation. Corporate managers should therefore integrate environmental, social, and governance (ESG) considerations into core business strategies and operational decision-making processes. Since the study found that sustainability disclosures significantly improve financial performance, managers should institutionalize sustainability practices within corporate planning, risk management, and performance monitoring systems. Boards of directors and senior executives should establish clear sustainability governance structures, including board-level sustainability committees, formal ESG policies, and internal reporting mechanisms that ensure accountability for sustainability outcomes.

The statistically significant positive effect of social sustainability disclosure suggests that firms can improve financial performance by strengthening their social responsibility initiatives. Managers should therefore prioritize policies that promote employee welfare, occupational health and safety, fair labour practices, and meaningful stakeholder engagement. Investing in workforce development, community engagement programs, and inclusive workplace policies can enhance employee productivity, improve corporate reputation, and strengthen relationships with key stakeholders. Firms that effectively communicate these initiatives through transparent social disclosures are likely to build stronger stakeholder trust and long-term organizational resilience.

The findings also demonstrate that governance sustainability disclosure has a strong direct influence on financial performance. This highlights the importance of strengthening governance transparency and accountability mechanisms within corporate structures. Managers and board members should prioritize improvements in board independence, risk oversight, internal control systems, and ethical compliance frameworks. Enhancing governance disclosure practices can reduce information asymmetry between managers and shareholders, strengthen investor confidence, and promote more effective corporate oversight.

In addition, the positive effect of environmental sustainability disclosure suggests that firms should adopt proactive environmental management practices that improve resource efficiency and reduce environmental risks. Managers should invest in initiatives such as energy efficiency programs, waste reduction strategies, sustainable supply chain management, and environmental risk assessment systems. These initiatives can improve operational efficiency, reduce long-term costs, and strengthen the firm's reputation among environmentally conscious investors and consumers.

Finally, the findings on the mediating role of firm size suggest that the effectiveness of sustainability practices may partly depend on organizational capacity. Managers in smaller firms should prioritize scalable sustainability initiatives that align with available resources while progressively strengthening disclosure systems. Firms can also leverage digital reporting tools and standardized sustainability reporting frameworks to reduce the administrative costs of ESG reporting. Therefore, managers should view sustainability disclosure not merely as a compliance requirement but as a strategic investment that enhances

operational efficiency, strengthens stakeholder relationships, and improves long-term financial performance.

5.3.4 Methodological Implication

The methodological approach adopted in this study provides several insights that can guide future empirical research on sustainability disclosure and firm performance. The use of a longitudinal panel data design allowed the study to capture both cross-sectional differences among firms and variations over time, thereby strengthening the robustness of the empirical analysis. Future studies examining sustainability-performance relationships are encouraged to adopt similar panel research designs, as they provide more reliable results compared to purely cross-sectional approaches by accounting for firm-specific heterogeneity and temporal dynamics.

The study also demonstrates the usefulness of constructing sustainability disclosure indices based on internationally recognized reporting frameworks such as the Global Reporting Initiative (GRI). The use of structured disclosure indices improved measurement consistency and allowed for systematic comparison across firms and reporting periods. However, since disclosure-based indices primarily capture the presence of reported sustainability information rather than the quality or credibility of that information, future research could expand measurement approaches by incorporating additional indicators such as ESG assurance reports, third-party sustainability ratings, or qualitative assessments of disclosure depth and transparency.

Although panel regression and mediation analysis provided an appropriate framework for testing the relationships between sustainability disclosures, firm size, and financial

performance, future research could further strengthen causal inference by applying more advanced econometric techniques. Methods such as dynamic panel models (for instance, System GMM), instrumental variable approaches, or structural equation modeling could help address potential issues of endogeneity, reverse causality, and omitted variable bias that may arise in observational panel data studies.

Finally, the reliance on secondary data obtained from corporate annual reports and sustainability reports highlights the importance of improving data triangulation in sustainability research. Future studies could complement disclosure-based data with primary data sources such as managerial interviews, stakeholder surveys, or industry expert assessments. Incorporating multiple data sources would enhance measurement validity, reduce potential reporting bias, and provide deeper insights into how sustainability practices influence firm performance in practice. These methodological enhancements would contribute to more rigorous and comprehensive empirical investigations of the sustainability–performance relationship in both emerging and developed market contexts.

5.4 Recommendations for Future Research

Future research should expand the scope of financial performance measurement beyond accounting-based indicators such as Return on Assets to include market-based measures such as Tobin’s Q, market capitalization, or stock returns. Incorporating these indicators would provide a broader understanding of how sustainability disclosures influence both operational efficiency and investor perceptions in capital markets.

Subsequent studies could also refine the measurement of sustainability disclosure by incorporating quality-weighted indices, third-party ESG ratings, or verified sustainability

performance indicators. Such approaches would help distinguish between symbolic sustainability reporting and substantive sustainability performance, thereby providing a more accurate assessment of the sustainability–performance relationship.

In addition, future research may explore alternative mediating and moderating variables that influence the relationship between sustainability disclosure and financial performance. Variables such as innovation capability, corporate governance quality, ownership structure, reputational capital, and risk management practices may provide a deeper understanding of the mechanisms through which sustainability practices translate into financial outcomes.

The measurement of sustainability disclosure was based on content analysis and index construction, which primarily captured the extent of disclosure rather than the quality, credibility, or effectiveness of sustainability initiatives. Firms that provided more detailed disclosures were assigned higher index scores regardless of whether those disclosures translated into measurable improvements in environmental, social, or governance performance. As a result, the indices may not fully distinguish between symbolic disclosure and substantive sustainability practices, which may influence the strength and interpretation of the observed relationships with financial performance.

Future researchers using content analysis to measure sustainability disclosure should assess inter-rater reliability. Two or more coders could independently score a randomly selected subset of annual reports using the same coding instructions and scoring criteria. Researchers should then calculate and report an appropriate agreement statistic, such as weighted Cohen's kappa or Krippendorff's alpha, together with its interpretation. This would make the

consistency of the disclosure scores easier to evaluate and strengthen confidence in the resulting indices.

Finally, future studies may employ more advanced econometric techniques such as structural equation modeling, dynamic panel estimation (e.g., System GMM), or bootstrapping mediation analysis to strengthen causal inference and capture complex interrelationships among variables. Expanding the study scope to include cross-country comparisons, sectoral analyses, or longer time horizons would further enhance the generalizability and robustness of findings related to the sustainability–performance nexus within emerging and developed capital markets.

Finally, the mediation analysis adopted the stepwise procedure proposed by Baron and Kenny (1986) to assess the mediating role of firm size. Although this approach is widely used in empirical research, it may have limitations in detecting subtle indirect effects. While the study identified partial mediation in certain sustainability dimensions, alternative techniques such as bootstrapping procedures or structural equation modeling could provide deeper insights into the underlying transmission mechanisms. Future studies may therefore benefit from employing advanced mediation techniques and incorporating additional structural variables to further refine the sustainability–performance relationship within the NSE context.

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APPENDICES

Appendix A: Authorization Letter



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**KISII
UNIVERSITY**

SCHOOL OF BUSINESS AND ECONOMICS

OFFICE OF THE COORDINATOR, POST-GRADUATE PROGRAMMES

Ref: KSU/SBM/DCB/10018/14

Thursday, 31st July, 2025.

The Director,
National Commission for Science, Technology &
Innovation (NACOSTI)
NAIROBI.

Dear Sir,

**REF: APPLICATION FOR A RESEARCH PERMIT FOR RUTH MAGARA:
DCB/10018/14**

The above named is a PhD student in our institution who intends to carry out a Research. The intended study is titled; **"Sustainability Disclosures, Firm Size, and Financial Performance of Listed Companies at the Nairobi Securities Exchange."**

The purpose of this letter is to request you to give her a research permit to enable her conduct the research.

Thank you.


Dr. Yobes Benjamin Nyaboga, PhD
COORDINATOR, POST-GRADUATE PROGRAMMES

YBN/pa


31 JUL 2025

KISII UNIVERSITY IS ISO 9001:2008 CERTIFIED



Appendix B: NACOSTI Research Permit

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 157553	Date of Issue: 08/August/2025
RESEARCH LICENSE	
	
This is to Certify that Ms. RUTH MAGARA of Kisii University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: SUSTAINABILITY DISCLOSURES, FIRM SIZE, AND FINANCIAL PERFORMANCE OF LISTED COMPANIES AT THE NAIROBI SECURITY EXCHANGE for the period ending : 08/August/2026.	
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THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013 (Rev. 2014)
Legal Notice No. 108: The Science, Technology and Innovation (Research Licensing) Regulations, 2014

The National Commission for Science, Technology and Innovation, hereafter referred to as the Commission, was established under the Science, Technology and Innovation Act 2013 (Revised 2014) herein after referred to as the Act. The objective of the Commission shall be to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto.

CONDITIONS OF THE RESEARCH LICENSE

1. The License is granted subject to provisions of the Constitution of Kenya, the Science, Technology and Innovation Act, and other relevant laws, policies and regulations. Accordingly, the licensee shall adhere to such procedures, standards, code of ethics and guidelines as may be prescribed by regulations made under the Act, or prescribed by provisions of International treaties of which Kenya is a signatory to.
2. The research and its related activities as well as outcomes shall be beneficial to the country and shall not in any way:
 - i. Endanger national security
 - ii. Adversely affect the lives of Kenyans
 - iii. Be in contravention of Kenya's international obligations including Biological Weapons Convention (BWC), Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Chemical, Biological, Radiological and Nuclear (CBRN).
 - iv. Result in exploitation of intellectual property rights of communities in Kenya
 - v. Adversely affect the environment
 - vi. Adversely affect the rights of communities
 - vii. Endanger public safety and national cohesion
 - viii. Plagiarize someone else's work
3. The License is valid for the proposed research, location and specified period.
4. Neither the license nor any rights thereunder are transferable.
5. The Commission reserves the right to cancel the research at any time during the research period if in the opinion of the Commission the research is not implemented in conformity with the provisions of the Act or any other written law.
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14. The Commission shall have powers to acquire from any person the right in, or to, any scientific innovation, invention or patent of strategic importance to the country.
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Innovation (NACOSTI),
Off Waiyaki Way, Upper Kabete,
P. O. Box 30623 - 00100 Nairobi, KENYA
Telephone: 020 4007000, 0713788787, 0735404245
E-mail: dg@nacosti.go.ke
Website: www.nacosti.go.ke

Appendix C: Thesis Budget

S/No	Item	Quantity	Unit Price	Total (Ksh)
1.	Laptop	1	90000	150000
2.	Typesetting and Printing	320 Pages	10	102000
3.	Research Assistants	3 Person	50000	150000
4.	Lunch	4	2000	8000
5.	Data Analysis Software	1	38000	38000
Total				448000

Appendix D: Gantt Chart

“Sustainability Disclosures, Firm Size, and Financial Performance of Listed Companies at the Nairobi Security Exchange”

Thesis Author: Ruth Magara

Activity chart for thesis Writing on “Sustainability Disclosures, Firm Size, and Financial

Activity	Milestone	Indicator	Nov 202 4	Dec 202 4	Jan 202 5	Feb 202 5	Mar 202 5	Apr 202 5	June 202 5	July2025 - June2026
Proposal Topic, Problem & Literature Development	Clear research gap and well-defined topic	Draft topic approved by supervisor								
Objectives, Hypotheses & Methodology Development	Refined problem statement and variables	Document with specific objectives and hypotheses								
Proposal Drafting and Supervisor Review	Full draft proposal	Proposal submitted for departmental review								
Departmental Defense	Approved proposal for school defense	Department defense minutes and corrections								
School-Level Defense	Finalized and approved proposal for data collection	School-level defense report								
Data collection, Analysis and Report Writing	Chapter 4 and Chapter 5	Dissertation Defense								

Appendix E: Sustainability Disclosures Reporting Checklist

The table shows how various variables of sustainability disclosure are measured and scored from the reports published.

Name of the Company.....

Industry Sector.....

(disclosure scores: 0 = No disclosure, 1 = Partial disclosure without financial indicators and 2 = Full disclosure with financials).

CORPORATE GOVERNANCE SUSTAINABILITY DISCLOSURES (GRI - Content Index Template, 2025)

I	Governance Performance Indicators												
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
1	Direct economic value generated and distributed												
2	Financial implications and other risks & opportunities due to climate change												
3	Coverage of org defined benefit plan obligations												
4	Significant financial assistance received from the government.												
5	Range of ratios of standard entry-level wage compared to local minimum wage												
6	Policy, practices, and proportion of spending on locally based suppliers												
7	Procedures for local hiring and proportion of senior mgt. hired from the local community												
8	Development and impact of infrastructure investments and												

	services (for public benefit)												
9	Understanding and describing significant indirect economic impacts												
II	Environmental Performance Indicators												
10	Materials used by weight or volume.												
11	Percentage of materials used that are recycled input materials.												
12	EN3 Direct energy consumption by primary energy source												
13	Indirect energy consumption by primary energy source.												
14	Energy saved due to conservation and efficiency improvements												
15	Initiatives to provide energy efficient products and services												
16	Initiatives to reduce indirect energy consumption												
17	EN8 Total water withdrawal by source.												
18	Water sources significantly affected by withdrawal of water.												
19	Percentage and total volume of water recycled and reused												
20	Location and size of land (in protected areas & areas of high biodiversity)												
21	Description of significant impacts of activities on biodiversity.												

22	Habitats protected or restored.												
23	EN14 Strategies, current actions, and future plans for managing impacts on biodiversity.												
24	Number of IUCN Red List species and national conservation list species affected by operations.												
25	Total direct and indirect greenhouse gas emissions by weight												
26	Other relevant indirect greenhouse gas emissions by weight												
27	Initiatives to reduce greenhouse gas emissions and reductions achieved												
28	Emissions of ozone depleting substances by weight.												
29	CO ₂ , SO _x , and other significant emissions by type and weight.												
30	Total water discharge by quality and destination.												
31	Total weight of waste by type and disposal method.												
32	Total number and volume of significant spills.												
33	Weight of transported waste deemed hazardous												
34	Identity, size, protected status, and biodiversity value of water bodies and related habitats affected by organization.												
35	Initiatives to mitigate environmental impacts												

36	Percentage of products sold and their packaging materials that are reclaimed by category.												
37	Monetary fines and non-monetary sanctions for non-compliance with environmental laws & regulations												
38	Environmental impacts of transporting.												
39	Total environmental protection expenditures and investments by type												
III	Social Performance Indicators												
	Total workforce												
41	Total number and rate of employee turnover												
42	Benefits provided exclusively to full-time employees												
43	Percentage of employees covered by collective bargaining agreements.												
44	Minimum notice period(s) regarding operational changes												
45	Percentage of Workforce presented in formal joint management-worker health & safety committees												
46	Rates of injury, occupational diseases etc.												
47	LA7 Education, training, etc. to assist workforce.												
48	Health and safety topics												
49	Average hours of training per year per employee by												

	employee by category.												
50	Programmes for skills management and lifelong learning												
51	Percentage of employees receiving regular performance and career development review.												
52	Composition of governance bodies and breakdown of employees per category												
53	Ratio of basic salary of men to women by employee category.												
	Human Rights												
54	Investment agreements that include human rights clauses												
55	Percentage of significant suppliers and contractors (have undergone screening on human rights)												
56	Total hours of employee training on human rights aspects. 57												
57	Total number of incidents of discrimination and actions taken												
58	Operations identified (in freedom of association and collective bargaining)												
59	Operations identified of having risk (child labor)												
60	Operations identified of having risk (compulsory labor)												
61	Percentage of security personnel trained.												

62	Total number of incidents of violations involving rights of indigenous people and actions taken												
	Anticorruption												
63	Nature, scope, and effectiveness of any programmes												
64	Percentage and total number of business units analyzed for corruption.												
65	Percentage of employees trained in anticorruption												
66	Actions taken in response to incidents of corruption.												
67	Public policy positions and participation in public policy development and lobbying												
68	Total value of financial and in-kind contributions (political)												
69	Total number of legal actions for anti-competitive behaviour												
70	Monetary fines and non-monetary sanctions for noncompliance with laws etc.												
	Product Responsibility												
71	Life cycle stages in which health & safety impacts of products and services are assessed for improvement												
72	Total number of incidents of non-compliance,												

	health and safety impacts												
73	Product and service information required by procedures												
74	Total number of incidents of non-compliance with laws (products & services)												
75	Practices related to customer satisfaction												
76	Programs for adherence to laws, standards etc. related to marketing communications												
77	Incidents of noncompliance with regulations (marketing communications)												
78	Substantiated complaints regarding breaches of customer privacy & losses of customer data)												
79	Fines for noncompliance with laws (products & services)												

Appendix F: Sub-Indicator Codes

Variable		Indicator Code
Corporate Governance		
	Financial, Risk and Governance	
	Direct economic value generated and distributed	GP1
	Financial implications and other risks & opportunities due to climate change	GP2
	Coverage of org defined benefit plan obligations	GP3
	Significant financial assistance received from govt.	GP4
	Socio-economic Impact	GP5
	Range of ratios of standard entry level wage compared to local minimum wage	GP6
	Policy, practices and proportion of spending on locally based suppliers	GP7
	Procedures for local hiring and proportion of senior mgt. hired from local community	GP8
	Development and impact of infrastructure investments and services (for public benefit)	GP9
Environmental Sustainability Disclosures		
	Resource Efficiency and Conservation	
	Materials used by weight or volume.	EN1
	Percentage of materials used that are recycled input materials.	EN2
	Direct energy consumption by primary energy source	EN3
	Indirect energy consumption by primary energy source.	EN4
	Energy saved due to conservation and efficiency improvements	EN5
	Initiatives to provide energy efficient products and services	EN6
	Initiatives to reduce indirect energy consumption	EN7
	EN8 Total water withdrawal by source.	EN8
	Water sources significantly affected by withdrawal of water.	EN9
	EN10 Percentage and total volume of water recycled and reused	EN10
	Biodiversity and Habitat Management	
	Location and size of land (in protected areas & areas of high biodiversity)	EN11
	Description of significant impacts of activities on biodiversity.	EN12
	Habitats protected or restored.	EN13
	Strategies, current actions, and future plans for managing impacts on biodiversity.	EN14
	Number of IUCN Red List species and national conservation list species affected by operations.	EN15

	Environmental Impact Mitigation	
	Total direct and indirect greenhouse gas emissions by weight	EN16
	Other relevant indirect greenhouse gas emissions by weight	EN17
	Initiatives to reduce greenhouse gas emissions and reductions achieved	EN18
	Emissions of ozone depleting substances by weight.	EN19
	CO2, NO, SO, and other significant emissions by type and weight.	EN20
	Total water discharge by quality and destination.	EN21
	Total weight of waste by type and disposal method.	EN22
	Total number and volume of significant spills.	EN23
	Weight of transported waste deemed hazardous	EN24
	Identity, size, protected status, and biodiversity value of water bodies and related habitats affected by organization.	EN25
	Initiatives to mitigate environmental impacts	EN26
	Percentage of products sold and their packaging materials that are reclaimed by category.	EN27
	Monetary fines and non-monetary sanctions for non- compliance with environmental laws & regulations	EN28
	Environmental impacts of transporting.	EN29
	Total environmental protection expenditures and investments by type	EN30
	Materials used by weight or volume.	
Social Sustainability Disclosures		
	Labour Practices and Decent Work	
	Total workforce	LA1
	Total number and rate of employee turnover	LA2
	Benefits provided exclusively to full-time employees	LA3
	Percentage of employees covered by collective bargaining agreements.	LA4
	Minimum notice period(s) regarding operational changes	LA5
	Percentage of Workforce presented in formal joint management-worker health & safety committees	LA6
	Rates of injury, occupational diseases etc.	LA7

	Education, training, etc. to assist workforce.	LA8
	Health and safety topics	LA9
	Average hours of training per year per employee by employee by category.	LA10
	Programmes for skills management and lifelong learning	LA11
	Percentage of employees receiving regular performance and development review.	LA12
	Composition of governance bodies and breakdown of employees per category	LA13
	Current Ratio of basic salary of men to women by employee category.	LA14
	Human Rights	
	Investment agreements that include human rights clauses	HR1
	Percentage of significant suppliers and contractors (have undergone screening on human rights)	HR2
	Total hours of employee training on human rights aspects. 57	HR3
	Total number of incidents of discrimination and actions taken	HR4
	Operations identified (in freedom of association and collective bargaining)	HR5
	Operations identified of having risk (child labor)	HR6
	Operations identified of having risk (compulsory labor)	HR7
	Percentage of security personnel trained.	HR8
	Total number of incidents of violations involving rights of indigenous people and actions taken	HR9
	Society	
	Nature, scope, and effectiveness of any programmes	SO1
	Percentage and total number of business units analyzed for corruption.	SO2
	Percentage of employees trained in anticorruption	SO3
	Actions taken in response to incidents of corruption.	SO4
	Public policy positions and participation in public policy development and lobbying	SO5
	Total value of financial and in-kind contributions (political)	SO6
	Total number of legal actions for anti –competitive behavior	SO7

	Monetary fines and non-monetary sanctions for noncompliance with laws etc.	SO8
	Product Responsibility	
	Life cycle stages in which health & safety impacts of products and services are assessed for improvement	RP1
	Total number of incidents of non-compliance, health and safety impacts	PR2
	Product and service information required by procedures	PR3
	Total number of incidents of non-compliance with laws (products & services)	PR4
	Practices related to customer satisfaction	PR5
	Programs for adherence to laws, standards etc. related to marketing communications	PR6
	Incidents of noncompliance with regulations (marketing communications)	PR7
	Substantiated complaints regarding breaches of customer privacy & losses of customer data)	PR8
	Fines for noncompliance with laws (products & services)	PR9

Appendix G: Listed Companies at NSE

Sector	Company Name
Agricultural	
1	Eaagads Ltd.
2	Kapchorua Tea Kenya Plc.
3	Kakuzi Plc
4	Limuru Tea Co. Ltd.
5	Sasini Plc.
6	Williamson Tea Kenya Plc.
Automobiles & Accessories	
7	Car & General (K) Ltd.
Banking	
8	ABSA Bank Kenya Plc.
9	Stanbic Holdings Ltd.
10	I & M Holdings Plc.
11	Diamond Trust Bank Kenya Ltd
12	HF Group Plc.
13	KCB Group Plc.
14	NCBA Group Plc.
15	Standard Chartered Bank Kenya Ltd.
16	Equity Group Holdings Plc.
17	The Co-operative Bank of Kenya Ltd
Commercial & Services	
18	Express Kenya Plc.
19	Kenya Airways Ltd.
20	Nation Media Group Plc.
21	Standard Group Plc.
22	TPS Eastern Africa (Serena) Ltd.
23	WPP Scangroup Plc.
24	Uchumi Supermarket Plc.

25	Eveready East Africa Ltd.
26	Longhorn Publishers Plc.
27	Deacons (East Africa) Plc.
28	Sameer Africa Plc.
29	Nairobi Business Ventures Ltd.
30	Homeboyz Entertainment Plc.
Construction & Allied	
31	ARM Cement Plc.
32	Bamburi Cement Ltd.
33	Crown Paints Kenya Plc.
34	E.A Cables Ltd.
35	E.A Portland Cement Ltd.
Energy & Petroleum	
36	Total Kenya Ltd.
37	KenGen Plc.
38	Kenya Power & Lighting Plc.
39	Umeme Ltd
Insurance	
40	Jubilee Holdings Ltd
41	Sanlam Kenya Plc.
42	Kenya Re - Insurance Corporation Ltd.
43	Liberty Kenya Holdings
44	Britam Holdings Plc.
45	CIC Insurance Group Ltd.
Investment	
46	Olympia Capital Holdings Ltd.
47	Centum Investment Plc.
48	Trans - Century Plc.
49	Home Afrika Ltd.
50	Kurwitu Ventures Ltd.

Investment Services	
51	Nairobi Securities Exchange Plc.
Manufacturing & Allied	
52	B.O.C Kenya Plc.
53	British American Tobacco Kenya Plc.
54	Carbacid Investments Plc.
55	East African Breweries Ltd.
56	Mumias Sugar Co. Ltd
57	Unga Group Ltd.
58	Kenya Orchards Ltd.
59	Flame Tree Group Holdings Ltd.
Telecommunication	
60	Safaricom Plc.
Real Estate Investment Trust	
61	ILAM Fahari I-REIT
Exchange Traded Funds	
62	ABSA New Gold ETF

Appendix H: Abbreviations for the Listed Companies

Agricultural

Symbol Listing

- EGAD 1. Eaagads Limited
- KUKZ 2. Kakuzi Limited
- KAPC 3. Kapchorua Tea Company Limited
- LIMT 4. Limuru Tea Company Limited
- SASN 5. Sasini Tea and Coffee
- WTK 6. Williamson Tea Kenya Limited

Automobiles and Accessories

Symbol Listing

- CGEN 1. Car & General Kenya

Banking

Symbol Listing

- ABSA 1. ABSA Bank Kenya
- CFC 2. CfC Stanbic Holdings
- DTK 3. Diamond Trust Bank Group
- EQTY 4. Equity Group Holdings Limited
- HFCK 5. Housing Finance Company of Kenya
- IHM 6. I&M Holdings Limited
- KCB 7. Kenya Commercial Bank Group
- NBK 8. National Bank of Kenya
- COOP 9. Cooperative Bank of Kenya
- BOK 10. Bank of Kigali
- SCBK 11. Standard Chartered of Kenya

Commercial and Services

Symbol Listing

- XPRS 1. Express Kenya Limited
- HBER 2. Hutchings Biemer Limited
- KQ 3. Kenya Airways
- LKL 4. Longhorn Kenya Limited
- NMG 5. Nation Media Group
- SCAN 6. Scangroup
- SGL 7. Standard Group Limited

Symbol Listing

TPSE 8. TPS Serena
SMER 9. Sameer Africa Limited
UCHM 10. Uchumi Supermarkets

Construction and Allied**Symbol Listing**

ARM 1. ARM Cement Limited
BAMB 2. Bamburi Cement Limited
CRWN 3. Crown Paints (Kenya)
CABL 4. East African Cables Limited
PORT 5. East Africa Portland Cement Company

Energy and Petroleum**Symbol Listing**

KEGN 1. KenGen
TOTL 2. Total Kenya Limited
UMME 3. Umeme
KPLC 4. Kenya Power and Lighting Company

Insurance**Symbol Listing**

BRIT 1. British-American Investments Company
CIC 2. CIC Insurance Group
CFCI 3. Liberty Kenya Holdings Limited (formerly CFC Insurance)
JUB 4. Jubilee Holdings Limited
KNRE 5. Kenya Reinsurance Corporation
SLAM 6. Sanlam Kenya Plc (formerly Pan Africa Insurance Holdings)

Investment**Symbol Listing**

CTUM 1. Centum Investment Company
OCH 2. Olympia Capital Holdings
TCL 3. TransCentury Investments

Investment Services**Symbol Listing**

NSE 1. Nairobi Securities Exchange

Manufacturing and Allied

Symbol Listing

BAUM	1. A Baumann and Company
BOC	2. BOC Kenya Limited
BAT	3. British American Tobacco Limited
CARB	4. Carbacid Investments Limited
EABL	5. East African Breweries
EVRD	6. Eveready East Africa
ORCH	7. Kenya Orchards Limited
MSC	8. Mumias Sugar Company Limited
UNGA	9. Unga Group

Telecommunication and Technology

Symbol Listing

SCOM	1. Safaricom
------	--------------

Growth Enterprise Market Segment (GEMS)

Symbol Listing

ADSS	1. Atlas Development & Support Services
HAFR	2. Home Afrika
FTGH	3. Flame Tree Group Holdings Ltd
KVL	4. Kurwitu Ventures

Real Estate Investment Trust (REIT)

Symbol Listing

—	1. Stanlib Fahari I-REIT
---	--------------------------

Appendix I: Websites for Sustainability Reports for the NSE Firms

- ✓ <https://www.eaagads.co.ke/annual-reports-and-financial-statements/>
- ✓ <https://www.kakuzi.co.ke/sustainability>
- ✓ <https://www.reavipingo.com/shareholderinformation.htm>
- ✓ <https://sasini.co.ke/sustainability/>
- ✓ <https://www.williamsontea.com/impact-reports/>
- ✓ <https://sustainabilityreports.com/reports/williamson-tea-kenya-plc-impact-report-pdf/>
- ✓ <https://cargen.com/wp-content/uploads/Intergrated-Report-.pdf>
- ✓ <https://www.absa.africa/wp-content/uploads/Absa-Group-Limited-Sustainability-and-Climate-Report.pdf>
- ✓ https://www.stanbicbank.co.ke/static_file/Kenya/Downloadable%20files/Stanbic%20Holdings%20PLC/Annual%20Reports/Sustainability%20reports/Stanbic_Holdings_Plc_Sustainability_report.pdf
- ✓ https://equitygroup Holdings.com/investor-relations/#tab_financial-results
- ✓ <https://sustainability.co-opbank.co.ke/>
- ✓ <https://bk.rw/about/financial-reports>
- ✓ <https://www.imbankgroup.com/financial-results-and-annual-reports/>
- ✓ <https://www.sc.com/en/investors/financial-results/>
- ✓ <https://www.hfgroup.co.ke/investor-relations/reports>
- ✓ <https://kcbgroup.com/integrated-reports>
- ✓ <https://ke.ncbagroup.com/downloads?s=intergrated+financial+statements>
- ✓ <https://sameerafrica.com/financial-reports/>
- ✓ <https://corporate.kenya-airways.com/en/investors-shareholders/annual-reports/>
- ✓ <https://www.nationmedia.com/investor-relations/financial-reports/>
- ✓ <https://www.standardmedia.co.ke/corporate/investors>
- ✓ <https://africanfinancials.com/company/ke-tpse/>
- ✓ <https://wpp-scangroup.com/investor-relations>
- ✓ <https://www.longhornpublishers.com/investor-relations/reports/>
- ✓ <https://www.nbvplc.com/annual.html>
- ✓ https://d-portal.org/ctrack.html?reporting_ref=GB-COH-03877777#view=main
- ✓ <https://www.holcim.com/investors/publications>

- ✓ <https://www.crownpaints.co.ke/about-us/annual-reports-and-financial-statements/>
- ✓ https://www.eacables.com/index.php?option=com_jdownloads&Itemid=193&view=viewcategory&catid=4
- ✓ <https://totalenergies.ke/about-us/shareholder-information/financials>
- ✓ <https://umeme.co.ug/investor-relations/reports>
- ✓ <https://www.sanlam.co.za/kenya/about/Pages/default.aspx#results>
- ✓ <https://kenyare.co.ke/investor-relations/financial-reports/full-year-results>
- ✓ https://www.libertykenya.co.ke/investor_relations.php
- ✓ <https://www.britam.com/index.php/investor-relations/financial-results>
- ✓ <https://www.britam.com/index.php/investor-relations/financial-results>
- ✓ <https://www.homeafrika.com/investor-info/#annual-reports-block>
- ✓ <https://www.transcentury.co.ke/financial-results>
- ✓ <https://centum.co.ke/centum-financial-results/>
- ✓ <https://www.batkenya.com/investors-and-reporting/financial-sustainability-reports>
- ✓ https://carbacid.com/documents/68/Carbacid_Sustainability_Report_2024.pdf
- ✓ <https://www.eabl.com/investors/financial-results>
- ✓ <https://unga-group.com/investor-relations/>
- ✓ <https://www.safaricom.co.ke/about/sustainability/sustainable-business-reports>
- ✓ <https://laptrustimaraireit.co.ke/integrated-annual-reports/>
- ✓ <https://www.nse.co.ke/wp-content/uploads/BOC-Kenya-Plc-Audited-Group-Results-for-the-Year.pdf>
- ✓ <https://newgold.com/investors/reports-and-financials/default.aspx>
- ✓ <https://laptrustimaraireit.co.ke/integrated-annual-reports/>
- ✓ <https://africanfinancials.com/company/ke-msc/>
- ✓ <https://investor.amctheatres.com/sec-filings/annual-reports>
- ✓ <https://flametreegroup.com/financial-reports>
- ✓ https://dyerandblaironline.com:444/research_web/Company%20Results%20and%20Financial%20Statements/Eveready%20E.A.%20Results/2023/Eveready%20East%20Africa%20Plc-%20FY23%20Results.pdf
- ✓ https://www.batkenya.com/content/dam/endmarkets/ke/en/download/investors-and-reporting/bat_kenya-2024_full_year_results.pdf

Appendix J: Firm Financial Statements Data Collection Sheet

Name of the company

Industry sector.....

Stock exchange.....

(Information to be extracted from the annual financial statements of selected companies)

Years	Company Name	Total assets	Equity	Total debt	Firm size (Natural log of TA)	Leverage (D/E)	Net Income	Return on Assets	Firm Age
2012									
2013									
2014									
2015									
2016									
2017									
2018									
2019									
2020									
2021									
2022									
2023									

Appendix K: Listed Sampled Firms

COMPANY NAME	COMPANY ID
EAAGADS LIMITED	1
KENYA AIRWAYS LIMITED	2
SAFARICOM LIMITED	3
WILLIAMSON TEA KENYA LIMITED	4
KCB GROUP LIMITED	5
UNGA GROUP LIMITED	6
SASINI LIMITED	7
LIMURU TEA KENYA LIMITED	8
JUBILEE HOLDINGS LIMITED	9
STANDARD CHATERED BANK OF KENYA LIMITED	10
DIAMOND TRUST BANK OF KENYA LIMITED	11
BARCLAYS BANK OF KENYA LIMITES	12
EAAGARDS	13
EAST AFRICA BREWERIES	14
HOUSING FINANCE GROUP LIMITED	15
STANDARD GROUP LIMITED	16
TPS EASTERN AFRICA LIMITED	17
CROWN PAINTS KENYA LIMITED	18
NCBA HOLDINGS	19
EXPRESS KENYA LIMITED	20
BAMBURI CEMENT LIMITED	21
E.A PORTLAND CEMENT COMPANY LIMITED	22
LIBERTY KENYA HOLDINGS LIMITED	23
BOC KENYA LIMITED	24
TOTAL KENYA LIMITED	25
KEN GEN COMPANY LIMITED	26
KPLC	27
SAMEER AFRICA	28
BRITAM HOLDINGS LIMITED	29
CIC INSURANCE GROUP LIMITED	30
KAPCHORUA TEA FACTORY LIMITED	31
CFC STANBIC OF KENYA HOLDINGS LIMITED	32
CAR AND GENERAL(KENYA) LIMITED	33
CARBACID INVESTMENTS	34
BRITISH AMERICAN TOBACCO	35
E.A CABLES LIMITED	36
THE COOPERATIVE BANK OF KENYA LIMITED	37
OLYMPIA CAPITAL HOLDINGS LIMITED	38
KENYA ORCHADS LIMITED	39
EVEREADY EAST AFRICA	40

Appendix I: Publications

INTERNATIONAL JOURNALS OF ACADEMICS & RESEARCH <i>IJARKE Business & Management Journal</i>	ISSN: 2617-4138 DOI: 10.32898/ibmj.01/8.2article13	www.ijarke.com
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INTERNATIONAL JOURNALS OF ACADEMICS & RESEARCH
(IJARKE Business & Management Journal)

Firm size and Financial Performance: Evidence from Listed Firms in Nairobi Security Exchange – Kenya

Ruth Magara, Kisii University, Kenya
Dennis Nyamasege, Kisii University, Kenya
Francis Nyarombe, Kisii University, Kenya
Caleb Akuku, Kisii University, Kenya

Abstract

This study empirically investigates the effect of firm size on firm financial performance among firms listed on the Nairobi Securities Exchange over the period 2012–2023. 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 performance and firm growth. The regression results show that firm size has a positive and statistically significant relationship with firm performance indicating that increases in firm scale are associated with substantial improvements in performance within firms over time. In contrast, control variable including firm age exhibits a negative and significant relationship with performance suggesting that older firms may face maturity-related rigidity or declining efficiency. Firm leverage is also negative and statistically significant implying that higher debt exposure marginally reduces performance. Overall, the findings indicate that scaling up is performance-enhancing in this context, but the benefits may be constrained by ageing effects and leverage-related financial risk. The study recommends that NSE-listed firms should pursue well-governed, efficiency-focused growth in size while keeping leverage prudent and renewing strategies to avoid age-related performance decline.

Key words: *Firm Size, Firm Performance, Return on Assets, Firm Age, Leverage, Fixed Effects Model, Nairobi Securities Exchange, Kenya*

1. Introduction

Firm performance commonly captured through accounting outcomes such as return on assets (ROA), return on equity (ROE), operating margins, and market-based measures such as Tobin's Q remains a central concern for investors and policymakers because it shapes survival, employment, tax revenues, and long-run productivity growth (Latifi et al., 2021; Kijkasiwat & Phuensane, 2020; OECD, 2025). Globally, the performance question is inseparable from firm size because economies are dominated numerically by micro, small, and medium enterprises (MSMEs), yet output and productivity are often concentrated in fewer large firms (World Bank, 2025; OECD, 2021). This "size-performance" tension matters even more in periods of shocks (e.g., COVID-19 and post-pandemic inflationary pressures), where smaller firms tend to face tighter liquidity, thinner buffers, and weaker access to external finance conditions that can quickly translate into poorer operating performance (Adian et al., 2020; OECD, 2021; Jaiswal & Elmarzouky, 2025).

From a global perspective, theory provides competing predictions on how firm size affects performance. On the one hand, larger firms may enjoy scale economies, bargaining power, diversified revenue bases, and stronger resource bundles that raise efficiency and profitability (Tomas Žiković et al., 2025; Latifi et al., 2021). Larger scale can also support investments in technology, compliance systems, professional management, and innovation capability—channels frequently linked to stronger performance outcomes (Kijkasiwat & Phuensane, 2020; Latifi et al., 2021). On the other hand, size can also introduce bureaucratic rigidities, agency problems, and slower strategic responsiveness, potentially weakening profitability as firms grow beyond an efficient frontier (Canarella & Miller, 2021; Muthusamy & Kannan, 2023). Recent evidence from traditional U.S. industries, for example, suggests that the link between scale-related strategies and profitability can weaken over time under more volatile and knowledge-driven competitive conditions (Muthusamy & Kannan, 2023), reinforcing the idea that "bigger" is not automatically "better" for performance.

Empirically, international studies increasingly show that the size performance relationship is heterogeneous across sectors, institutional environments, and firm categories (OECD, 2025; Tomas Žiković et al., 2025). In European wine firms, profitability drivers differ when SMEs are analyzed separately from large and very large firms, implying that the determinants of performance (and the returns to scale) vary substantially by size category (Tomas Žiković et al., 2025). In corporate finance research, size also interacts with financial structure and agency costs: debt, R&D intensity, and governance frictions can affect performance differently in small versus large firms, producing non-linear outcomes (Canarella & Miller, 2021; Jaiswal & Elmarzouky, 2025).

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Research Article

Sustainability Reporting, Firm Size and Financial Performance: Evidence from Listed Firms in Nairobi Security Exchange, Kenya

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Abstract

This study empirically investigates how environmental, social, and governance disclosures influence firm financial performance, and whether firm size acts as a mediating channel through which ESG reporting affects performance among listed firms in the Nairobi Security Exchange. The analysis applies a path (mediation) model that decomposes ESG effects into direct, indirect (via firm size), and total effects. Firm size is modeled as an intermediate outcome affected by each ESG disclosure pillar, while firm performance is modeled as the final outcome influenced by both ESG disclosures and firm size. The results show that ESG dimensions relate differently to firm size: environmental disclosure and governance disclosure have negative and statistically significant effects on firm size, while social disclosure has a positive and highly significant effect on firm size. Firm size, in turn, has a negative and significant effect on firm performance, implying that larger scale is associated with lower performance in this specification. Regarding direct effects on performance, environmental disclosure is negative and significant, social disclosure is insignificant, and governance disclosure is positive and significant. The mediation results indicate that environmental and governance disclosures generate positive indirect effects on performance through their association with smaller firm size, while social disclosure produces a negative indirect effect by increasing firm size. In total effects, only governance disclosure remains positive and statistically significant, while environmental and social total effects are statistically insignificant. Practitioners should prioritize strengthening governance practices and disclosures, while managing environmental and social initiatives with efficiency-focused implementation to avoid short-run performance and scale-related cost burdens. Policymakers should improve ESG disclosure guidance and comparability especially for environmental and social reporting while incentivizing credible governance standards that reinforce accountability and performance.

Keywords

ESG Disclosure, Environmental Disclosure, Social Disclosure, Governance Disclosure, Firm Size, Firm Performance, Nairobi Security Exchange, Mediation Analysis

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