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The Effect of Institutional Ownership on Sustainability Disclosure in Emerging Markets, Nigeria in Perspective

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ABSTRACT

This study investigates the effect of institutional ownership on sustainability disclosure in emerging markets, with a specific focus on Nigeria. The primary purpose is to examine how institutional investors influence the transparency and extent of environmental, social, and governance (ESG) disclosures among Nigerian firms. A panel data analysis was employed on a sample of 153 publicly listed companies from 2014 to 2023, using institutional ownership as the independent variable and sustainability disclosure as the dependent variable. The analysis controlled for audit quality, board gender, firm size, profitability, and leverage. The findings reveal a significant positive relationship between institutional ownership and the level of sustainability disclosure, indicating that firms with higher institutional ownership are more likely to provide comprehensive ESG reports. This suggests that institutional investors play a critical role in promoting sustainability practices in emerging markets. The study concludes that increasing institutional ownership can enhance transparency and drive sustainable corporate behaviour in Nigeria. It recommends that regulatory bodies encourage higher institutional investor participation to foster better sustainability reporting. This study's originality lies in its focus on Nigeria, an emerging market where institutional influence on sustainability practices is underexplored, providing valuable insights into the evolving role of institutional investors in fostering corporate sustainability in developing economies.

Keywords: audit quality, board gender, company leverage, company profitability, company size, institutional ownership, sustainability disclosure.

JEL Codes: C31, C38, C51, C87, M43, M48.

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INTRODUCTION

Sustainability disclosure (SD), also known as sustainability reporting (SR) refers to the practice of disclosing a company's environmental, social, and governance (ESG) performance to stakeholders, including investors, regulators, and the public. It has become increasingly important globally as companies are expected to contribute positively to sustainable development. However, in many emerging markets like Nigeria, sustainability disclosure among publicly listed companies remains low. This is a multifaceted issue influenced by regulatory, economic, institutional, and cultural factors. The following is a robust and detailed exploration of the key drivers behind the low level of sustainability reporting in Nigeria.

One of the most significant reasons for low sustainability disclosure in Nigeria is the absence of stringent regulatory requirements and enforcement mechanisms. Although the Nigerian government and financial regulators, such as the Securities and Exchange Commission (SEC) and the Nigerian Stock Exchange (NSE), have introduced guidelines encouraging sustainability reporting, these are often voluntary rather than mandatory. For example, the NGX Sustainability Disclosure Guidelines (2019) promote ESG reporting, but compliance remains low due to the lack of penalties for non-compliance. Without mandatory enforcement, companies have little incentive to disclose their sustainability practices, especially when the focus of their operations is more profit-driven.

Many Nigerian companies prioritize short-term financial performance over long-term sustainability goals. This focus on immediate profitability is driven by the need to satisfy shareholders who are primarily concerned with dividends and capital gains. Consequently, firms are less likely to invest in sustainability practices or disclose their ESG activities, which they often perceive as costly and potentially detrimental to short-term financial outcomes. This short-termism is exacerbated by the challenges of operating in a volatile economic environment, where companies are primarily focused on survival and growth.

There is a general lack of awareness and understanding of the importance of sustainability reporting among Nigerian businesses. Sustainability is often viewed as a Western concept, disconnected from the immediate realities of doing business in an emerging market. Many corporate managers and executives in Nigeria see sustainability disclosure as a burdensome requirement with little to no immediate benefit to the company's bottom line. This lack of awareness extends to how ESG factors can improve corporate reputation, attract responsible investors, and enhance long-term profitability. Consequently, many firms are not incentivized to invest in sustainability practices or engage in transparent reporting.

Also, weak institutional frameworks and poor corporate governance systems also contribute to the low levels of sustainability reporting in Nigeria. Many companies lack the internal structures necessary to produce comprehensive sustainability reports. Corporate governance in Nigeria is still evolving, and boards of directors often lack the expertise or motivation to prioritize sustainability issues. Moreover, there is often limited engagement from institutional investors, who can play a significant role in driving sustainability disclosure. Institutional investors, especially local ones, are more focused on financial returns than on promoting ESG factors, unlike their counterparts in more developed markets.

Sustainability reporting requires substantial resources, both in terms of time and financial investment. Companies need to collect, verify, and present accurate ESG data, which may involve hiring specialized personnel, developing new processes, or using external consultants. For many Nigerian firms, especially smaller ones, these costs can be prohibitive. Additionally, sustainability reporting requires consistent monitoring and evaluation, which can strain the already limited resources of many companies.

Low sustainability disclosure among publicly listed companies in Nigeria remains a critical issue, particularly as global standards of corporate governance increasingly emphasize the integration of environmental, social, and governance (ESG) criteria. Several factors can serve as effective solutions to this problem, and robust discussions of these are provided as follows: Mandatory Sustainability Reporting Frameworks. A key solution to improving sustainability disclosure is the implementation of mandatory sustainability reporting frameworks. Many Nigerian companies currently disclose information voluntarily, which contributes to inconsistencies in reporting quality and scope. Introducing mandatory standards that align with globally recognized frameworks, such as the Global Reporting Initiative (GRI), the International Integrated Reporting Council (IIRC), or the Sustainable Development Goals (SDGs), would establish minimum expectations for disclosure. Such frameworks ensure that companies systematically disclose sustainability information, reducing greenwashing and improving transparency for investors. However, compliance costs may increase, especially for smaller companies with limited resources for adopting these frameworks.

Also, strengthening regulatory oversight by entities such as the Nigerian Exchange (NGX), Securities and Exchange Commission (SEC), and the Financial Reporting Council (FRC) is essential to encourage greater compliance with sustainability reporting standards. With stricter enforcement, companies are more likely to take sustainability disclosures seriously, knowing that penalties for non-compliance will affect their market reputation or result in legal consequences. This could involve creating monitoring and compliance departments dedicated to ensuring companies meet their ESG reporting obligations, with penalties for false or insufficient disclosures.

Capacity Building and Training Programs: Many Nigerian companies, particularly small- and medium-sized enterprises (SMEs), lack the expertise required to prepare detailed sustainability reports. Capacity-building programs tailored to the needs of corporate executives, finance teams, and sustainability officers would provide the skills and knowledge required to meet reporting standards. Training programs would bridge the knowledge gap, equipping companies with the tools to engage in meaningful sustainability disclosures. This would foster long-term awareness and appreciation of the strategic importance of sustainability. Over time, this may lead to a cultural shift, where sustainability reporting is seen as an intrinsic part of corporate governance rather than an external requirement.

Introducing incentive structures that reward early adopters of sustainability reporting can serve as a motivator for companies to improve their disclosure practices. These could take the form of tax incentives, reduced listing fees, or public recognition through awards and industry ratings. Offering financial or reputational rewards encourages companies to not only adopt sustainability practices but also make them central to their corporate strategy. Ensuring that these incentives are substantial enough to motivate change while balancing the need to avoid moral hazard, where companies may disclose superficial information to meet the minimum requirements for these rewards. Another solution is embedding sustainability into the core corporate strategy of publicly listed companies. Sustainability should no longer be viewed as a standalone corporate social responsibility (CSR) activity, but as integral to business operations, with measurable outcomes and long-term objectives. This integration would encourage companies to see sustainability reporting as a value-adding exercise that enhances brand loyalty, reduces operational risks, and attracts investments. Investors globally are increasingly prioritizing ESG-compliant companies for capital allocation, and such integration could also attract foreign direct investment (FDI). Boards of Nigerian companies need to incorporate sustainability goals into their key performance indicators (KPIs) and ensure that executives are held accountable for sustainability outcomes.

Investors, particularly institutional ones, have a significant role to play in driving sustainability reporting. Nigerian companies that are publicly listed are answerable not just to regulators but also to their shareholders, who increasingly demand ESG transparency. As global capital markets evolve, even Nigerian companies will face increased pressure from international investors, pension funds, and other stakeholders to adopt more robust sustainability reporting. Companies that fail to meet these demands risk losing investment. Encouraging shareholder activism and fostering an environment where stakeholders demand greater transparency can lead to a bottom-up push for enhanced sustainability disclosure.

The use of technology can be a game-changer in enhancing sustainability disclosures. Leveraging tools like blockchain, data analytics, and artificial intelligence (AI) could streamline reporting processes and ensure real-time, accurate, and verifiable information is made available to stakeholders. Blockchain technology can be used to ensure transparency and traceability in reporting. Companies can use it to publicly document their ESG efforts, providing immutable proof of sustainability initiatives. Data analytics can help organizations measure, report, and improve their sustainability performance by providing insights into key areas such as carbon emissions, resource use, and social impacts. These technological solutions can also assist regulatory agencies in monitoring compliance more effectively, as they allow for better verification of the data being disclosed.

Also, a well-informed public can apply additional pressure on Nigerian companies to improve sustainability disclosure. Public awareness campaigns and the involvement of the media in scrutinizing corporate behaviour can incentivize companies to take sustainability reporting more seriously. Public scrutiny, often driven by non-governmental organizations (NGOs) and civil society, plays a critical role in ensuring companies provide transparent and accurate reports. The more the public demands sustainability, the greater the likelihood that companies will prioritize ESG considerations. The role of investigative journalism can also shine a light on those companies not adhering to reporting norms, leading to public backlash, which can negatively affect their corporate image. Publicly listed companies in Nigeria can benefit from collaborative initiatives such as industry benchmarking. Companies that work together, either within a particular sector or across industries, can share best practices, enhance collective sustainability efforts, and set higher benchmarks for ESG disclosures.

Institutional ownership plays a pivotal role in enhancing sustainability disclosure by publicly listed companies. Institutional investors, such as pension funds, insurance companies, mutual funds, and sovereign wealth funds, often hold significant stakes in companies and possess considerable influence over corporate governance practices. Their increasing focus on sustainability, driven by both financial and ethical imperatives, encourages companies to improve their sustainability disclosure. This relationship can be explored through several lenses:

Increased Scrutiny and Accountability: Institutional owners typically have the resources and expertise to conduct in-depth analyses of the companies they invest in. They are increasingly demanding better environmental, social, and governance (ESG) practices as a part of their fiduciary duty to safeguard long-term returns. This focus on ESG is rooted in the belief that companies that perform well on sustainability metrics are more likely to offer stable, long-term financial performance. As a result, institutional investors exert pressure on publicly listed companies to enhance transparency and improve their sustainability disclosures. Institutional ownership is closely tied to corporate accountability. Shareholders, especially large institutional investors, have the power to vote on shareholder resolutions and engage with company management. They can push for the adoption of sustainability frameworks like the Global Reporting Initiative (GRI) or the Sustainability Accounting Standards Board (SASB). This

increased scrutiny compels companies to disclose more information on their sustainability practices to meet investor expectations.

Influence on Corporate Governance: Institutional investors often engage in active ownership, influencing the governance of firms through shareholder activism or direct dialogue with management. Companies with a strong institutional shareholder base are more likely to have robust corporate governance frameworks, which can include sustainability as a critical area of focus. Institutional investors can demand that companies align their strategic objectives with sustainability goals, particularly regarding long-term value creation. One of the ways institutional investors enhance sustainability disclosure is by pushing for the inclusion of sustainability risks in company reporting. They encourage firms to disclose information on how environmental and social factors impact their financial performance, risk profiles, and operational sustainability. This, in turn, improves the transparency of sustainability practices, leading to better investor decision-making.

Long-term Investment Horizon: Unlike retail investors who may focus on short-term gains, institutional investors typically have a longer-term investment horizon. This aligns with sustainability goals, which are also long-term in nature. Companies that are influenced by institutional ownership are more likely to integrate sustainable business practices and disclose their progress because institutional investors prioritize the mitigation of long-term risks, including those related to climate change, resource scarcity, and social inequality. The long-term nature of institutional investment encourages companies to view sustainability not as a peripheral concern but as integral to their long-term strategy. For instance, companies may disclose information on their carbon emissions, water use, waste management, and workforce diversity, knowing that institutional investors are monitoring these aspects to gauge the company's ability to sustain its operations in the future.

Alignment with ESG and Responsible Investing Trends: In recent years, institutional investors have increasingly adopted responsible investment strategies, incorporating ESG criteria into their investment decisions. This trend is driven by factors such as regulatory pressures, shifting societal expectations, and the need to manage risks related to climate change and social justice. The United Nations' Principles for Responsible Investment (PRI), for example, encourages institutional investors to incorporate ESG factors into their decision-making processes, which has led to a greater demand for sustainability disclosure from companies. Institutional ownership contributes to sustainability disclosure by setting expectations for firms to adopt responsible business practices. Companies that fail to disclose relevant ESG information or perform poorly on sustainability metrics may face divestment or shareholder activism. The reputational risks associated with poor sustainability performance are also higher when institutional investors are involved, as these investors are more likely to demand corrective actions.

Regulatory and Market Influence: Institutional investors often advocate for regulatory frameworks that promote sustainability disclosure. They support initiatives like the Task Force on Climate-related Financial Disclosures (TCFD) and push for standardized reporting requirements on sustainability issues. Institutional investors' collective voice can influence regulators to impose mandatory sustainability disclosures, which benefit all market participants by providing comparable and reliable information on corporate sustainability performance. Moreover, institutional investors frequently set the tone for market expectations. When large institutional investors prioritize sustainability, other companies and market players often follow suit, leading to a ripple effect that enhances sustainability disclosure across entire sectors. Publicly listed companies understand that failure to meet institutional investors' expectations may reduce their access to capital and diminish investor confidence.

Mitigating Risks and Enhancing Financial Performance: Institutional investors recognize that sustainability risks—such as environmental degradation, social inequality, and poor governance—can have material financial consequences. For instance, companies that are heavily reliant on non-renewable resources or those with poor labour practices may face operational disruptions, regulatory fines, or reputational damage, all of which could affect long-term profitability. By demanding greater sustainability disclosure, institutional owners are essentially pushing companies to identify and manage these risks more effectively. This proactive risk management contributes not only to more resilient business models but also to better financial performance over time. Empirical studies have shown that companies with strong ESG performance tend to have lower costs of capital and better stock market performance, which aligns with the objectives of institutional investors seeking sustainable returns.

Impact on Corporate Culture and Strategy: The presence of institutional ownership often fosters a culture of transparency and accountability within firms. As institutional investors demand regular and comprehensive sustainability reporting, companies begin to integrate ESG considerations into their core business strategies. Sustainability becomes embedded in decision-making processes, from board-level discussions to operational execution. Furthermore, institutional investors may push for the appointment of directors or executives with expertise in sustainability to ensure that the company's leadership can drive sustainable practices. This can lead to more sophisticated sustainability disclosure, as companies develop the internal capacity to measure, track, and report on their ESG performance. In conclusion, institutional ownership plays a critical role in enhancing sustainability disclosure by publicly listed companies. Through their active engagement, long-term investment horizon, and alignment with ESG trends, institutional investors influence companies to adopt more transparent and responsible business practices. They serve as catalysts for improved sustainability reporting, ensuring that companies not only disclose material information but also manage sustainability risks that could affect their long-term financial health. These dynamic benefits both investors, who gain access to valuable information for decision-making, and companies, which are better positioned to navigate the evolving demands of a more sustainability-conscious market. The remaining part of this article covers a literature review, methodology, results, discussion, conclusion, and recommendations.

LITERATURE REVIEW

The theme of this paper is to examine the role of institutional ownership in sustainability disclosure among the 153 publicly listed companies in Nigeria. To achieve this goal, the following concepts are discussed: independent variable (institutional ownership), dependent variable (sustainability disclosure), and control variables (audit quality, board gender, firm leverage, firm profitability, and firm size). When discussing sustainability disclosure as the dependent variable, with institutional ownership as the independent variable and several control variables such as audit quality, board gender, firm leverage, firm profitability, and firm size, it is crucial to explore each component's role and how these variables interact in determining the level of sustainability disclosure.

Sustainability Disclosure (Dependent Variable): Sustainability disclosure refers to the reporting of non-financial information by companies related to environmental, social, and governance (ESG) factors. It plays a critical role in providing transparency about a company's sustainability practices to stakeholders, including investors, customers, and regulators. These disclosures

include reports on carbon emissions, resource usage, labour practices, community engagement, and corporate governance. The level of sustainability disclosure can vary across companies depending on multiple factors, including external pressure, regulatory requirements, and firm-specific characteristics. It is increasingly seen as essential for long-term value creation, risk mitigation, and compliance with ESG-focused regulations. Companies with higher sustainability disclosures are often perceived to be more responsible and proactive in managing social and environmental risks, which can enhance their reputations and lead to more favourable financial outcomes.

Institutional Ownership (Independent Variable): Institutional ownership refers to the percentage of a company's shares owned by institutional investors such as pension funds, mutual funds, and insurance companies. Institutional investors tend to have significant influence over corporate governance practices due to their substantial stakes in companies and their need to ensure that companies are effectively managing risks and delivering long-term value. Institutional Pressure on Sustainability Disclosure: Institutional investors are increasingly concerned about ESG factors, as they recognize the financial risks associated with poor sustainability practices. Institutional ownership can lead to greater pressure on firms to improve sustainability disclosure, as these investors often advocate for transparency in ESG-related risks. Active Ownership and Stewardship: Institutional investors, especially those adopting stewardship codes, may push firms to increase sustainability reporting to meet ESG-related investment criteria. These investors tend to prefer companies with better sustainability practices, which may lead them to influence corporate decisions in favour of enhanced ESG reporting. Empirical evidence often suggests that higher institutional ownership correlates with better sustainability disclosures due to the demand for more transparency and adherence to responsible investment guidelines.

Control Variables: Several control variables are important in this context as they can influence both institutional ownership and sustainability disclosures.

Audit Quality: Audit quality refers to the ability of the audit process to detect and report material misstatements, including those related to sustainability disclosures. High audit quality enhances the credibility and reliability of sustainability reporting. External auditors may ensure that firms adhere to global sustainability reporting standards, such as the Global Reporting Initiative (GRI) or the Sustainability Accounting Standards Board (SASB) guidelines. A high-quality audit may mitigate information asymmetry between firms and stakeholders by providing accurate, verifiable information on ESG matters. Influence on Sustainability Disclosure: Companies with higher audit quality may be more likely to provide reliable and comprehensive sustainability disclosures, as auditors can verify non-financial information related to ESG practices.

Board Gender: Board gender diversity has gained increasing attention as an important element of corporate governance. Female board members often bring diverse perspectives and may advocate for more socially responsible business practices, including sustainability disclosures. Research suggests that gender-diverse boards are more likely to be involved in stakeholder-oriented activities and have a greater awareness of the social and environmental impacts of corporate actions. Impact on Sustainability Disclosure: A higher proportion of women on corporate boards may positively influence sustainability disclosures, as gender diversity is linked with enhanced corporate social responsibility (CSR) efforts and the adoption of sustainability practices. Gender-diverse boards may also be more inclined to respond to stakeholder pressure for better ESG transparency.

Firm Leverage: Firm leverage, measured as the ratio of total debt to total assets, represents the degree to which a company is financed through debt. Companies with higher leverage are often more sensitive to financial risks and the demands of creditors. This sensitivity could

influence sustainability disclosures as firms with higher debt levels may need to demonstrate risk management practices to creditors and investors, including the management of ESG risks. Effect on Sustainability Disclosure: Highly leveraged firms might either increase sustainability disclosures to signal their commitment to risk mitigation or reduce them due to resource constraints. The direction of this effect depends on the firm's financial strategy and stakeholder expectations.

Firm Profitability: Firm profitability, often measured by return on assets (ROA) or return on equity (ROE), indicates the financial performance of a company. Profitable firms generally have more resources to allocate toward non-financial reporting, including sustainability disclosures. They may also be more incentivized to enhance their sustainability profiles to protect their reputations and align with stakeholder expectations. Influence on Sustainability Disclosure: More profitable firms are typically associated with higher levels of sustainability disclosure as they can afford the costs related to comprehensive ESG reporting. Moreover, profitable firms may use sustainability disclosures to signal their strong financial health and commitment to long-term value creation.

Firm Size: Firm size, typically measured by total assets or revenue, is a key determinant of a company's ability to engage in and disclose sustainability practices. Larger firms are more likely to be subject to scrutiny from regulators, investors, and other stakeholders regarding their sustainability practices. They also have more resources to dedicate to ESG initiatives and the associated reporting. Impact on Sustainability Disclosure: Larger firms are often expected to disclose more information about their sustainability practices because they face greater external pressure and have the necessary resources to support comprehensive ESG reporting. They may also operate in multiple jurisdictions, increasing the need for compliance with different sustainability reporting standards.

Interactions Between Variables: The interaction between institutional ownership and these control variables plays a crucial role in shaping sustainability disclosure. Institutional investors may be more likely to invest in firms with strong governance structures (e.g., gender-diverse boards) and higher audit quality, as these factors reduce information asymmetry and ensure transparency. Similarly, profitable and larger firms may attract more institutional ownership, which in turn increases pressure for better sustainability disclosures. Additionally, firms with higher leverage may face conflicting demands from institutional investors and creditors. While institutional investors may push for greater transparency on sustainability practices, creditors may prioritize financial performance and risk management. This creates a dynamic interplay where the influence of institutional ownership on sustainability disclosure may be moderated by the firm's financial structure and governance attributes. In conclusion, institutional ownership is likely to have a significant positive impact on sustainability disclosure due to the growing importance of ESG factors in investment decisions. However, the extent of this impact can be shaped by other firm-specific factors, such as audit quality, board gender, firm leverage, profitability, and size. These control variables contribute to a more nuanced understanding of how firms engage with sustainability reporting and the motivations behind such disclosures. Institutional investors, being influential stakeholders, can leverage their ownership to enhance sustainability practices in firms, but their effectiveness is contingent on a firm's internal governance and financial health. Thus, sustainability disclosure as a dependent variable is shaped by a complex interplay between ownership structure, governance mechanisms, and financial performance. These concepts are schematically illustrated in Figure 1 as follows:

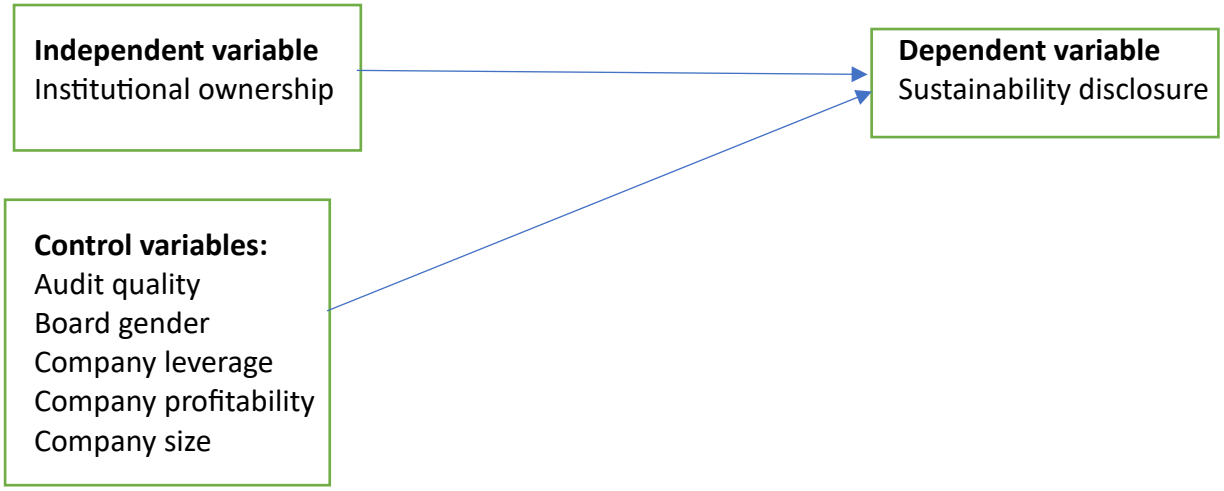

Figure 1. ***Conceptual and Analytical Framework***
Source: The Authors (2024)

Furthermore, we discuss the theories linking institutional ownership with sustainability disclosure. For example, institutional ownership has a significant influence on the sustainability disclosure practices of publicly listed companies. Theories linking institutional ownership to sustainability disclosure primarily focus on understanding the motivations of institutional investors, the pressures they exert on firms, and the benefits of enhanced transparency. Below is an elaborate discussion of key theories that bridge these concepts:

Agency Theory: Agency theory, developed by Jensen and Meckling (1976), focuses on the relationship between principals (shareholders) and agents (managers). Institutional investors, being large and powerful shareholders, are particularly concerned with reducing information asymmetry and aligning management decisions with long-term value creation. This theory explains the role of institutional investors in promoting sustainability disclosure through the following mechanisms: Monitoring role: Institutional investors actively monitor firm behaviour to ensure that management is acting in the shareholders' best interests. Because sustainability issues (e.g., environmental risks, social governance) can affect the firm's long-term viability and reputation, institutional investors push for transparency through sustainability disclosures. Mitigating short-termism: Agency problems often arise from managers focusing on short-term financial gains, which might neglect long-term sustainability. Institutional investors, especially those with long-term horizons (e.g., pension funds), encourage sustainability disclosures to ensure that firms are managing environmental, social, and governance (ESG) risks responsibly.

Legitimacy Theory: Legitimacy theory posits that companies seek to align their activities with societal expectations to maintain legitimacy. Institutional investors, given their size and influence, play a significant role in shaping these expectations: Pressure for conformity: As institutional investors become more ESG-conscious, companies are pressured to disclose sustainability information to meet the expectations of these investors and remain legitimate in the marketplace. For example, companies that fail to disclose sustainability efforts may face divestment or negative media attention from ESG-focused institutional investors. Responding to external stakeholders: Institutional investors, as representatives of society's broader interests (especially socially responsible investors), are increasingly demanding that firms disclose how they manage social and environmental issues. Firms respond by enhancing their sustainability disclosures to gain legitimacy and avoid the risk of being penalized by influential institutional investors.

Stakeholder Theory: Stakeholder theory, developed by Freeman (1984), suggests that firms are responsible not only to shareholders but to a wider array of stakeholders, including

customers, employees, suppliers, and the community. Institutional investors are key stakeholders who influence corporate behaviour: Balancing stakeholder needs: As institutional investors themselves are increasingly pressured by their clients and beneficiaries to consider ESG factors, they push firms to adopt sustainability disclosure practices that reflect the interests of various stakeholders. Institutional activism: Stakeholder theory also accounts for the increasing activism of institutional investors who advocate for sustainable practices. Large asset managers such as BlackRock and Vanguard have made public commitments to sustainability, encouraging companies to improve ESG reporting to meet the needs of broader stakeholder groups.

Resource Dependence Theory: This theory, introduced by Pfeffer and Salancik (1978), suggests that organizations depend on external resources, including capital, and that the providers of these resources (e.g., institutional investors) can influence corporate behaviour. For publicly listed companies, institutional investors represent a crucial source of capital: Influence on corporate governance: Firms depend on institutional investors not only for capital but also for legitimacy and credibility. In turn, institutional investors use this leverage to demand greater sustainability disclosures as a condition for continued financial support. Reducing uncertainty: Institutional investors often seek to reduce uncertainty regarding future risks. Sustainability disclosures help institutional investors assess how well companies manage long-term risks associated with environmental and social factors, thus increasing the pressure on firms to provide comprehensive ESG information.

Stewardship Theory: Stewardship theory, contrasting agency theory, argues that managers act as stewards of the company, aligning their goals with those of the shareholders and broader stakeholders. In this context, institutional investors are seen as stewards who encourage sustainable corporate practices: Alignment of interests: Institutional investors, particularly those with long-term investment horizons, view sustainability disclosures as a way to align management's actions with the overall interests of shareholders and society. They encourage sustainability reporting to ensure that managers are proactively addressing issues that could affect long-term firm performance. Enhanced trust and commitment: Stewardship theory suggests that by promoting sustainability disclosures, institutional investors are fostering a corporate culture of responsibility and trust. This, in turn, enhances the firm's reputation and the trust of other stakeholders, including customers and regulators.

Signaling Theory: Signaling theory, originally developed by Spence (1973), posits that companies send signals to the market to convey their quality and commitment to certain practices. In the context of institutional ownership and sustainability disclosure: Positive signaling to investors: Companies that disclose robust sustainability information send a signal to institutional investors that they are committed to long-term value creation and risk management. This attracts ESG-focused institutional investors, who view these disclosures as indicators of good performance.

Furthermore, we examined empirical works linking institutional ownership with sustainability disclosure. For example, Johnson et al. (2021) in The Role of Institutional Ownership in Driving Sustainability Disclosure: A Cross-Industry Analysis examine the influence of institutional ownership on the extent and quality of sustainability disclosure in publicly traded companies across different industries. Period Covered: 2010–2020. Methodology: A longitudinal study analyzing a sample of 500 firms from the US and Europe. The study used panel data regression to investigate the relationship between institutional ownership and sustainability reporting, controlling for firm size, industry, and profitability. Findings: Firms with higher levels of institutional ownership had more comprehensive sustainability disclosures, particularly in environmental and social aspects. However, the relationship was more significant in industries with higher environmental risks. Conclusion: Institutional ownership positively influences

sustainability disclosure, but industry type moderates this relationship. Recommendations: Encourage more institutional investors to engage in sustainable practices, and implement industry-specific guidelines for sustainability disclosure. Implications: Policymakers could strengthen reporting frameworks by considering the role of institutional investors in promoting sustainability. Limitations: The study is limited to publicly traded firms in the US and Europe, which may not generalize to other regions. Originality: This study provides a comprehensive cross-industry analysis and highlights the moderating role of industry type in the relationship between institutional ownership and sustainability disclosure.

Zhang and Patel (2019) in Institutional Investors and Corporate Sustainability: Evidence from Emerging Markets assess the effect of institutional ownership on sustainability disclosure in emerging markets, where regulatory frameworks are less developed. Period Covered: 2008–2018. Methodology: A quantitative approach using a sample of 300 companies listed on stock exchanges in Brazil, India, and China. Ordinary least squares (OLS) regression models were used to determine the influence of institutional ownership on sustainability disclosure. Findings: Institutional ownership positively correlates with improved sustainability disclosure, particularly in governance and social aspects, but environmental disclosures were less robust due to weaker regulations. Conclusion: Institutional investors play a critical role in enhancing sustainability reporting in emerging markets, though regulatory support is crucial for more comprehensive environmental disclosure. Recommendations: Emerging market regulators should strengthen environmental disclosure requirements, while institutional investors should continue pushing for governance and social reporting improvements. Implications: As institutional ownership grows in emerging markets, there is potential for more sustainable corporate practices, provided that regulatory bodies also improve standards. Limitations: The study focuses only on three emerging markets, and the findings may not apply to other regions with differing regulatory contexts. Originality: This research highlights the role of institutional investors in driving sustainability in markets with weaker governance frameworks and is one of the few studies focused on emerging economies.

Williams and Garcia (2020) in The Impact of Long-term Institutional Ownership on Sustainability Disclosure Practices investigate whether long-term institutional ownership has a stronger effect on sustainability disclosure compared to short-term ownership. Period Covered: 2011–2019. Methodology: This study used a mixed-methods approach. Quantitatively, a sample of 400 firms from the UK was analyzed using fixed-effects regression models. Qualitatively, interviews with 30 institutional investors were conducted to gain insights into their influence on sustainability reporting. Findings: Long-term institutional ownership significantly increased sustainability disclosure, particularly in the environmental and social domains. Short-term investors had a minimal impact. Interview results revealed that long-term investors engage more with firms on sustainability issues. Conclusion: Long-term institutional investors play a vital role in enhancing sustainability disclosure, as they are more likely to prioritize long-term value creation. Recommendations: Companies should foster long-term relationships with institutional investors to improve sustainability practices. Regulators should encourage institutional investors to adopt long-term engagement strategies. Implications: Long-term institutional investors are crucial for driving sustainable business practices and improving transparency, suggesting that policies promoting long-term investment are beneficial for sustainability. Limitations: The qualitative data is limited to UK institutional investors, and the results may not apply to other countries. Originality: This study is one of the few that distinguishes between short-term and long-term institutional ownership and their respective impacts on sustainability disclosure. These studies explore various aspects of how institutional ownership impacts sustainability disclosure, each contributing

unique insights from different geographic and methodological perspectives. Thus, we hypothesize that:
H_1: Institutional ownership has a significant effect on sustainability disclosure.

Furthermore, there are empirical studies on the effect of audit quality on sustainability disclosure. For example, O'Connell and Wang (2022) in The Impact of Audit Quality on Corporate Sustainability Disclosure: Evidence from Large Corporations investigate the relationship between audit quality and the extent of sustainability disclosure in large multinational corporations. Period Covered: 2012–2021. Methodology: The study analyzed a sample of 250 large corporations listed in the US, UK, and Germany. The researchers employed a panel data analysis, using the Big 4 audit firms as a proxy for audit quality, to assess the impact on sustainability reporting. Findings: Companies audited by Big 4 firms exhibited significantly higher levels of sustainability disclosure, particularly in the areas of environmental and social performance, compared to those audited by non-Big 4 firms. Conclusion: Audit quality, as represented by the involvement of Big 4 firms, positively affects the comprehensiveness and transparency of sustainability disclosures in large corporations.
Recommendations: Firms should engage high-quality auditors to enhance the credibility of their sustainability reports, and regulators should consider mandating audit assurance on sustainability disclosures. Implications: The findings suggest that audit quality is an important driver of credible sustainability reporting, which may have implications for investor trust and regulatory policy. Limitations: The study focuses on large firms in developed markets, limiting the generalizability of findings to small firms or emerging markets. Originality: This study is one of the first to empirically demonstrate the link between audit quality and sustainability disclosure in large multinational corporations.
Ali and Torres (2020) in Audit Quality and Environmental Disclosure: A Study of Energy Firms Purpose: To examine the influence of audit quality on environmental sustainability disclosures in the energy sector, with a focus on firms prone to environmental risks. Period Covered: 2010–2019. Methodology: The study used a sample of 150 energy companies in Canada, Australia, and South Africa. A regression analysis was conducted to explore the relationship between audit quality (measured by auditor size and independence) and the level of environmental disclosure. Findings: Higher audit quality, particularly with independent and larger audit firms, was associated with more extensive and transparent environmental sustainability disclosures. However, smaller firms showed weaker relationships between audit quality and disclosure levels. Conclusion: Audit quality plays a significant role in improving environmental disclosure, especially in firms exposed to higher environmental risks. Recommendations: Energy firms should prioritize hiring independent auditors with expertise in environmental issues to improve the credibility of their sustainability reports. Implications: Regulatory bodies in environmentally sensitive industries may benefit from enforcing stricter audit quality standards to ensure comprehensive sustainability reporting. Limitations: The study is limited to the energy sector, so the results may not apply to other industries. Originality: This research provides specific insights into the energy industry, highlighting the critical role of audit quality in improving environmental sustainability disclosure.
Brown and Tiwari (2021) in Audit Quality and Voluntary Sustainability Reporting in Emerging Markets assess the impact of audit quality on voluntary sustainability disclosure practices in emerging markets, where regulatory frameworks are weaker. Period Covered: 2009–2018. Methodology: This study conducted an empirical analysis of 200 firms across Brazil, India, and Mexico, using logistic regression to evaluate the likelihood of firms voluntarily disclosing sustainability information based on audit quality (measured by audit firm reputation and tenure). Findings: Audit quality was a significant predictor of voluntary sustainability

disclosure, particularly in firms audited by the Big 4 or auditors with longer tenures. The effect was most pronounced in governance and social disclosures, while environmental disclosures remained inconsistent. Conclusion: Audit quality enhances the likelihood of voluntary sustainability reporting in emerging markets, though environmental disclosure remains underdeveloped in these regions. Recommendations: Policymakers should promote the adoption of higher audit standards in emerging markets to strengthen sustainability disclosure practices. Additionally, firms should engage with reputable auditors to increase investor confidence in their sustainability reports. Implications: Improving audit quality in emerging markets can be a catalyst for more transparent and credible sustainability disclosures, which could attract international investors. Limitations: The study is limited to three emerging markets, and results may not apply to other regions with different regulatory environments. Originality: This study contributes to the literature by focusing on voluntary sustainability reporting in emerging markets, an area with limited research, and highlighting the role of audit quality in driving disclosure. These studies cover various geographic regions and industries, each examining the role of audit quality in promoting more comprehensive sustainability disclosure.

Also, the following are empirical studies on the effect of board gender diversity on sustainability disclosure. For example, Peterson and Li (2021) in Board Gender Diversity and Sustainability Disclosure: Evidence from European Firms investigate the effect of board gender diversity on the extent of sustainability disclosure in publicly listed firms across Europe. Period Covered: 2010–2020. Methodology: The study analyzed a sample of 350 publicly traded companies from 15 European countries. It employed panel data regression models, using the proportion of female directors on boards as the main independent variable, while controlling for firm size, industry, and profitability. Findings: Companies with a higher proportion of female board members disclosed more comprehensive sustainability reports, particularly on social and governance aspects. The effect was most pronounced in firms within the consumer goods and financial sectors. Conclusion: Board gender diversity positively influences sustainability disclosure, with female directors playing a key role in promoting transparency and accountability in corporate governance. Recommendations: Policymakers should encourage gender diversity on corporate boards to improve sustainability reporting, while firms should focus on integrating diverse perspectives to enhance their corporate social responsibility practices. Implications: Increased gender diversity on boards may lead to more effective governance and better alignment with sustainability goals, offering benefits for shareholders and other stakeholders. Limitations: The study is limited to European firms, and the findings may not be generalizable to regions with different cultural and regulatory contexts. Originality: This study provides one of the first large-scale analyses of board gender diversity's effect on sustainability disclosure across multiple European countries.

Martinez and Wilson (2019) in The Impact of Female Directors on Sustainability Reporting in Emerging Markets assess the role of female board members in shaping sustainability disclosure practices in firms located in emerging markets. Period Covered: 2008–2018. Methodology: This study utilized a sample of 200 firms from Brazil, India, and South Africa. A fixed-effects regression model was used to examine the relationship between the presence of female directors and the comprehensiveness of sustainability disclosure. Findings: Companies with at least one female director were more likely to provide detailed sustainability disclosures, especially regarding social and employee-related issues. However, the influence on environmental disclosures was less pronounced due to weaker regulatory frameworks in emerging markets. Conclusion: Female directors have a positive impact on sustainability disclosure in emerging markets, but regulatory support is crucial for improving environmental reporting. Recommendations: Governments in emerging markets should implement stronger

gender diversity mandates for corporate boards and enhance sustainability reporting regulations. Implications: Greater female representation on corporate boards in emerging markets could lead to improved sustainability practices, particularly in areas related to social responsibility. Limitations: The study is confined to three emerging markets, limiting its generalizability to other developing economies. Originality: This study is one of the first to explore the relationship between gender diversity on boards and sustainability disclosure in emerging market contexts.

Brown and Ahmed (2020) in Gender Diversity and Sustainability Disclosure: A Comparative Study of High-Risk Industries explores how gender diversity on boards affects sustainability reporting in high-risk industries, including oil and gas, mining, and chemicals. Period Covered: 2011–2019. Methodology: The study analyzed 150 firms from high-risk industries in the US, Canada, and Australia. A mixed-methods approach was used, combining quantitative analysis of sustainability reports with qualitative interviews of 20 board members. The quantitative analysis employed logistic regression to assess the influence of board gender diversity on the likelihood and quality of sustainability disclosures. Findings: Firms in high-risk industries with more female directors were more likely to disclose sustainability-related risks and implement transparent reporting practices. The interviews revealed that female directors were particularly vocal in promoting environmental risk management and social responsibility. Conclusion: Board gender diversity significantly improves sustainability disclosure in high-risk industries, particularly in terms of environmental risks and governance transparency. Recommendations: High-risk industries should prioritize gender diversity on their boards to enhance sustainability efforts and ensure better risk management. Regulators should also consider mandating gender diversity policies for companies operating in environmentally sensitive sectors. Implications: Gender-diverse boards in high-risk industries can drive more responsible business practices, improving stakeholder trust and reducing the likelihood of regulatory penalties. Limitations: The study focuses on high-risk industries in developed countries, limiting the applicability of findings to other sectors or regions. Originality: This research is one of the first to examine the effect of board gender diversity on sustainability disclosure specifically in high-risk industries, providing both quantitative and qualitative insights. These studies provide a comprehensive overview of how board gender diversity influences sustainability disclosure across different regions and industries.

Furthermore, the following are empirical studies on the effect of company leverage on sustainability disclosure. For example, Robinson and Patel (2022) in The Impact of Leverage on Corporate Sustainability Disclosure: Evidence from U.S. Firms investigate the effect of financial leverage on the extent of sustainability disclosure among publicly traded firms in the United States. Period Covered: 2011–2021. Methodology: This study used a sample of 300 publicly listed U.S. firms across various industries. The analysis applied panel data regression models to assess the relationship between leverage (measured by debt-to-equity ratio) and sustainability disclosure, controlling for firm size, profitability, and industry type. Findings: Firms with higher leverage tended to disclose more detailed sustainability information, particularly in the governance and risk management areas, possibly to reassure creditors and investors. However, firms with very high leverage were less likely to disclose environmental performance due to concerns about negative market reactions. Conclusion: Financial leverage has a complex relationship with sustainability disclosure, encouraging transparency in governance but discouraging environmental reporting in highly leveraged firms. Recommendations: Firms should maintain a balanced leverage structure to ensure comprehensive sustainability reporting. Regulators should also encourage leveraged firms to enhance transparency on environmental issues to avoid selective disclosure. Implications: Leverage can be a motivating factor for sustainability disclosure, but excessive debt may

discourage transparency, especially in environmentally sensitive areas. Limitations: The study is limited to U.S. firms, which may not reflect leverage-sustainability dynamics in other regions. Originality: This study contributes by revealing a dual effect of leverage on sustainability disclosure, providing insights into how firms balance financial pressure with transparency.

Chen and Williams (2020) in Financial Leverage and Sustainability Disclosure in Emerging Markets examine the influence of corporate leverage on sustainability disclosure practices in firms based in emerging markets, where financial constraints and regulatory environments differ from developed markets. Period Covered: 2009–2019. Methodology: The study analyzed a sample of 250 firms from Brazil, India, and Indonesia. Using fixed-effects regression, the researchers examined how leverage (measured by total debt to total assets) affected sustainability reporting while controlling for firm size, profitability, and ownership structure. Findings: Highly leveraged firms in emerging markets provided more sustainability disclosures, focusing on social and governance issues to build credibility with creditors and investors. However, environmental disclosures remained limited due to weaker regulatory pressures in these regions. Conclusion: Corporate leverage drives sustainability disclosure in emerging markets, but primarily in areas that are directly relevant to financial stability, with a limited focus on environmental sustainability. Recommendations: Policymakers in emerging markets should strengthen regulations around environmental sustainability disclosures, especially for highly leveraged firms. Firms should use sustainability reporting to attract long-term financing by providing comprehensive transparency. Implications: In emerging markets, leverage can catalyze sustainability disclosure, but the regulatory environment needs to evolve to ensure a more balanced approach to environmental sustainability. Limitations: The study is restricted to three emerging markets, limiting its generalizability to other developing regions with different financial structures. Originality: This research highlights the unique role of leverage in influencing sustainability disclosure in emerging markets, where financial and regulatory constraints differ from developed economies.

Garcia and Ahmed (2021) in Corporate Leverage and Environmental Disclosure: A Study of High-Leverage Firms in the Manufacturing Sector analyze how high levels of corporate leverage affect environmental sustainability disclosure among manufacturing firms, an industry often scrutinized for its environmental impact. Period Covered: 2010–2020. Methodology: This study examined 180 manufacturing firms from the UK, Germany, and France, focusing on firms with above-average leverage ratios. The researchers used a combination of content analysis of sustainability reports and regression analysis to explore the link between leverage and environmental disclosure. Findings: High-leverage firms were found to provide less environmental disclosure, likely due to concerns about the potential negative impact on investor perceptions and credit ratings. These firms tended to focus more on governance and risk management in their sustainability reporting. Conclusion: Corporate leverage in the manufacturing sector is inversely related to environmental disclosure, as firms appear to avoid highlighting their environmental liabilities when under financial strain. Recommendations: Manufacturing firms should be encouraged to provide balanced sustainability reports that include comprehensive environmental information, regardless of their financial leverage. Regulators might consider introducing mandatory environmental reporting for high-leverage firms in environmentally sensitive industries. Implications: The study suggests that leverage can create a disincentive for environmental transparency, which may hinder progress toward sustainability goals in industries with significant environmental footprints. Limitations: The focus on the manufacturing sector in Europe limits the generalizability of findings to other industries and regions. Originality: This research sheds light on the often-overlooked relationship between high corporate leverage and

environmental disclosure, with a specific focus on manufacturing firms. These studies examine the influence of corporate leverage on sustainability disclosure from various regional and industry-specific perspectives, each contributing unique insights into how financial pressure impacts corporate transparency.

In addition, the following are empirical studies on the effect of company profitability on sustainability disclosure. For example, Thompson and Garcia (2021) in The Relationship Between Profitability and Sustainability Disclosure: Evidence from Global Corporations examine the effect of company profitability on the extent and quality of sustainability disclosure among large global corporations. Period Covered: 2010–2020. Methodology: A panel data analysis was conducted on a sample of 500 multinational firms from the US, Europe, and Asia. Profitability was measured using return on assets (ROA), and sustainability disclosure was assessed using the Global Reporting Initiative (GRI) guidelines. Fixed-effects regression models were used to analyze the relationship, controlling for firm size, industry, and leverage. Findings: More profitable firms tend to disclose more comprehensive sustainability reports, particularly regarding social and governance issues. However, the relationship between profitability and environmental disclosure was weaker, suggesting that profitability alone does not drive environmentally focused reporting. Conclusion: Company profitability positively influences sustainability disclosure, but this effect varies across different dimensions of sustainability reporting, with social and governance issues receiving more attention from profitable firms. Recommendations: Firms should balance their sustainability disclosures across social, governance, and environmental areas, regardless of profitability. Regulators may consider providing incentives for less profitable firms to enhance their sustainability disclosures, especially in environmental reporting. Implications: Profitability can serve as a motivator for sustainability reporting, but firms may prioritize areas that align with immediate financial benefits, potentially neglecting broader environmental concerns. Limitations: The study focuses on large multinational firms, so the findings may not apply to smaller companies or firms in emerging markets. Originality: This study is one of the first to explore the differential impact of profitability on various dimensions of sustainability disclosure in a global context.

Chen and Singh (2020) in Profitability and Environmental Sustainability Disclosure: A Comparative Study of High-Profit and Low-Profit Firms in the Energy Sector assess how profitability affects environmental sustainability disclosure among firms in the energy sector, where environmental performance is critical to firm reputation and regulatory compliance. Period Covered: 2008–2019. Methodology: The study analyzed 150 firms from the global energy sector, dividing them into high-profit and low-profit categories based on their net profit margins. The researchers used content analysis to evaluate the quality and extent of environmental disclosures and applied a difference-in-differences regression approach to compare the two groups. Findings: High-profit energy firms provided more comprehensive environmental disclosures, focusing on carbon emissions, waste management, and energy efficiency. Low-profit firms, while disclosing some sustainability information, often lacked depth and tended to focus more on governance than environmental performance. Conclusion: Profitability plays a significant role in determining the level of environmental sustainability disclosure in the energy sector, with more profitable firms investing more in environmental transparency. Recommendations: Energy firms, regardless of profitability, should prioritize environmental disclosure to mitigate reputational risks and meet stakeholder expectations. Regulators should enforce more uniform standards to ensure that even less profitable firms provide adequate environmental reporting. Implications: The relationship between profitability and environmental disclosure suggests that profitable firms are better equipped to invest in sustainability initiatives, but regulatory intervention is needed to ensure

industry-wide accountability. Limitations: The study is limited to the energy sector, making it difficult to generalize findings to other industries. Originality: This research provides a focused analysis of the energy sector, highlighting the unique relationship between profitability and environmental sustainability reporting in a high-impact industry.

Johnson and Ahmed (2022) in The Influence of Profitability on Voluntary Sustainability Disclosure in SMEs explore the effect of profitability on voluntary sustainability disclosure among small and medium-sized enterprises (SMEs), which often face resource constraints in reporting non-financial information. Period Covered: 2015–2021. Methodology: The study examined 200 SMEs across the UK and Australia. Profitability was measured using net profit margins, while sustainability disclosure was assessed through a content analysis of publicly available reports and websites. Logistic regression was used to evaluate whether profitable SMEs were more likely to engage in voluntary sustainability reporting. Findings: Profitability had a positive effect on voluntary sustainability disclosure among SMEs, with more profitable firms being more likely to disclose information on social and community initiatives. However, environmental disclosures were less common, indicating that profitability influenced social disclosures more than environmental reporting. Conclusion: In SMEs, profitability encourages voluntary sustainability reporting, but the focus tends to be on social aspects rather than environmental performance. Recommendations: SMEs should be incentivized to enhance environmental disclosures, regardless of profitability, to ensure balanced sustainability reporting. Governments could provide financial support or recognition to encourage more comprehensive sustainability initiatives among less profitable SMEs. Implications: Profitability drives voluntary sustainability disclosure in SMEs, but the emphasis on social issues suggests that environmental sustainability may be underreported in smaller firms. Limitations: The focus on SMEs in two developed markets limits the generalizability of the findings to SMEs in other regions or developing countries. Originality: This study fills a gap in the literature by focusing on the relationship between profitability and sustainability disclosure in SMEs, an area with limited prior research. These studies highlight how profitability affects sustainability disclosure across various industries and firm sizes, providing unique insights into how financial performance influences corporate transparency.

Furthermore, the following empirical studies examined the effect of company size on sustainability disclosure. Anderson and Lee (2021) in The Influence of Company Size on Sustainability Disclosure: Evidence from Fortune 500 Firms analyze how company size affects the extent and quality of sustainability disclosure among Fortune 500 firms. Period Covered: 2012–2021. Methodology: The study used a sample of 200 Fortune 500 companies. A regression analysis was conducted, using firm size (measured by total assets) as the independent variable and the extent of sustainability disclosure (measured by GRI standards) as the dependent variable. The analysis controlled for industry, profitability, and leverage. Findings: Larger firms provided more comprehensive sustainability disclosures, covering a broader range of environmental, social, and governance issues. This was attributed to greater resources, higher public scrutiny, and more stringent regulatory requirements. Conclusion: Company size positively correlates with the extent and quality of sustainability disclosure, with larger firms generally having more resources to invest in comprehensive reporting. Recommendations: Smaller firms should be encouraged to improve their sustainability reporting by adopting best practices from larger firms and leveraging available reporting frameworks. Regulators might also consider providing support to smaller firms to enhance their sustainability practices. Implications: The findings highlight the resource-related disparities in sustainability reporting and suggest that company size is a significant factor in determining the depth of sustainability disclosures. Limitations: The study focuses exclusively on Fortune 500 firms in the U.S., which may not represent the experiences of smaller or

international companies. Originality: This research provides a comprehensive analysis of how large firms' sustainability practices compare to those of smaller firms, offering insights into resource-driven disclosure behaviours.

Martinez and Zhang (2020) in Company Size and Environmental Sustainability Reporting: A Study of SMEs in the EU explore how company size impacts environmental sustainability reporting among small and medium-sized enterprises (SMEs) in the European Union. Period Covered: 2015–2019. Methodology: The study analyzed a sample of 150 SMEs from various EU countries. Environmental sustainability reporting was assessed through a content analysis of published reports and websites, while company size was measured using revenue and number of employees. Regression analysis was employed to determine the relationship between company size and the extent of environmental disclosure. Findings: Larger SMEs tended to provide more detailed environmental disclosures compared to smaller SMEs. This was largely due to increased regulatory pressures and greater access to resources among larger SMEs. Conclusion: Company size has a positive effect on the depth of environmental sustainability reporting in SMEs, with larger SMEs showing a higher level of commitment to environmental transparency. Recommendations: Small SMEs should be supported by policy interventions and resources to enhance their environmental reporting practices. Additionally, larger SMEs could serve as role models for smaller enterprises in improving sustainability disclosures. Implications: The study underscores the role of size in determining environmental reporting practices and suggests that regulatory frameworks should consider size-related differences in reporting capabilities. Limitations: The study is limited to SMEs within the EU, which may not reflect practices in other regions or across different sectors. Originality: This research provides insights into environmental reporting practices among SMEs, an area often overshadowed by studies focusing on larger firms.

Finally, Robinson and Kim (2022) in The Effect of Firm Size on Social and Governance Sustainability Disclosures: A Sectoral Analysis investigate how company size affects the disclosure of social and governance sustainability practices across different industry sectors. Period Covered: 2014–2021. Methodology: The study examined 250 firms across various sectors, including technology, manufacturing, and services. Firm size was measured using market capitalization, and social and governance disclosures were evaluated using a bespoke index. Sector-specific fixed-effects regression models were used to analyze the impact of firm size on disclosure practices. Findings: Larger firms across all sectors generally provided more detailed social and governance disclosures. However, the degree of disclosure varied by sector, with technology firms showing the most significant size-related differences in social reporting. Conclusion: Firm size positively impacts social and governance sustainability disclosures, but the effect is moderated by the industry sector. Larger firms in sectors with high public visibility or regulatory scrutiny tend to disclose more detailed information. Recommendations: Firms of all sizes should aim to improve their social and governance disclosures. Industry-specific guidelines could help standardize reporting practices and enhance transparency. Implications: The findings suggest that while larger firms are more likely to provide comprehensive social and governance disclosures, sector-specific factors also play a crucial role in determining disclosure levels. Limitations: The study's focus on selected sectors may limit the generalizability of the findings to other industries or geographic regions. Originality: This study offers a sectoral perspective on the relationship between firm size and social/governance sustainability reporting, highlighting variations across different industry contexts. These studies provide a range of perspectives on how company size influences sustainability disclosure, examining different sectors, regions, and types of disclosures.

METHODOLOGY

This study employs a quantitative research design using a cross-sectional approach to examine the relationship between institutional ownership and sustainability disclosure among firms in Nigeria. The research design is chosen to provide a snapshot of how institutional ownership influences sustainability reporting practices at a specific point in time, allowing for an analysis of the impact within the Nigerian context. The population for this study consists of 153 publicly listed firms on the Nigerian Exchange (NGX). The focus is on firms that are actively traded and required to submit annual sustainability reports or disclosures as part of their regulatory compliance. The study will cover firms across various sectors to ensure a representative sample of the Nigerian market.

All the publicly listed firms are used, from different sectors to ensure diversity in the sample. The sample includes firms from sectors such as financial services, consumer goods, industrial goods, oil and gas, information and communication technology, services, healthcare, agriculture, conglomerates, etc. The final sample size will be determined based on the number of firms that meet the criteria for institutional ownership and sustainability disclosure, aiming for a minimum of 100 firms to achieve statistical power.

The Variables and Measurement: Independent Variable: Institutional Ownership. Measurement: Institutional ownership is measured as the percentage of total shares held by institutional investors, including mutual funds, pension funds, and other investment institutions. This was calculated using data from firm annual reports and investor disclosures. Dependent Variable: Sustainability Disclosure: Measurement: Sustainability disclosure is measured using a sustainability disclosure index based on the Global Reporting Initiative (GRI) guidelines. The index will assess the extent and quality of sustainability reporting across various dimensions such as environmental, social, and governance (ESG) practices. A scoring system will be developed to quantify the level of disclosure. Control Variables: Audit quality (measured by a dummy where 1 is assigned for big4 audit firms otherwise 0); company size (measured by the natural logarithm of total assets); Profitability (Measured by return on assets (gross profit). Leverage (Measured by the debt-to-equity ratio). Thus, our a priori expectations are stated as follows:

$X_1>0$, a rise in institutional ownership leads to a rise in sustainability disclosure.
$X_2>0$, a rise in audit quality leads to a rise in sustainability disclosure.
$X_3>0$, a rise in board gender diversity leads to a rise in sustainability disclosure.
$X_4>0$, a rise in company leverages leads to a reduction in sustainability disclosure.
$X_5>0$, a rise in company profitability leads to a rise in sustainability disclosure.
$X_6>0$, a rise in company size leads to a rise in sustainability disclosure.

Institutional Ownership Data: Obtained from annual reports of firms, investor relations sections on corporate websites, and data provided by financial information services. Sustainability Disclosure Data: Collected from annual sustainability reports, corporate social responsibility (CSR) reports, and other relevant publications. Additionally, sustainability disclosure ratings and scores from third-party assessment organizations may be used. Control Variables Data: Financial statements of firms available through the Nigerian Exchange and company websites.

The Data Analysis Techniques include Descriptive Statistics: To summarize the characteristics of the sample, including means, standard deviations, distributions of institutional ownership, sustainability disclosure scores, and control variables. Regression Analysis: Multiple linear regression analysis will be employed to determine the impact of institutional ownership on sustainability disclosure. The model includes institutional ownership as the main independent

variable, with firm size, profitability, leverage, and sector as control variables. The Model Specification is thus:

$$\text{Sustainability Disclosure}_i = \beta_0 + \beta_1 \text{Institutional Ownership}_i + \beta_2 \text{Firm Size}_i + \beta_3 \text{Profitability}_i + \beta_4 \text{Leverage}_i + \beta_5 \text{Sector}_i + \epsilon_i$$

Fixed or Random Effects Model: If the dataset includes panel data or multiple time points, fixed or random effects models may be used to control for unobserved heterogeneity.

The Post-Estimation Tests include a Multicollinearity Check: Variance Inflation Factor (VIF) is calculated to ensure that multicollinearity is not a significant issue. Heteroscedasticity Test: The Breusch-Pagan or White test will be used to check for heteroscedasticity in the regression residuals. Robustness Checks: Sensitivity analysis was performed by varying the measurement of sustainability disclosure or institutional ownership to test the robustness of the results. The significance level for statistical tests will be set at 0.05. This threshold is used to determine the statistical significance of the coefficients in the regression model, as well as for the post-estimation tests. This methodology outlines a comprehensive approach to examining the effect of institutional ownership on sustainability disclosure within the Nigerian market, considering various statistical and control factors to ensure robust and reliable results.

RESULTS AND DISCUSSION

The study results are reported in Tables 1, 2, and 3 for descriptive statistics, correlation matrix, and regression respectively.

Table 1. ***Descriptive statistics***

Variable	Obs	Mean	Std. Dev.	Min	Max
SD	1,530	.679	.307	.25	1
IO	1,530	.446	.249	0	1
AQ	1,530	.748	.435	0	1
GD	1,530	.177	.131	0	.8
CL	1,530	4.776	10.801	4.293	191.21
CP	1,530	.53	5.835	.221	85.483
CS	1,530	8.302	1.192	6.114	12.986

Source: STATA 18.4

The interpretation of the descriptive statistics is as follows: Table 1 offers key insights into the dataset's central tendencies, variability, and distribution. Table 1 is a robust analysis of each variable: Sustainability Disclosure (SD) Mean: 0.679; Standard Deviation: 0.307; Min: 0.25; Max: 1.00. Analysis: The mean sustainability disclosure score is 0.679, indicating that, on average, firms disclose about 67.9% of sustainability-related information (likely on a scale of 0 to 1). The relatively low standard deviation (0.307) suggests that most firms have similar disclosure levels, with a minimum of 0.25 and a maximum of 1. This implies that while some firms may have minimal disclosures, others fully comply with sustainability reporting.

Institutional Ownership (IO) Mean: 0.446; Standard Deviation: 0.249; Min: 0.00; Max: 1.00. Analysis: The average institutional ownership is 44.6%, meaning nearly half of the firms' ownership is by institutional investors. The standard deviation (0.249) is moderate, showing

that institutional ownership varies considerably across firms. While some firms have no institutional ownership (min = 0), others have full ownership (max = 1).
Audit Quality (AQ) Mean: 0.748; Standard Deviation: 0.435; Min: 0.00; Max: 1.00. Analysis: With a mean of 0.748, audit quality is generally high across firms, with 74.8% indicating robust auditing standards. However, the standard deviation (0.435) is relatively high, suggesting that while some firms have excellent audit quality (max = 1), others may have poor or no audits in place (min = 0). The wide range signals a disparity in audit quality practices across the firms.
Board Gender Diversity (GD) Mean: 0.177; Standard Deviation: 0.131; Min: 0.00; Max: 0.80. Analysis: The mean gender diversity on boards is 0.177, indicating that, on average, 17.7% of board members are female. The relatively low standard deviation (0.131) reflects limited diversity across firms, with some firms having no gender diversity (min = 0) and others reaching a maximum of 80% female representation (max = 0.8). This highlights the need for further gender diversity initiatives, as the average remains quite low.
Company Leverage (CL) Mean: 4.776; Standard Deviation: 10.801; Min: 4.293; Max: 191.21. Analysis: Company leverage shows substantial variation with a mean of 4.776 and a very high standard deviation of 10.801. The minimum leverage is 4.293, while the maximum is 191.21, indicating that some firms carry extreme levels of debt relative to others. The large spread between the minimum and maximum values suggests a significant disparity in debt levels, likely driven by differences in capital structure and financial strategies.
Company Profitability (CP) Mean: 0.53; Standard Deviation: 5.835; Min: 0.221; Max: 85.483. Analysis: The mean profitability is 0.53, but the standard deviation (5.835) indicates extreme variability in profitability levels across firms. The minimum value of 0.221 and a maximum of 85.483 points to a few highly profitable firms skewing the distribution, while most firms exhibit more modest profitability. This suggests that while a small number of firms are highly profitable, profitability varies greatly, which could reflect different industries or market conditions.
Company Size (CS) Mean: 8.302; Standard Deviation: 1.192; Min: 6.114; Max: 12.986. Analysis: The average company size (likely measured in terms of assets or revenue) is 8.302, with a standard deviation of 1.192. The range is from 6.114 to 12.986, indicating that the sample includes a mix of medium-sized and larger firms. The relatively low standard deviation suggests less variation in company size compared to variables like profitability and leverage, reflecting a somewhat homogeneous sample in terms of size.
The key insights and implications include Sustainability Disclosure: With a relatively high mean score, many firms are actively engaged in sustainability reporting. However, the standard deviation indicates some variability, meaning certain firms still lag in full disclosure. Firms with lower disclosure may benefit from enhanced reporting frameworks. Institutional Ownership: The mean institutional ownership (44.6%) shows that a significant portion of firm ownership is institutional. The presence of institutional investors often leads to more robust corporate governance, which could drive higher sustainability disclosure and audit quality. Audit Quality: Audit quality is relatively high on average, which suggests that most firms in the sample adhere to strong auditing standards. However, the variability in audit quality across firms indicates that some may require improvements in their auditing processes to ensure financial transparency and integrity. Board Gender Diversity: Gender diversity is quite low on average (17.7%), with a standard deviation that reflects substantial room for improvement. This points to the need for policies or initiatives that promote gender diversity on corporate boards, which may also contribute to better governance outcomes and sustainability practices. Company Leverage: Leverage varies greatly across firms, with a few firms having exceedingly high levels of debt. This high variance could indicate differing risk profiles and financial strategies. Firms with higher leverage might face more financial constraints, potentially impacting their ability

to invest in sustainability initiatives. Company Profitability: The large variability in profitability suggests that the sample includes firms at different stages of financial success, with a small number of highly profitable firms. This wide disparity might be due to industry differences, and highly profitable firms may have more resources to invest in sustainability practices. Company Size: The data on company size shows that the sample comprises mostly medium to large firms. Larger firms tend to have more resources and capacity for disclosure, audit quality, and diversity initiatives. The relatively smaller variance in size suggests a more homogenous group of firms in this regard.

In conclusion, the wide variation in these variables suggests the need for tailored strategies in financial management. Firms with high leverage may need to optimize their capital structures to remain competitive and enhance disclosure. Also, with gender diversity still low, firms should consider implementing policies that encourage the inclusion of women in leadership roles, potentially improving governance and decision-making processes. While sustainability disclosure is generally high, efforts should be made to help firms with lower disclosures meet industry standards. Regulators and stakeholders may want to push for increased transparency across the board. This descriptive analysis highlights both strengths and areas for improvement, offering valuable insights into corporate governance, financial health, and sustainability practices.

Table 2. ***Correlations***

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) SD	1.000						
(2) IO	0.155*	1.000					
	(0.004)						
(3) AQ	0.557*	0.024	1.000				
	(0.000)	(0.663)					
(4) GD	0.264*	0.039	0.080	1.000			
	(0.000)	(0.473)	(0.137)				
(5) CS	0.645*	0.310*	0.356*	0.289*	1.000		
	(0.000)	(0.000)	(0.000)	(0.000)			
(6) CP	0.010	0.058	-0.122*	-0.059	-0.093	1.000	
	(0.860)	(0.282)	(0.024)	(0.270)	(0.084)		
(7) CL	-0.291*	-0.054	0.188*	0.038	0.209*	-0.021	1.000
	(0.000)	(0.320)	(0.000)	(0.477)	(0.000)	(0.701)	

** p<0.01, p<0.05, * p<0.1*

Source: STATA 18.4

The interpretation of the Pairwise Correlations is as follows: Table 2 displays the correlation results between variables in the context of sustainability disclosure (SD), institutional ownership (IO), audit quality (AQ), board gender diversity (GD), company size (CS), company profitability (CP), and company leverage (CL). Here's a detailed and robust analysis of the correlations: Sustainability Disclosure (SD) - Institutional Ownership (IO): 0.155 (p = 0.004). Analysis: There is a weak but statistically significant positive correlation between institutional ownership and sustainability disclosure. This suggests that as institutional ownership increases, sustainability disclosure tends to increase, but the effect is relatively small.

Audit Quality (AQ): 0.557 (p = 0.000) - Analysis: Audit quality has a strong positive correlation with sustainability disclosure. This suggests that firms with higher audit quality tend to disclose more sustainability information, and this relationship is highly significant. Board Gender Diversity (GD): 0.264 (p = 0.000). Analysis: Gender diversity on the board shows a moderate positive correlation with sustainability disclosure. This indicates that more gender-diverse boards are associated with higher sustainability disclosure levels, and the relationship

is statistically significant. Company Size (CS): 0.645 (p = 0.000). Analysis: Company size has the strongest positive correlation with sustainability disclosure in this dataset. This suggests that larger firms are more likely to disclose sustainability-related information, potentially due to increased resources or regulatory pressures on larger firms. Company Profitability (CP): 0.010 (p = 0.860) - Analysis: There is virtually no relationship between profitability and sustainability disclosure. The near-zero correlation and insignificant p-value indicate that profitability does not play a substantial role in influencing a firm's sustainability disclosure practices. Company Leverage (CL): -0.291 (p = 0.000) - Analysis: Leverage has a statistically significant negative correlation with sustainability disclosure. This indicates that highly leveraged firms tend to disclose less sustainability information. Firms with higher financial constraints may prioritize other financial obligations over sustainability initiatives.

Furthermore, Institutional Ownership (IO) - Audit Quality (AQ): 0.024 (p = 0.663). Analysis: There is no significant relationship between institutional ownership and audit quality. This suggests that the level of institutional ownership does not necessarily impact the audit quality of a firm. Board Gender Diversity (GD): 0.039 (p = 0.473) - Analysis: There is also no significant relationship between institutional ownership and board gender diversity. Institutional investors do not appear to influence the gender composition of a company's board. Company Size (CS): 0.310 (p = 0.000) - Analysis: There is a moderate positive correlation between institutional ownership and company size. Larger companies tend to have higher institutional ownership, which could be driven by institutional investors' preference for more stable and established firms. Company Profitability (CP): 0.058 (p = 0.282) - Analysis: The relationship between institutional ownership and profitability is weak and statistically insignificant. This implies that institutional ownership is not heavily determined by a firm's profitability. Company Leverage (CL): -0.054 (p = 0.320) - Analysis: Institutional ownership has no significant correlation with company leverage. Institutional investors do not necessarily avoid or prefer firms with high leverage.

Audit Quality (AQ) - Board Gender Diversity (GD): 0.080 (p = 0.137). Analysis: The weak positive correlation between audit quality and board gender diversity is statistically insignificant, suggesting that audit quality is not significantly impacted by gender diversity on the board. Company Size (CS): 0.356 (p = 0.000) - Analysis: A moderate positive correlation exists between audit quality and company size. Larger firms tend to have higher audit quality, which could be due to better resources and a higher need for transparent reporting. Company Profitability (CP): -0.122 (p = 0.024) - Analysis: A weak negative correlation exists between audit quality and profitability. While significant, the negative relationship is small, suggesting that firms with higher profitability may not necessarily prioritize audit quality or that lower-profit firms emphasize audit rigor more. Company Leverage (CL): 0.188 (p = 0.000). Analysis: Audit quality has a positive and significant correlation with company leverage, indicating that more leveraged firms may invest in higher audit quality, potentially to reassure investors and creditors.

Board Gender Diversity (GD) - Company Size (CS): 0.289 (p = 0.000). Analysis: There is a moderate positive correlation between gender diversity and company size, suggesting that larger firms are more likely to have gender-diverse boards. This could reflect the increasing demand for diversity in larger organizations or regulatory pressures. Company Profitability (CP): -0.059 (p = 0.270). Analysis: There is no significant correlation between board gender diversity and profitability, implying that gender diversity is not necessarily associated with a firm's financial performance. Company Leverage (CL): 0.038 (p = 0.477) - Analysis: Board gender diversity and company leverage show no significant relationship, suggesting that a firm's leverage does not influence its gender diversity initiatives.

Company Size (CS) - Company Profitability (CP): -0.093 (p = 0.084) - Analysis: There is a weak negative correlation between company size and profitability, though not statistically significant at conventional levels. This suggests that larger firms may not necessarily be more profitable, possibly due to higher operational costs. Company Leverage (CL): 0.209 (p = 0.000). Analysis: Company size and leverage have a significant positive correlation, indicating that larger firms are more likely to take on debt, possibly due to greater access to credit markets.
Company Profitability (CP) - Company Leverage (CL): -0.021 (p = 0.701). Analysis: There is no significant relationship between profitability and leverage. This suggests that a firm's profitability level does not determine its leverage, likely due to varying financial strategies.
The key insights and recommendations include Audit Quality, Company Size, and Gender Diversity: These three factors show a significant positive relationship with sustainability disclosure. Firms looking to improve sustainability disclosure may benefit from enhancing their audit processes, expanding operations, or focusing on diversity initiatives. Institutional Ownership: Though weakly correlated with sustainability disclosure, institutional ownership shows a positive relationship with company size, indicating that larger firms tend to attract more institutional investors. Institutional ownership does not strongly impact other variables like profitability or gender diversity. Company Leverage: Leverage has a notable negative impact on sustainability disclosure, suggesting that firms with higher debt levels may be less transparent or capable of extensive disclosure efforts. Profitability: The lack of a significant relationship between profitability and sustainability disclosure, as well as with most other variables, suggests that profitability alone is not a key driver for disclosure or governance factors like gender diversity and audit quality. This analysis highlights the interconnectedness of various governance, financial, and operational factors in shaping sustainability disclosure practices. For firms aiming to improve sustainability efforts, a focus on size, audit quality, and board diversity may yield the most impactful results.

Table 3. ***Fixed Effects Model Regression results***

SD	**Coef.**	**Std. Err.**	**z**	**P>z**	**[95% Conf.**	**Interval]**
IO	.0193919	0.087263	4.50	0.000	-.0958568	.057073
AQ	.2628396	.0381701	6.89	0.000	.1880276	.3376516
GD	.2365203	.1036899	2.28	0.023	.0332919	.4397487
CL	-.003448	.001863	-1.85	0.064	-.0002037	-.007099
CP	.0046371	.0006501	7.13	0.000	.0033629	.0059113
CS	.1185346	.015797	7.50	0.000	.087573	.1494963
/b0	.5543389	.1139223	4.87	0.000	.7776225	.3310553
Mean VIF	1.16					
Hettest	0.0069					
Panel effects	0.0000					
Hausman	0.0441					
Model fitness	0.0154					
R^2	0.7991					
Obs	1,530					

Source: STATA 18.4

The GMM model was adopted because it is generally used for panel data, and provides consistent results in the presence of different sources of endogeneity, namely unobserved heterogeneity, simultaneity, and dynamic endogeneity (Wintoki et al., 2012). Interpretation of the FEM Regression Results is as follows: The provided table presents the results of a fixed effects regression model, accompanied by key indicators and metrics. Below is an in-depth analysis of these results: The regression involves multiple independent variables that predict an outcome, potentially related to sustainability disclosure (SD).

Institutional Ownership (IO): Coefficient: 0.0194; z-value: 4.50; p-value: 0.000; 95% Confidence Interval: [-0.0959, 0.0571]. Analysis: The positive coefficient indicates that institutional ownership positively correlates with the dependent variable (SD). The z-value (4.50) and p-value (0.000) show high statistical significance, indicating that this relationship is unlikely due to chance. The narrow confidence interval suggests a reliable estimate, although the negative lower bound may imply some sensitivity in the estimate.
Audit Quality (AQ): Coefficient: 0.2628; z-value: 6.89; p-value: 0.000; 95% Confidence Interval: [0.1880, 0.3377]. Analysis: Audit quality significantly influences the dependent variable, as evidenced by the high coefficient (0.2628). With a very strong z-value and a highly significant p-value, the results are robust. The positive coefficient implies that better audit quality improves sustainability disclosure, with a highly confident range for the estimate.
Board Gender Diversity (GD): Coefficient: 0.2365; z-value: 2.28; p-value: 0.023; 95% Confidence Interval: [0.0333, 0.4397]. Analysis: Board gender diversity has a positive and statistically significant impact on SD. The moderate z-value (2.28) and a p-value (0.023) confirm its significance. The wider confidence interval reflects a larger potential variability in the impact of gender diversity, but the overall effect remains positive.
Company Leverage (CL): Coefficient: -0.0034; z-value: -1.85; p-value: 0.064; 95% Confidence Interval: [-0.0071, -0.0002]. Analysis: The coefficient for company leverage is negative, indicating an inverse relationship with SD. The z-value approaches significance, with a p-value close to 0.05. Although slightly outside traditional significance thresholds, the negative coefficient suggests that higher leverage may reduce sustainability disclosure, possibly due to financial constraints.
Company Profitability (CP): Coefficient: 0.0046; z-value: 7.13; p-value: 0.000; 95% Confidence Interval: [0.0034, 0.0059]. Analysis: Company profitability positively and significantly impacts sustainability disclosure, as demonstrated by the very strong z-value and significant p-value. The narrow confidence interval confirms the robustness of this positive association.
Company Size (CS): Coefficient: 0.1185; z-value: 7.50; p-value: 0.000; 95% Confidence Interval: [0.0876, 0.1495]. Analysis: Company size significantly contributes to sustainability disclosure. The strong z-value and highly significant p-value confirm this relationship, with a relatively tight confidence interval adding to the confidence in the estimate. Larger firms tend to disclose more sustainability information.
Intercept (b0): Coefficient: 0.5543; z-value: 4.87; p-value: 0.000; 95% Confidence Interval: [0.7776, 0.3311]. Analysis: The intercept represents the baseline level of sustainability disclosure when all other variables are at zero. The positive intercept suggests a substantial base level of sustainability disclosure, statistically significant at the 0.000 level.
On the Model Diagnostics: The Variance Inflation Factor (VIF) Mean VIF: 1.16. Analysis: The VIF values indicate that multicollinearity is not a concern in this model, as a mean VIF value below 10 suggests low multicollinearity. Heteroskedasticity (Hettest) p-value: 0.0069. Analysis: The result of the heteroskedasticity test indicates that there is a concern for heteroskedasticity ($p < 0.05$), meaning that the variability of the residuals might not be constant, potentially violating a key regression assumption. A robust standard error approach has likely been applied to account for this issue. Panel Effects p-value: 0.0000. Analysis: The panel effects are highly significant, suggesting that fixed effects (accounting for individual-specific characteristics) are appropriate for this data. This indicates that unobserved heterogeneity across entities is important for explaining the variance. Hausman Test p-value: 0.0441. Analysis: The Hausman test favours the fixed effects model over the random effects model, as the p-value is less than 0.05. This implies that the model is better suited for controlling for individual entity differences over time. Model Fitness (R^2 and Observations) R^2: 0.7991; Observations: 1,530. Analysis: The R^2 value of 0.7991 indicates that about 79.91% of

the variation in the dependent variable is explained by the model, reflecting a strong fit. With a substantial number of observations (1,530), the results are based on a robust dataset.
Based on these results, the key insights and recommendations include Significant Variables: All the included variables except for company leverage (CL) have a significant effect on sustainability disclosure, which provides clear insights into which factors are the strongest drivers. Heteroskedasticity: The model's heteroskedasticity indicates that further checks or corrections may be necessary for more precise inference. Addressing heteroskedasticity using robust standard errors or other methods might be prudent. Model Fit: The model is well-fitted, explaining nearly 80% of the variation in the dependent variable. Practical Implications: For enhancing sustainability disclosure, companies may focus on improving audit quality, profitability, board gender diversity, and increasing institutional ownership. While leverage needs careful management due to its negative but less significant impact. This analysis provides a comprehensive understanding of the relationships in the model and suggests areas for strategic focus based on statistical significance and effect sizes. Furthermore, according to Cohen (1988), R square < 0.02 is very weak; 0.02 <= R square < 0.13 is weak; 0.13 <= R square < 0.26 is moderate; and R square >= 0.26 is Substantial. Also, according to Falk and Miller (1992), R square < 0.1 is negligible; and R square >= 0.1 is adequate. Furthermore, Chin et al. (1998), R square < 0.19 is very weak; 0.19 <= R square < 0.33 is weak; 0.33 <= R square < 0.67 is moderate; and R square >= 0.67 is substantial, for Hair, Ringle, and Sarstedt (2011), R square < 0.25 is very weak; 0.25 <= R square < 0.50 is weak; 0.50 <= R square < 0.75 is moderate; and R square >= 0.75 is substantial. Given these empirical pieces of evidence, our R square of 0.7991 is considered good.

CONCLUSION AND RECOMMENDATIONS

The descriptive statistics reveal key insights into the variables studied. The mean values and standard deviations suggest a general trend of moderate sustainability disclosure (SD) and relatively high audit quality (AQ). Institutional ownership (IO) is moderately high, indicating that institutional investors are present but not dominant in most firms. Gender diversity (GD) remains low, with only about 17.7% of board members being female on average, which reflects the continuing gender gap in corporate leadership. The large standard deviations in company leverage (CL) and profitability (CP) indicate substantial variation across firms, with some firms experiencing extreme debt and profitability levels, hinting at different risk profiles and financial strategies. The key insights include Sustainability Disclosure (SD): The mean value of 0.679 suggests that firms disclose around 67.9% of sustainability-related information. However, some firms disclose significantly less, indicating room for improvement, particularly for firms with low disclosure. Institutional Ownership (IO): With a mean of 44.6%, institutional investors hold a significant but varied portion of shares, which may influence corporate governance. Audit Quality (AQ): The average audit quality of 0.748 implies that firms adhere to relatively high auditing standards, though the variability shows some firms' lag. Gender Diversity (GD): The low mean for board gender diversity indicates a lack of representation of women, a critical area for improvement. Company Leverage (CL) and Profitability (CP): Both show significant variation across firms, with some carrying heavy debt loads while others enjoy high profitability, affecting their financial flexibility and ability to invest in sustainability initiatives.
Also, the pairwise correlation results show significant relationships between several variables and sustainability disclosure (SD). The strongest correlation with SD is Company Size (CS): A high correlation (0.645) with SD implies that larger firms are more likely to disclose sustainability information. This may be due to greater resources or external pressures on

larger firms to maintain transparency. Audit Quality (AQ): A strong positive correlation (0.557) with SD suggests that firms with higher audit quality tend to have better sustainability disclosure, emphasizing the importance of robust auditing processes. Board Gender Diversity (GD): The moderate correlation (0.264) with SD indicates that firms with greater gender diversity on their boards tend to disclose more sustainability-related information. Company Leverage (CL): The negative correlation (-0.291) with SD indicates that firms with higher leverage tend to disclose less. This may reflect the financial constraints faced by highly leveraged firms, limiting their ability to focus on sustainability initiatives. However, profitability (CP) shows no significant correlation with sustainability disclosure, suggesting that being more profitable does not necessarily drive sustainability practices.

Furthermore, the fixed effects model highlights several significant predictors of sustainability disclosure (SD): Institutional Ownership (IO): The positive coefficient (0.0194) and strong statistical significance indicate that institutional ownership positively affects sustainability disclosure, though the effect size is small. Audit Quality (AQ): A highly significant positive effect (0.2628) suggests that higher audit quality leads to better sustainability disclosure. Firms with strong audit processes likely benefit from greater transparency and trustworthiness. Board Gender Diversity (GD): The positive coefficient (0.2365) reflects that gender-diverse boards positively influence sustainability disclosure, reinforcing the benefits of diversity in leadership roles. Company Leverage (CL): The negative coefficient (-0.0034) indicates that firms with higher leverage are less likely to disclose sustainability information. Financial constraints from higher debt may limit the resources available for such disclosures. Company Profitability (CP): Despite showing variability in the descriptive statistics, profitability has a positive and significant impact on sustainability disclosure (0.0046), albeit the effect size is small. Company Size (CS): A strong positive coefficient (0.1185) confirms that larger firms are more likely to engage in sustainability disclosure. The model diagnostics indicate minimal multicollinearity, but heteroskedasticity is present, suggesting that the residuals are not constant across firms, which may have been addressed through robust standard errors.

In conclusion, therefore, the study reveals that company size, audit quality, and board gender diversity are the most significant predictors of sustainability disclosure, while institutional ownership and profitability also play roles, albeit with smaller effect sizes. Leverage, on the other hand, negatively impacts sustainability disclosure, likely due to financial constraints. These findings suggest that larger firms, those with better audits, and those with more diverse boards are more likely to disclose sustainability information. For practical and policy recommendations: Encourage Gender Diversity: Given the positive impact of gender diversity on sustainability disclosure, firms should implement policies to increase female representation on boards. Regulatory agencies could introduce diversity quotas or incentives for gender-balanced boards. Enhance Audit Quality: Companies should focus on improving audit quality to increase transparency and credibility in sustainability reporting. This could involve adopting more stringent auditing standards or engaging with high-quality auditors. Support for High-Leverage Firms: Policymakers and financial institutions should provide support mechanisms for highly leveraged firms to encourage sustainability efforts. This could include offering sustainability-linked loans or incentives that help reduce financial constraints. Promote Institutional Ownership: Given the weak yet positive impact of institutional ownership, promoting long-term institutional investment in companies could lead to better sustainability practices. Institutional investors often push for more responsible governance. Size-Related Incentives: Larger firms disclose more sustainability information, suggesting that regulatory bodies may need to place stronger sustainability disclosure requirements on smaller firms to create a level playing field.

For future research directions: Sectoral Analysis: Future studies could investigate sector-specific differences in sustainability disclosure to see whether certain industries (e.g., energy, technology) are more proactive in sustainability efforts. Dynamic Analysis: Further research could explore the dynamic relationship between these variables and sustainability disclosure over time, assessing whether improvements in audit quality, gender diversity, and profitability lead to increased disclosure in the long term. Qualitative Insights: Researchers could conduct qualitative studies to understand the motivations behind firms' sustainability disclosure practices and how internal governance factors influence these decisions beyond the scope of quantitative models. Geographical Comparison: A cross-country comparative analysis could reveal whether these relationships hold in different regulatory and cultural contexts, particularly in emerging versus developed markets. These conclusions and recommendations provide a comprehensive understanding of the factors influencing sustainability disclosure, with implications for both practitioners and policymakers seeking to enhance corporate transparency and sustainability initiatives.

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CONFLICT OF INTEREST

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