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# Sustainability Disclosure, Institutional Ownership and Value of Listed Companies in Nigeria

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## Abstract

**Research aim**: This study seeks to examine the relationship between sustainability disclosure and the value of listed companies in Nigeria, using institutional ownership as a moderator.
**Design/ Methodology/ Approach**: Data was collected from annual reports and accounts of the firms and daily price listings of the Nigerian Exchange Group from 2014 to 2021. The study uses the Feltham and Ohlson (1995) linear information valuation model to estimate industry-based influence on firm value variations.
**Research finding**: The results show that economic and environmental disclosures as well as institutional ownership significantly and positively impact the value of listed firms, while social disclosure has an insignificant effect. Institutional ownership enhances the positive effect of economic disclosure, but does not enhance the effect of environmental disclosure on firm value, and there is no statistical evidence that it affects the impact of social disclosure on firms' value.
**Theoretical contribution/Originality**: The study uses stakeholder and legitimacy theories to guide decision-making in sustainability disclosure and institutional ownership. It suggests that greater transparency and accountability in sustainability reporting in Nigeria are needed.
**Practitioner/Policy implication**: The study findings support regulators to mandate sustainability disclosure, raise awareness about its benefits and impact on value, and encourage investor participation in corporate sustainability decision-making. This would enhance the value creation and governance process, ultimately leading to better governance and increased firm value.
**Research limitation**: This study focuses only on sustainability disclosure of Nigerian companies in selected sectors of the economy. Future studies can explore the long-term effects of sustainability disclosures on firm value to understand whether social disclosures yield delayed financial benefits, investigate the impact of sustainability disclosures on firm value across different sectors in Nigeria, and explore how governance frameworks influence the quality of sustainability disclosures and their subsequent effect on firm value.

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## 1. Introduction

Firm value is factored by stakeholders' decisions, particularly investors, communicated through financial reporting, of which sustainability is a significant determinant (Sucuahi & Cambarihan, 2016). In an efficient stock market, firm value is determined by financial and non-financial disclosures, thus influencing investment decisions. With value maximisation as the primary motivation of business, the global community has become interested in sustainable socio-economic development, and environmental performance is a crucial factor in corporate information disclosure. Consequently, firms must disclose their sustainability commitments to ensure long-term value creation (Horn et al., 2018). The low level of sustainability performance among firms led to emergence of institutions such as Carbon Disclosure Project (CDP), Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), World Business Council for Sustainable Development (WBCSD), and the International Sustainability Standards Board (ISSB) (Hales et al., 2016; Deloitte, 2023; IFRS, 2023).

Poor or non-disclosure sends a signal that such companies are environmentally unfriendly, which makes them unappealing to investors. The discourse on corporate sustainability has grown, emphasising environmental, social, and governance (ESG) considerations in decision-making processes, with sustainability disclosure being central to this, involving transparent communication of ESG practices (Orshi et al., 2023a). Sustainability disclosure, a key mechanism for companies to communicate their commitment to sustainable practices, enhances trust, credibility, and accountability, has been linked to improved financial performance, reduced risk exposure, and enhanced long-term shareholder value (Flammer, 2015). Moreover, institutional ownership significantly influences corporate behaviour and performance, with investors integrating ESG factors into investment decisions. They engage in proxy voting, shareholder resolutions, and dialogue to promote sustainable practices leading to long-term value maximisation (Gillan & Starks, 2003).

The motivation for this study arises from the recognition that sustainability disclosure is no longer just a corporate social responsibility (CSR) initiative, but a necessity for firms to remain competitive and attractive to investors. Despite the global trend toward sustainability, many firms in developing economies, including Nigeria, lag in disclosing their sustainability practices. This gap is concerning, given that poor or non-disclosure signals to investors that a company may not be environmentally responsible, which could harm its reputation and attractiveness to both institutional and individual investors. This study is therefore built on the premise that sustainability disclosure, alongside institutional ownership, has a direct and significant impact on the value of firms in Nigeria. It seeks to examine the role of sustainability disclosure, particularly in its economic, environmental, and social dimensions, and how these disclosures affect firm value as measured by Tobin's q, share price, and market-to-book value. Furthermore, the study explores the moderating role of institutional ownership in shaping corporate sustainability disclosure practices and how this, in turn, influences firm valuation. As such, this study posits a conceptual framework as shown in Figure 1. The outcome of this study is expected to enhance the scope of knowledge and understanding for scholars and practitioners, especially in developing economies where sustainability disclosure practices are still emerging. Furthermore, this research serves as a call to action for regulatory agencies to enforce the adoption of globally recognised sustainability standards, ensuring that firms in Nigeria align with international best practices for long-term value creation.

The paper is structured into five sections. Section 1 is the introduction. In Section 2, the paper reviews related literature and Section 3 presents the methodology adopted by the study. The results and discussion of data analysis is contained in Section 4, while the conclusion and recommendations are presented in Section 5.

## 2. Literature Review

Sustainability disclosure is the practice of companies voluntarily communicating information about their ESG performance to stakeholders, including investors, customers, employees, and communities (Eccles et al., 2014; Orshi et al., 2023b). It encompasses the reporting of a company's efforts and impacts related to sustainability initiatives, such as carbon emissions reduction, diversity and inclusion policies, and community engagement programmes (Lo & Sheu, 2007). Sustainability disclosure aims to provide transparency and accountability for a company's non-financial performance, crucial for long-term value creation and risk management. It enhances a company's reputation, mitigates risks, drives operational efficiencies, and fosters stakeholder engagement, leading to improved relationships with employees, suppliers, and communities, ultimately enhancing organisational resilience and adaptability (GRI, 2013).

Theoretically, the stakeholder hypothesis states that companies should consider the interests of all stakeholders, not just shareholders, when making business decisions (Freeman et al., 2010). This perspective suggests that companies can create long-term shareholder value and contribute to society and the environment by addressing stakeholders' concerns (Clarkson et al., 2008). Furthermore, stakeholder theory suggests that companies that effectively manage their relationships with stakeholders are better positioned to identify emerging opportunities and risks, leading to improved decision-making and long-term value creation. Sustainability disclosure facilitates communication, accountability, and trust, demonstrating commitment to transparency and stakeholder engagement. Thus, by considering the interests of stakeholders in their sustainability disclosure practices, companies can address societal and environmental challenges more effectively, thereby enhancing their competitiveness and resilience in the marketplace.

### *2.1 Economic disclosure and firm value*

Economic sustainability disclosure focuses on communicating a company's financial sustainability and performance to its stakeholders. The stakeholder theory posits that companies should address the concerns of all stakeholders, including shareholders, employees, and customers, in their decision-making process (Freeman et al., 2010). The disclosure of economic sustainability details a company's financial performance about its impact on various stakeholders (GRI, 2013) and promotes accountability and transparency, which are crucial for building stakeholder trust (Clarkson et al., 2008). By providing clear financial performance information, companies can increase trust among customers, employees, investors, and others, leading to higher firm value, improved reputation, and reduced perceived risk (Lozano, 2016).

In developed countries, based on stakeholder theory, firms that provide detailed economic disclosures tend to benefit from higher investor trust, reduced capital costs, and improved operational efficiency, thus enhancing a company's value (Caesaria & Basuki, 2017; Kurniawan et al., 2018; Linh et al., 2022). Economic sustainability disclosure enhances a firm's operational efficiency and innovation by measuring key metrics like resource usage, waste generation, and energy efficiency, leading to cost savings and process improvements (Bansal & DesJardine, 2014). However, Kristyanto and Sanjaya (2017) suggests that economic information doesn't significantly impact company value.

In contrast, in developing countries like Nigeria, economic disclosures are often inconsistent, reflecting the country's developing regulatory and capital market environments. While some Nigerian firms have embraced international sustainability standards, such as the GRI, economic disclosures in Nigeria are not yet mandatory, which leads to varied practices. Given this backdrop, it remains unclear whether economic disclosure in the Nigerian context has the same positive impact on firm value as observed in developed economies (Caesaria & Basuki, 2017; Kurniawan et al., 2018). Thus, the current body of research lacks sufficient evidence on the impact of economic sustainability disclosure on firm value in Nigeria. This study seeks to bridge this gap by evaluating the effect of economic disclosure on firm value in a developing market context. It is expected that economic disclosure is positively associated with firm value in Nigeria, as improved transparency can increase investor confidence, leading to higher market valuation.

$H_1$ Economic sustainability disclosure is positively associated with firm value in Nigeria

### 2.2 *Environmental disclosure and firm value*

Environmental sustainability disclosure involves the reporting of a company's environmental practices and its efforts to mitigate environmental impact. It is grounded in stakeholder theory and legitimacy theory. Companies disclose their environmental practices to maintain legitimacy with stakeholders, especially in industries that are heavily scrutinised for environmental impact (Deegan, 2002). According to the resource-based view of the firm, environmental sustainability can also be a source of competitive advantage, as firms that manage their environmental impacts efficiently can reduce operational costs and improve innovation (Hart, 1995). Disclosing environmental performance enhances stakeholder trust, gives firms competitive advantage and enhances value (Amran et al., 2014; Hossain et al., 2015; Emeka-Nwokeji & Osisioma, 2019; Abdi et al., 2020; Orshi et al., 2022a). It improves operational efficiency and innovation, resulting in cost savings, resource efficiency, and innovation, all of which raise the value of the company (Caesaria & Basuki, 2017; Li et al., 2018; Kurniawan et al., 2018).

In developed markets, where environmental regulations are stricter and more thoroughly enforced, companies that actively disclose their environmental efforts tend to enjoy better reputations, lower perceived risk, and improved operational efficiency. By demonstrating compliance with environmental laws and sustainability standards, these companies reduce legal liabilities and strengthen stakeholder trust, leading to enhanced firm value (Amran et al., 2014; Hossain et al., 2015; Nguyen et al., 2015; Li et al., 2018; Abdi et al., 2020). In contrast, Kristyanto and Sanjaya (2017), Setiadi et al. (2017) and Ratri and Dewi (2017) find a negative relationship between environmental disclosure and companies' value.

In Nigeria, however, environmental reporting is often voluntary, and there is no national mandate for firms to disclose their environmental impacts. This lack of mandatory regulation results in inconsistent reporting, as firms may not face the same legal pressures as their counterparts in developed countries. While some Nigerian firms have adopted international reporting standards, the effectiveness of environmental disclosure in influencing firm value remains contested, with some studies showing positive impacts (Akinlo & Iredele, 2014; Orshi et al., 2022a) and others revealing no significant effect (Fodio et al., 2013; Egbunike & Okoro, 2018; Amiolemen et al., 2018; Emeka-Nwokeji & Osisioma, 2019). The inconsistency in empirical evidence on the impact of environmental disclosure on firm value in Nigeria presents a significant gap in the literature. This study aims to address this by investigating the influence of environmental disclosure on firm value within Nigeria's unique regulatory and business environment. It is the study's expectation that environmental disclosure will have a positive effect on firm value, as companies that are transparent about their environmental practices may attract more environmentally conscious investors.

$H_2$ Environmental sustainability disclosure is positively associated with firm value in Nigeria

### 2.3 *Social disclosure and firm value*

Social sustainability disclosure is closely linked to stakeholder theory, as it focuses on a firm's impact on society, including issues such as employee welfare, community engagement, and diversity (Freeman et al., 2010). Firms disclose social information to build trust and credibility with stakeholders, enhancing their legitimacy (GRI, 2013). The signalling theory also applies, as companies use social disclosures to signal their commitment to ethical and socially responsible practices (Spence, 1973). Social sustainability disclosure can boost talent attraction and retention in the labour market by revealing companies' social initiatives and values, reducing recruitment and training costs, and increasing productivity (Bhattacharya et al., 2008; Clarkson et al., 2008; Peloza & Shang, 2011).

In developed countries, social sustainability disclosure has been shown to positively impact firm value by improving a company's reputation, brand loyalty, and stakeholder relationships. Gherghina et al. (2015), Jiang et al. (2016) and Abdi et al. (2020) find that firms in developed economies that disclosed their social initiatives attracted more socially conscious investors and consumers, leading to higher firm valuations. However, evidence in some climes demonstrated that social disclosure is not a driver of value (Garai, 2017; Horn et al., 2018). While in developing countries, the impact of social disclosure on firm value is less clear. For instance, social sustainability reporting in Nigeria is still underdeveloped. While some firms, particularly those with international affiliations, have begun to disclose their social initiatives, there is no mandatory requirement for social disclosure in the country. This lack of regulation leads to inconsistent reporting practices, with many firms only disclosing social information when it is necessary for maintaining a positive public image (Emeka-Nwokeji & Osisioma, 2019). As a result, the relationship between social disclosure and firm value in

Nigeria remains tenuous. While Syder et al. (2020) find that social disclosure has a significant positive effect on firm value in Nigeria, Amiolemen et al. (2018), Emeka-Nwokeji and Osisioma (2019) and Orshi et al. (2022b) report an adverse impact.

$H_3$ Social sustainability disclosure is positively associated with firm value in Nigeria

### 2.4 *Sustainability disclosure, institutional ownership and firm value*

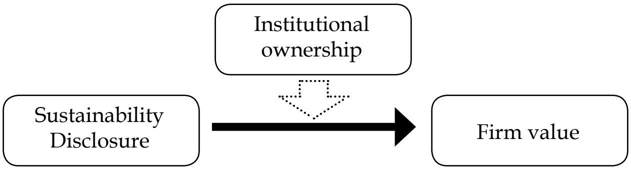
Stakeholder theory highlights the link between institutional ownership, firm value, and sustainability disclosure, with investors favouring companies with strong sustainability disclosures due to perceived risk reduction and long-term value (Flammer, 2015). Institutional ownership significantly impacts a company's value, influencing its performance and behaviour. Companies may face pressure to adopt sustainable practices, enhance governance, and enhance disclosure transparency (Gillan & Starks, 2003). The perceptions of ESG-related risks and opportunities held by institutional ownership are greatly influence sustainability disclosure. This, in turn, shapes the firm's value through active engagement and company behaviour.

In Nigeria, the ownership structure of companies is often characterised by significant institutional ownership, with large shareholders exerting considerable influence on corporate governance. Institutional investors, particularly those with long-term investment horizons, are increasingly integrating ESG factors into their investment strategies (Gillan & Starks, 2003). These investors tend to push companies toward greater transparency in sustainability disclosure and better corporate governance practices, which can enhance firm value (Flammer, 2015). Thus, institutional ownership plays a critical role in shaping corporate behaviour and sustainability practices. Institutional investors are likely to exert pressure on companies to adopt more robust sustainability disclosures, thereby improving transparency and accountability. Investor evaluations of a company's ESG performance are influenced by it, which eventually leads to improvements in the behaviour and performance of the company (Khan et al., 2016). According to Buchanan et al. (2018), influential institutional shareholders strengthen the relationship between corporate social responsibility and firm value.

While institutional ownership is known to influence corporate governance and sustainability practices in developed markets, there is limited research on its moderating role in the relationship between sustainability disclosure and firm value in Nigeria. Institutional ownership is expected to strengthen the positive relationship between sustainability disclosure (economic, environmental, and social) and firm value in Nigeria, as institutional investors push for higher standards of corporate transparency and sustainability practices.

$H_4$ Institutional ownership is positively associated with firm value in Nigeria
$H_5$ Institutional ownership enhances the relationship between sustainability disclosure (economic, environmental, and social) and firm value in Nigeria

**Figure 1. Conceptual Framework**




## 3. Methodology

The study uses a descriptive-correlational research design to determine the relationship between dependent and independent variables. A sample of 43 firms, representing 76.79% of the population, was extracted based on delisting and technical suspension by the Nigerian Exchange Group (NGX) (see Table 1).

**Table 1. Population and Sample of the Study**

| S/N | Sector | Population | Sample | Percentage |
|---|---|---|---|---|
| 1 | Agriculture | 4 | 4 | 100% |
| 2 | Conglomerates | 3 | 3 | 100% |
| 3 | Consumer goods | 20 | 16 | 80% |
| 4 | Healthcare | 8 | 6 | 75% |
| 5 | Industrial goods | 11 | 8 | 72.73% |
| 6 | Natural resources | 3 | 2 | 66.67% |
| 7 | Oil and gas | 7 | 4 | 57.14% |
| | Total | 56 | 43 | 76.79% |

The study analyses data from annual reports and daily price listings of the NGX from 2014 to 2021, focusing on sustainability disclosure and firm value. It introduces an industry dummy to estimate industries' contribution to firm value based on sustainability performance disclosures. Institutional ownership is a moderating variable. The study also presents capital structure and total asset size as control variables. To assess sustainability disclosure, a checklist was developed based on the GRI and the SASB. The checklist was tailored to the Nigerian context, reflecting the specific economic, environmental, and social reporting requirements of Nigerian firms. This is presented in Table 2.

**Table 2. Sustainability Disclosure Checklist**

| Economic disclosure | Environmental disclosure | Social disclosure |
|---|---|---|
| Economic performance, market presence, indirect economic impacts, procurement practices | Materials, energy, water, biodiversity, emissions, effluents and waste, product and services, environmental impact, compliance to environmental laws and regulations | Local community, donations and gifts, employee health and safety, customer and complaints |

*Note*: Extracts from GRI 4.

The variables of the study are defined and measured in Table 3.

**Table 3. Variables Definition and Measurement**

| S/N | Variable | Type | Proxy | Measurement | Source |
|---|---|---|---|---|---|
| 1 | Firm value | Dependent | Tobin's q (TQ) | Book value of debt + Market value of equity / Total assets | Utami (2015) |
| | | | Market share price (SP) | (Opening + closing market price per share) / 2 | Amiolemen et al. (2018) |
| | | | Market to book value (MTBV) | Market value per share / Book value per share | Perez-Calderon et al. (2012) |
| 2 | Book value of equity | Independent | Book value of equity (BVE) | (Total assets – total liabilities)/number of outstanding common shares | Burnett et al. (2011); Loh et al. (2017) |
| 3 | Abnormal earnings | Independent | Earnings per share (EPS) | (Net income – preferred dividends)/outstanding common shares | Loh et al. (2017) |
| 4 | Sustainability disclosure | Independent | Economic disclosure index (ECDI) | '1' for item disclosed; '0' for item not disclosed (total economic items disclosed / total economic items disclosable) | Kurniawan et al. (2018) |
| | | | Environmental disclosure index (EVDI) | '1' for item disclosed; '0' for item not disclosed (total environmental items disclosed / total environmental items disclosable) | Kurniawan et al. (2018); Emeka-Nwokeji & Osisioma (2019) |
| | | | Social disclosure index (SCDI) | '1' for item disclosed; '0' for item not disclosed (total social items disclosed / total social items disclosable) | Kurniawan et al. (2018); Emeka-Nwokeji & Osisioma (2019) |

| S/N | Variable | Type | Proxy | Measurement | Source |
|---|---|---|---|---|---|
| 5 | Institutional ownership | Moderating | Institutional ownership (INST) | (Total units of shares owned by institutions * nominal price per share) / total units of outstanding shares * nominal price per share) * 100% | Buchanan et al. (2018) |
| 6 | Firm size (FSIZ) | Control | Total assets | Logarithm of total assets | Diantimala (2018) |
| 7 | Capital structure (CAPS) | Control | Debts capital to assets | Total debt / total assets | Gherghina & Vintila (2016) |

This study adapts the Feltham and Ohlson (1995) linear information model, which is mostly used in firm value-related studies (Loh et al., 2017). The model is stated as follows:

$$FV_{i,t} = \beta_0 + \beta_1 BVE_{i,t} + \beta_2 AE_{i,t} + \beta_3 TE_{i,t} + \mu_{i,t} \tag{1}$$

Where $FV_{i,t}$ is the value of firm $i$ for time period $t$; $BVE_{i,t}$ is the opening book value of equity of firm $i$ for time period $t$; $AE_{i,t}$ is the abnormal earnings of firm $i$ for time period $t$; and $TE_{i,t}$ is the transitory earning of firm $i$ for time period $t$. According to the model, transitory earning is any other non-financial or extra-financial variable that may affect the value of a firm directly or indirectly (Feltham & Ohlson, 1995).

Therefore, substituting variables of this study into model (1) gives rise to model (2), which expresses the relationship between firm value and independent as well as control variables:

$$FV_{i,t} = \beta_0 + \beta_1 BVE_{i,t} + \beta_2 EPS_{i,t} + \beta_3 ECDI_{i,t} + \beta_4 EVDI_{i,t} + \beta_5 SCDI_{i,t} + \beta_6 INST_{i,t} + \beta_7 FSIZ_{i,t} + \beta_8 CAPS_{i,t} + \mu_{i,t} \tag{2}$$

Furthermore, model (3) introduces the interaction between independent and moderating variables. It is used to determine the moderating effect or otherwise of institutional ownership on the relationship between sustainability disclosure and firm value and is stated thus:

$$FV_{i,t} = \beta_0 + \beta_1 BVE_{i,t} + \beta_2 EPS_{i,t} + \beta_3 ECDI_{i,t} + \beta_4 EVDI_{i,t} + \beta_5 SCDI_{i,t} + \beta_6 INST_{i,t} + \beta_7 FSIZ_{i,t} + \beta_8 CAPS_{i,t} + \beta_9 ECDI{*}INST_{i,t} + \beta_{10} EVDI{*}INST_{i,t} + \beta_{11} SCDI{*}INST_{i,t} + \mu_{i,t} \tag{3}$$

## 4. Results and Discussion

### *4.1 Descriptive statistics*

The results of descriptive analysis are presented in Table 4.

**Table 4. Descriptive Statistics of the Variables**

| Variable | Obs. | Mean | Std. Dev. | Min. | Max. |
|---|---|---|---|---|---|
| *Dependent variable* | | | | | |
| Tobin's q (TQ) | 330 | 1.41 | 1.30 | 0 | 8.99 |
| Market to book value (MTBV) | 332 | 2.79 | 6.75 | 0 | 75.57 |
| Share price (SP) | 332 | 57.52 | 198.55 | 0.20 | 1530.75 |
| *Adopted from the Ohlson model* | | | | | |
| Book value of equity (BVE) | 342 | 15.52 | 19.64 | -5.12 | 91.0 |
| Earnings per share (EPS) | 334 | 2.76 | 7.92 | -7.32 | 57.63 |
| *Independent variables* | | | | | |
| Economic disclosure index (ECDI) | 343 | 0.51 | 0.24 | 0.25 | 1 |
| Environmental disclosure index (EVDI) | 343 | 0.12 | 0.22 | 0 | 1 |
| Social disclosure index (SCDI) | 344 | 0.73 | 0.24 | 0 | 1 |
| *Moderating variable* | | | | | |
| Institutional ownership (INST) | 344 | 0.56 | 0.23 | 0 | 0.91 |
| *Control variables* | | | | | |
| Capital structure (CAPS) | 328 | 0.61 | 0.26 | 0.04 | 2.23 |
| Firm size (FSIZ) | 343 | 7.24 | 0.90 | 5.24 | 9.31 |

*Note*: Observations, means, standard deviations, minimum values and maximum values are based on STATA 17.0 Output, 2024.

Table 4 presents descriptive statistics for the dependent, independent, moderating, and control variables from a sample of companies in Nigeria. Tobin's q (TQ), a key indicator of firm value, shows a mean of 1.41. This implies that, on average, Nigerian companies are valued slightly higher than their replacement costs, suggesting some level of investor confidence in their future earnings potential. However, the standard deviation of 1.30 indicates substantial variability in Tobin's q across the sample, reflecting different levels of investor perception about the firms' market value. The minimum value of 0 suggests that some firms in Nigeria might be undervalued or facing financial challenges, while the maximum value of 8.99 reflects firms that are highly valued, possibly due to strong growth potential or significant intangible assets. The mean market-to-book (MTBV) ratio of 2.79 suggests that Nigerian firms are, on average, valued at nearly three times their book value, indicating a positive market perception. The high standard deviation of 6.75, however, points to a wide range of firm valuations. The maximum value of 75.57 highlights that certain firms are heavily favoured by investors, possibly due to future growth prospects or strategic advantages. Conversely, the minimum value of 0 indicates that some firms have a very low market value relative to their book value, potentially reflecting poor financial performance or market scepticism. Share prices (SP) exhibit a significant range, with a mean value of 57.52 and a very high standard deviation of 198.55, indicating vast differences between firms. Some Nigerian firms have share prices as low as 0.20, reflecting low investor interest or financial distress, while others are valued at up to 1530.75, which could indicate firms with significant market dominance, strong financial health, or strategic importance in the Nigerian economy. The wide range in share prices can also reflect market inefficiencies or varying levels of liquidity in the Nigerian stock market.

As per the adopted variables from the Ohlson model, the average book value of equity (BV) of 15.52 suggests moderate equity holdings among Nigerian firms. The standard deviation of 19.64 indicates significant variation in equity levels, with some firms having negative equity (-5.12), which may indicate accumulated losses, while others have robust equity positions, reaching up to 91.0. This wide range reflects the varying financial structures of companies in different sectors of the Nigerian economy. In addition, earnings per share (EPS), an indicator of abnormal earnings, has a mean of 2.76, suggesting that on average, Nigerian firms generate modest earnings for shareholders. The standard deviation of 7.92 highlights significant variability, with some firms experiencing losses (min: -7.32) and others reporting substantial profits (max: 57.63). This wide disparity in earnings reflects the challenges and opportunities faced by firms in Nigeria's diverse economic landscape.

On proxies of sustainability disclosure, the mean economic disclosure (ECDI) index of 0.51 indicates that, on average, Nigerian firms disclose about half of the economic information expected by international standards. The minimum value of 0.25 and the maximum value of 1 suggest that while some firms are highly transparent, others are much less forthcoming with their economic disclosures. The moderate standard deviation of 0.24 suggests some variation in disclosure practices, likely reflecting differences in firm size, industry requirements, and governance practices in Nigeria.

Moreover, environmental disclosure (EVDI) is notably low among Nigerian firms, with a mean of 0.12, indicating that environmental reporting is minimal. The standard deviation of 0.22 suggests substantial variation between firms, with many not providing any environmental disclosures (min = 0) and only a few fully complying with environmental reporting standards (max = 1). This finding reflects the limited regulatory pressure and lack of mandatory environmental reporting requirements in Nigeria.

Furthermore, social disclosure (SCDI) is relatively robust compared to economic and environmental disclosures, with a mean of 0.73. This suggests that Nigerian firms place more emphasis on social reporting, possibly due to growing awareness of CSR in the country. The minimum value of 0 indicates that some firms do not engage in social reporting at all, while others fully disclose their social impact, reflecting a wide spectrum of corporate engagement in social issues. The mean institutional ownership (INST), the moderating variable, of 0.56 suggests that, on average, 56% of the shares of Nigerian firms are owned by institutional investors. The standard deviation of 0.23 indicates some variation in ownership structure, with certain firms having no institutional ownership (min = 0) and others having as much as 91% institutional ownership. This reflects the growing influence of institutional investors in shaping corporate governance and performance in Nigeria.

Table 4 also presents the mean capital structure (CAPS) (one of the control variables) ratio of 0.61 indicates that Nigerian firms have, on average, 61% debt relative to equity, reflecting a moderate level of leverage. The standard deviation of 0.26 suggests variability in debt levels across firms, with some firms having very low leverage (min = 0.04) and others operating with high levels of debt (max = 2.23). This variation likely reflects differences in financing strategies and access to capital across industries. In addition, firm size (FSIZ), measured as the natural logarithm of total assets, has a mean of 7.24, indicating moderate firm size across the sample. The standard deviation of 0.90 indicates some variability, with smaller firms (min = 5.24) and larger firms (max = 9.31) included in the study. The range reflects the diversity of firms in Nigeria, from smaller companies to large, well-established firms with substantial asset bases.

The descriptive statistics reveal a wide range of firm characteristics in Nigeria, particularly in terms of firm value, earnings, and sustainability disclosure practices. While social disclosures appear relatively strong, environmental reporting remains minimal, reflecting the lack of regulatory requirements for sustainability reporting in Nigeria. Institutional ownership shows a significant presence, which could influence corporate governance and sustainability practices. The variations observed in the data highlight the diverse corporate landscape in Nigeria, providing a rich context for further analysis of the relationship between sustainability disclosure, firm value, and ownership structure.

## *4.2 Correlation coefficients*

The results of the Pearson's pairwise correlation analysis of the study variables is presented in Table 5.

**Table 5. Correlation matrix of dependent and explanatory variables**

| | TQ | MTBV | SP | BVE | EPS | ECDI | EVDI | SCDI | INST | CAPS | FSIZ | VIF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TQ | 1.000 | | | | | | | | | | | |
| MTBV | | 1.000 | | | | | | | | | | |
| SP | | | 1.000 | | | | | | | | | |
| BVE | 0.090 | 0.119* | 0.402* | 1.000 | | | | | | | | 1.88 |
| EPS | 0.531* | 0.468* | 0.873* | 0.515* | 1.000 | | | | | | | 1.39 |
| ECDI | 0.099 | 0.103 | 0.312* | 0.419* | 0.294* | 1.000 | | | | | | 1.85 |
| EVDI | 0.108 | 0.054 | 0.117* | 0.179* | 0.133* | 0.433* | 1.000 | | | | | 1.37 |
| SCDI | 0.044 | 0.087 | 0.159* | 0.161* | 0.190* | 0.377* | 0.353* | 1.000 | | | | 1.37 |
| INST | 0.171* | 0.127* | 0.167* | 0.273* | 0.201* | 0.263* | 0.096 | 0.114* | 1.000 | | | 1.21 |
| CAPS | 0.251* | 0.057 | 0.069 | -0.118* | 0.025 | -0.134* | -0.159* | -0.141* | -0.059 | 1.000 | | 1.08 |
| FSIZ | 0.032 | 0.088 | 0.284* | 0.582* | 0.360* | 0.627* | 0.442* | 0.443* | 0.392* | -0.218* | 1.000 | 2.66 |

*Notes*: * significant at 5%. Results of the correlation analysis are based on STATA 17.0 Output, 2024.

Table 5 shows that the coefficients among all the study variables fall within the threshold of 0.8 (Hockings & Pendelton, 1983; Craney & Surles, 2002; Gujarati, 2004). In spite of this, to further verify absence of multicollinearity among explanatory variables, the variance inflation factor (VIF) for multicollinearity is conducted based on the suggestion of Hockings and Pendelton (1983) and Craney and Surles (2002) that the cut-off for large VIF of 5 are based on the associated R2 of 0.80, which is further confirmed by Cohen et al. (2013) and Akinwande et al. (2015). The VIF presented in Table 6 for each explanatory variable is less than 5, implying that there is absence of perfect multicollinearity among the variables.

## *4.3 Other diagnostic tests*

The validity of statistical inferences relies on diagnostic tests on the data hence, post-estimation tests were conducted for data normality, multicollinearity, Breusch and Pagan Lagrange multiplier, contemporaneous correlation, panel serial correlation and group-wise heteroscedasticity. The summary of results of these tests is presented in Table 6.

**Table 6. Results of Diagnostic Tests**

| Test | Statistic | P-value | Interpretation |
|---|---|---|---|
| *Data normality* | | | |
| Skewness/kurtosis (adjusted chi2) | >1.96 | <0.05 | Positively skewed |
| Shapiro-Wilk (z-scores) | >1.96 | <0.05 | Abnormally distributed |
| *Multicollinearity* | | | |
| Variance inflation factor | VIFs< 5 | Mean=1.60 | Absent |
| *Contemporaneous correlation* | | | |
| Pesaran's cross-sectional dependence | 7.520 | 0.0000 | Present |
| *Panel serial correlation* | | | |
| Wooldridge's panel autocorrelation | 8.740 | 0.0051 | Present |
| *Group-wise heteroscedasticity* | | | |
| Modified Wald test | 72908.78 | 0.0000 | Present |

*Note*: Results of the diagnostic tests are based on STATA 17.0 Output, 2024.

From Table 6, the results of the skewness/kurtosis and Shapiro-Wilk tests indicate that outliers are present among standard residuals of the GLS regression. Although, there is absence of multicollinearity among explanatory variables of the study based on the correlation coefficients and VIFs, the presence of contemporaneous correlation, panel serial correlation and group-wise heteroscedasticity in the panel adversely affect parameter estimates and bias standard errors (Cameron, 2009). Therefore, to correct these abnormalities and ensure the estimation of parameter coefficients are consistent, efficient and standard error bias free, the study adopts the panel corrected standard error (PCSE) estimator as suggested by Beck and Katz (1995, 1996).

### *4.4 Discussion of regression results*

Table 7 presents the results derived from the Prais and Winsten PCSE regression, focusing on the relationship between sustainability disclosure (economic, environmental, and social) and firm value, with institutional ownership as a moderating variable.

**Table 7. PCSE Regression Results for Fitted Values of TQ, MTBV and SP**

| Variable | TQ | | | MTBV | | | SP | | |
|---|---|---|---|---|---|---|---|---|---|
| | z-value | | | z-value | | | z-value | | |
| | (IV) | (MV) | (IV*MV) | (IV) | (MV) | (IV*MV) | (IV) | (MV) | (IV*MV) |
| BE | -2.19** | -2.19** | -2.25** | -2.38** | -2.39** | -2.31** | -0.77 | -0.77 | -0.99 |
| EPS | 6.11*** | 6.05*** | 6.13*** | 6.87*** | 6.77*** | 6.72*** | 9.14*** | 9.14*** | 8.96*** |
| ECDI | 1.18 | 1.13 | -1.31 | 0.23 | 0.21 | -0.41 | 4.63*** | 4.62*** | -1.29 |
| EVDI | 3.62*** | 3.64*** | 1.20 | 1.07 | 1.19 | 2.12** | 0.44 | 0.48 | 2.50** |
| SCDI | -0.51 | -0.23 | 1.04 | 0.66 | 0.76 | 0.35 | 0.12 | 0.17 | 1.03 |
| CAPS | 3.66*** | 3.80*** | 3.73*** | 0.56 | 0.58 | 0.60 | 4.34*** | 4.38*** | 4.52*** |
| FSIZ | -2.01** | -3.16*** | -3.22*** | -0.61 | 0.90 | -0.81 | -2.83*** | -3.20*** | -2.48** |
| INST | | 5.09*** | 1.70* | | 1.43 | 0.25 | | 0.95 | -1.74* |
| ECDI_ INST | | | 1.62 | | | 0.37 | | | 3.20*** |
| EVDI_ INST | | | 1.23 | | | -0.96 | | | -2.17** |
| SCDI_ INST | | | -0.76 | | | 0.27 | | | -0.46 |
| $R^2$ | 0.3890 | 0.4112 | 0.4135 | 0.2459 | 0.2531 | 0.2537 | 0.7815 | 0.7817 | 0.7864 |
| $R^2$ change | | 0.022*** | 0.002 | | 0.007* | 0.001 | | 0.000 | 0.005* |
| F-value | 28.10*** | 26.88*** | 19.55*** | 14.40*** | 13.05*** | 9.43*** | 157.96*** | 137.83*** | 102.08*** |

*Notes*: *** significant at 1%; ** significant at 5%; * significant at 10%. The moderating effect of institutional ownership on the relationship between dimensions of sustainability disclosure and firm value are based on STATA 17.0 Output, 2024.

Table 7 reveals that earnings per share (EPS) across all three firm value proxies – Tobin's q, market-to-book value (MTBV), and share price (SP) – remains a highly significant and positive variable, even when institutional ownership is introduced as a moderator. For Tobin's q, EPS shows a z-value of 6.11, while for SP, the z-value reaches 9.14. This strong relationship collaborates with Burnett et al. (2011) and Loh et al. (2017), and aligns with signalling theory where higher earnings indicate better financial performance, thereby attracting more investor interest and raising firm value. The consistent significance across all firm value proxies further reinforces the importance of profitability in determining firm value in Nigerian companies. In addition, EVDI has a significant positive effect on Tobin's q (z-value of 3.62), suggesting that firms engaging in environmental disclosures gain market value through enhanced legitimacy and investor confidence. This aligns with legitimacy theory, which posits that firms disclose environmental information to gain social acceptance and meet stakeholder expectations.

However, when institutional ownership is introduced as a moderator, the interaction term (EVDI_INST) becomes significant with a negative coefficient for SP (-2.17), indicating that institutional investors might view environmental initiatives as potentially costly or not immediately rewarding in terms of short-term financial gains.

ECDI has a significant positive impact on SP (z-value of 4.63), suggesting that investors reward transparency in financial performance with higher stock prices. However, when the interaction term between ECDI and institutional ownership (ECDI_INST) is introduced, it maintains significance for SP, showing that institutional investors further enhance the positive effect of economic disclosure. This aligns with stakeholder theory; as institutional investors are known to demand higher levels of transparency. However, the contradictory result appears in the insignificant effect of ECDI on Tobin's q and MTBV, suggesting that the market may not uniformly reward economic disclosures when considering broader firm value measures such as Tobin's q and MTBV.

SCDI is insignificant across all firm value proxies, suggesting that social responsibility initiatives are not a significant determinant of firm value in Nigeria. This is contrary to expectations derived from stakeholder theory, which posits that firms engaging in social responsibility would see enhanced reputational benefits and higher firm value. The insignificant or weak impact of SCDI may reflect a lack of integration of CSR activities into core business strategies or a perception among investors that these initiatives do not directly contribute to financial performance.

Capital structure consistently shows a positive and significant impact on Tobin's q (z-value of 3.66) and SP (z-value of 4.34), supporting the notion that firms with higher leverage are more highly valued by the market. This result aligns with traditional finance theories, which argue that moderate levels of debt can enhance firm value through tax benefits and greater managerial discipline. This significant finding suggests that investors in Nigerian companies may view firms with debt as having greater growth potential.

Institutional ownership has mixed results as a moderating variable. While it has a positive and significant effect on Tobin's q (z-value of 5.09), it shows no significant effect on MTBV and a weak negative effect on SP (-1.74). This finding may reflect the fact that institutional investors in Nigeria are primarily focused on improving governance and financial disclosures (e.g., ECDI) rather than CSR activities (e.g., SCDI), which may not yield immediate financial returns.

The policy implications of these findings are that regulatory bodies in Nigeria should consider implementing more stringent guidelines for sustainability reporting, particularly in environmental and social disclosures, to encourage firms to engage more in these practices; Institutional investors play a critical role in amplifying the positive effects of economic and environmental disclosures. Policymakers should foster a regulatory environment that encourages institutional investors to take an active role in shaping corporate governance and disclosure practices. While economic disclosures are valued by the market, the lack of significance for social disclosures suggests a gap in the integration of CSR into corporate governance. Policymakers should encourage firms to adopt holistic sustainability strategies that link social initiatives to financial performance.

### *4.5 Test of research hypotheses*

For $H_1$, economic disclosure (ECDI) has a significant positive effect on share price with a z-value of 4.62, significant at the 1% level. This finding is consistent with stakeholder theory, which argues that firms that disclose more economic information increase transparency, enhancing investor confidence. By communicating their financial performance and strategy, these firms attract investment, thus driving up share prices. This result aligns with Caesaria and Basuki (2017) and Kurniawan et al. (2018), who also find that economic disclosures positively influence firm value in various contexts. In the Nigerian setting, this result suggests that investors are sensitive to detailed economic information, which helps them make informed decisions.

For $H_2$, environmental disclosure (EVDI) significantly impacts Tobin's q with a z-value of 3.64, significant at the 1% level. This outcome supports the growing emphasis on environmental sustainability globally, where investors favour companies that show a commitment to mitigating environmental risks. According to legitimacy theory, firms that disclose environmental information signal to the market their adherence to global sustainability standards, thus improving their market value. Hossain et al. (2015), Kurniawan et al. (2018) and Emeka-Nwokeji and Osisioma (2019) also confirm this result. In Nigeria, this reflects increasing awareness of environmental issues and the role of sustainability in firm valuation, although environmental disclosure remains underdeveloped.

For $H_3$, SCDI shows a significant but negative relationship with Tobin's q and share price. Contrary to theoretical expectations, social disclosure appears to have a negative impact on firm value in Nigeria. While stakeholder theory suggests that firms engaging in social responsibility activities should see enhanced reputation and increased value, the result here could indicate that the costs associated with social initiatives in Nigeria outweigh the perceived benefits, or that social disclosures are not as highly valued by the market as economic or environmental disclosures. This finding is in line with Garai (2017) and Emeka-Nwokeji and Osisioma (2019) that social disclosure insignificantly affects value in India and Nigeria respectively. However, it is contrary to studies like those by Gherghina and Vintila (2016) and Abdi et al. (2020), who find a significant impact of social disclosure on firm value. The insignificant impact in Nigeria may be due to the perception that CSR activities do not yield immediate financial returns or that they are seen as additional costs without clear benefits.

For $H_4$, institutional ownership positively impacts Tobin's q, with a z-value of 5.09, significant at the 1% level. Institutional ownership plays a critical governance role in firms by promoting transparency and demanding higher disclosure standards. This aligns with stakeholder theory, which posits that large shareholders, such as institutional investors, monitor management more effectively, ensuring that firms adhere to best practices in corporate governance and sustainability. The presence of institutional investors also enhances investor confidence, thus raising firm value. This result is consistent with previous research, such as Gillan and Starks (2003), which highlighted the influence of institutional investors in promoting firm value through their monitoring role.

For H5, the interaction term for institutional ownership and environmental disclosure (EVDI_INST) is insignificant for Tobin's q and share price. The lack of a significant moderating effect suggests that while institutional investors value economic disclosures, they may not prioritise environmental disclosures as highly. This could reflect a short-term focus among institutional investors in Nigeria or a general lack of emphasis on environmental sustainability in investment decisions.

## 5. Conclusion

This study concludes that economic and environmental disclosures have significant effects on firm value in Nigeria, particularly when institutional ownership is considered. Institutional investors are shown to enhance the positive effects of economic disclosure, while they may view environmental disclosures with some scepticism in terms of short-term financial gains. Social disclosure, however, remains insignificant in its impact on firm value, indicating a need for firms to better align their CSR activities with core business strategies and investor expectations. Consequently, the study recommends that the Nigerian government should introduce mandatory sustainability reporting standards, particularly for environmental and social disclosures, to ensure more consistent and transparent reporting across firms. In addition, there is a need to educate investors on the long-term financial benefits of social disclosures and CSR activities, which can enhance firm value through improved reputation and stakeholder trust. Moreover, firms should actively engage institutional investors in shaping their sustainability strategies, as these investors can provide critical oversight and governance that aligns sustainability practices with financial performance.

Further studies can explore the long-term effects of sustainability disclosures on firm value to understand whether social disclosures yield delayed financial benefits; investigate the impact of sustainability disclosures on firm value across different sectors in Nigeria, as some industries may have more immediate incentives to engage in CSR activities than others; and explore how governance frameworks influence the quality of sustainability disclosures and their subsequent effect on firm value.

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