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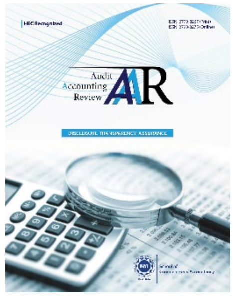

Title: **Sustainability Disclosure, Corporate Tax, and the Value of Quoted Firms in Industrial Goods Sector in Nigeria**

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Sustainability Disclosure, Corporate Tax, and the Value of Quoted Firms in Industrial Goods Sector in Nigeria

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Abstract

This study examines the moderated effect of corporate tax on the relationship between sustainability disclosure and the value of industrial goods firms listed on the Nigeria Exchange Group from 2013 to 2022. The study adopted the modified Linear Information Model of firm value using Generalized Method of Moments (GMM) for regression via Stata. The results reveal that economic and environmental disclosure performances have a positive and significant effect on firm value. Moreover, results of this research reveal that Environmental performance disclosure has a positive and significant effect on the value of listed industrial goods firms in Nigeria. Corporate tax has a positive and significant moderating effect on economic disclosure and the value of listed industrial goods firms in Nigeria. However, disclosing social performance related activities has a negative but significant effect. The study recommends that listed firms in Nigeria should keep reporting their economic and environmental performance activities, although more awareness regarding social disclosure be encouraged.

***Keyword*:** corporate tax, firm value, price-book-value, stakeholder theory, sustainability disclosure

Introduction

Businesses traditionally reported gains only but attention has now shifted from reporting gains alone to reporting activities that generate these gains, as well as their effects on the socioeconomic lives of different players. This is due to the fact that future generations may suffer, if the activities of most entities are not checkmated. Many corporate bodies have been criticized for ineffective management of their immediate societies, resulting in poor environmental impacts (Lazona, 2015; Manning et al., 2018). Efforts to bridge this gap birthed the concept of sustainability.

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Sustainability is the ability to live and fulfil the socioeconomic needs of people without jeopardizing their future needs. Three important dimensions for sustainable development were emphasized in the report of the United Nations World Commission on Environment and Development (Brundtland, 1987). These included environmental protection, economic development, and social equity (Bashiru et al., 2022). KPMG (2022) also posited that sustainability reporting is reporting environmental, social, and economic information as key components of corporate transparency and accountability. These components are the Triple Bottom Line and focal points of research in sustainability (Elkington, 1994).

According to Nobanee and Ellili (2016), sustainability is feeding the public with details on economic, social, and environmentally related business activities. It entails reports on the Triple Bottom Line as presented to all stakeholders. These reports depict the extent to which businesses implement their various sustainability agenda.

Stakeholder theory stresses the responsibility of corporate entities to different stakeholders who have unique interests to protect. Therefore, stakeholder theory is one of the means through which the enterprise sustainability disclosure can be analyzed. It opines that the success of a corporate body is not only a function of its financial performance but also requires a careful analysis of how it manages its relationships with various stakeholders. Communicating sustainability efforts by firms enhances trust with an eventual positive impact on firm value (Bello & Abdullahi, 2024).

Firm value indicates the total economic worth of a corporate entity which reflects its ability to generate profits or cash flows. It also represents the entity's sum of all claims including both equity and debt holders. There are three different ways of measuring firm value: market value, intrinsic value, and book value (Naparin & Dina, 2023). Book value is the net value of a firm based on its bookkeeping records, while the market value of a firm is based on the trading of its shares. The intrinsic value represents future cash flows from dividends and capital gains. The current study used price-to-book-value method to measure firm value due to its simplicity and clarity, also keeping in view the fact that industrial goods sector is heavy-asset-based. It explored the moderating effect of corporate tax on the relationship between sustainability disclosure and the value of quoted industrial goods firms listed on the Nigeria Exchange Group.

Sustainability disclosure has attracted significant attention in the recent past. This has made corporate sustainability one of the most explored areas in the contemporary accounting and finance literature. This area of study, however, remains unsaturated as more empirical works using alternative variables and methodologies are needed.

Literature shows that studies have examined sustainability reporting in relation to some firm-specific characteristics, such as firm size and age (Igbinovia & Agbadua, 2023; Setioningsih & Budiarti, 2024; Yaghoub et al., 2021), industry sensitivity (Qureshi et al., 2020), corporate governance mechanisms (Bello & Abdullahi, 2024; Clarrisa & Rasmini, 2018), ownership structure (Adzor et al., 2022; Sabiya et al., 2024; Teryima, 2023), board diversity (Masmoudi & Barhoumi, 2023), and intellectual capital (Baba & Manaf, 2017). Others have explored sustainability disclosure through various theoretical lenses, such as the stakeholder theory (Fernandez-Feijoo et al., 2014) and agency theory (Bashiru et al., 2022).

Bello and Abdullahi (2024), Emeka (2023), Orshi et al. (2022), and some other researchers relied on traditional financial performance measures to measure the effects of sustainability disclosure on firm performance. Most of the studies used content analysis of the Global Reporting Initiative (GRI) framework, leaving out alternative measures.

This study seeks to bridge key gaps in the literature by first employing Price-to-Book-Value (PBV)—a market-based measure—as an alternative proxy for firm value. Secondly, it introduces the MachameRatios Database as the empirical basis to measure sustainability disclosure, deviating from the traditional GRI-based scoring approach. Thirdly, it introduces corporate tax as a novel moderating variable. Moreover, the study focuses on industrial goods firms, the sector which has received less attention despite its contribution to economic development.

The main objective of this study is to establish the moderating effect of corporate tax on the relationship between sustainability disclosure and the value of listed industrial goods firms in Nigeria. Specifically, the study aims to

- Examine the impact of environmental, social, and economic disclosures on the value of quoted firms in the industrial goods sector in Nigeria.

- Analyze the moderating effect of corporate tax (CT) on the relationship between sustainability disclosure and the value of listed firms in the industrial goods sector in Nigeria.

The following null hypotheses are put forth to help achieve the objectives:

H_{01}: Environmental, social, and economic disclosures do not have any significant effect on the value of listed industrial goods firms in Nigeria.

H_{02}: Corporate tax (CT) does not moderate the relationship between sustainability disclosure and the value of listed firms in the industrial goods sector in Nigeria.

Literature Review

This section covers the concepts of sustainability reporting, corporate tax, and firm value, as well as the highlights of some previous empirical studies and the theoretical framework of the current study.

The Concept of Sustainability and Sustainability Reporting

The United Nations World Commission on Environment and Development (WCED), popularly called the Brundtland Report (1987) and formerly called "Our Common Future," is germane in understanding the concept of sustainability. The report is important in sustainability discourse due to stressing the need for an equitable approach to development, harmonizing the Triple Bottom Line. It introduced the generally accepted definition of sustainable development as achieving the needs of today without jeopardizing the needs of the future generations. Economic growth, environmental protection, and social equity represent the Triple Bottom Line and the focal points of contemporary research in sustainability (Elkington, 1994).

Muñoz et al. (2008) viewed sustainability as strategies that facilitate sustainable development; achieving human development in an inclusive, connected, equitable, prudent, and secure manner. Fisk (2010) linked the concept with 3Ps representing people, planet, and profit. This implies that to secure opportunity, operational advancement, and competitive advantage, a firm must be responsible both for its people and the environment and should strive to be profitable. Thus, from the aforementioned, sustainability is a people-centered concept emphasizing socioeconomic justice and environmental protection.

Bello and Abdullahi (2024) stated that sustainability reporting is a tool that provides a general overview of corporate operations and their impacts on the society and the environment. It deals with issues such as social responsibility initiatives, carbon emissions, supply chains, energy consumption, and so on. Therefore, sustainability reporting is a corporate demonstration of its commitment to transparency, which fosters trust among different stakeholder groups (Fombrun & Shanley, 1990).

The Concept of Firm Value

Putra et al. (2021) asserted that investors' view of the company's level of success is regarded as firm value. It is a function of stock price. Thus, an increase in the stock price of a firm means an increase in firm value and vice versa. Wahyudi and Prawesti (2006) considered firm value as a firm's market value. Thus, firm value is the amount for which the buyer is willing to buy the firm in the market. Kurshev and Strebulaev (2015) saw firm value as the overall worth of a firm. These two views are considered to be sound because the stock price and economic worth of a firm can be measured.

The Concept of Corporate Tax

Taxation is the process of generating sums which individuals or groups contribute for public development and administration. To Afuberoh and Okoye (2014), it is a civic duty of every citizenry. Ojo (2008) defined taxation as the science of imposing taxes on the citizenry. Also, Aransiola (2013) defined corporate tax as the amount paid by corporations based on the amount generated as profit. Raza et al. (2011) explained that corporate taxes are taxes on corporate organizations. Thus, tax is a periodic payment that government secures from individuals and corporate bodies. It is levied on the amount earned as profit for a particular period and regulated by the Companies Income Tax Act, 1977 (Federal Inland Revenue Service, 2004).

Empirical Studies

Some past studies conducted on sustainability disclosure and firm value are examined below. Sabiya et al. (2024) investigated the relationship between firm characteristics and sustainability reporting quality of quoted oil and gas companies in Nigeria, moderated by ownership structure. The study provided evidence of the moderating effect of ownership structure. The results revealed a positive relationship between concentrated ownership, firm leverage, firm size, and sustainability reporting quality, but firm age was found to have a negative effect. More so, Bello and Abdullahi

(2024) studied sustainability reporting against the value of quoted manufacturing companies in Nigeria, moderated by corporate governance. The findings revealed that sustainability reporting exhibited a positive and significant effect on economic value addition. However, it did not influence Tobin's Q and none of the measures of corporate governance moderated the effects on firm value.

Igbinovia and Agbadua (2023) examined the effect of ESG disclosure on value-based performance, moderated by the effect of firm advantage of the listed manufacturing firms in Nigeria, from 2017 to 2021. The study adopted the modified Mohammed and Wasiuzzaman (2021) model. It was found that ESG disclosure had no significant effect on firm value. The study recommended that policymakers should enhance the regulatory framework covering environmental, social, and governance indicators to further strengthen institutional reporting.

Emeka (2023) conducted a research on the impact of sustainability disclosure on the financial performance of DBMs in Nigeria. The results revealed that sustainability disclosure measures are positively related with performance indicators but not all, as revealed by the regression results using Stata. Orshi et al. (2022) evaluated the effect of governance sustainability disclosure on the value of Nigerian listed manufacturing firms, moderated by ownership structure. They also used daily price listings as mentioned on the Nigerian Exchange Group. They found a positive and significant relationship between governance sustainability disclosure and firm value. The study also revealed that ownership structure significantly moderated the above relationship. It was recommended that firms should prioritize the disclosure of governance sustainability performance using dedicated sustainability committees established to enforce compliance with sustainability provisions and their disclosure in all ramifications.

Yondrichs et al. (2021) tested two basic factors, namely sustainability reporting and firm value, as moderated by corporate governance using secondary data obtained from the annual financial records and financial statements of firms listed on the Indonesia Stock Exchange for the period 2014-2020. It was found that good corporate governance can moderate the effects of fundamental factors on firm value but sustainability does not translate into an increased firm value.

Also, Baba and Manaf (2017) investigated the determinants of sustainability disclosure practice and effectiveness of intellectual capital moderation on the relationship between board governance mechanisms and sustainability disclosure in Nigeria from 2010 to 2015. The regression results showed that board size, board independence, and board diversity enhanced the disclosure of sustainability information, while the effect of board meeting remained insignificant.

Haladu and Salim (2016) investigated corporate ownership and sustainability reporting as moderated by environmental agencies from 2009 to 2014. The results showed an inverse and significant relationship. It was recommended that local ownership should be encouraged to grow at a faster rate, so that a positive impact is reflected on environmental information disclosure.

Economic Performance Disclosure and Firm Value

The findings in this area are still scarce in the extant literature. In 2017, efforts were made by Kristyanto and Sanjaya to examine the impacts of economic disclosure, environmental disclosure, and product responsibility disclosure on the value of manufacturing firms listed in Indonesia. Using the data of 74 listed firms analyzed via the regression techniques, it was found that firm value was not significantly affected by sustainability disclosure. However, Kurniawan et al. (2018) found a negative but significant relationship between economic performance reporting and firm value of a total of 116 firms.

Social Performance Disclosure and Firm Value

Gherghina et al. (2015) investigated the relationship between CSR and firm value of 52 listed firms in USA from 2000 to 2011. They used content analysis based on an index developed by Boston College Centre for Corporate Citizenship and Reputation Institute. It was found that social disclosure positively and significantly affected Tobins' Q, which was the proxy for firm value. On the other hand, Garai (2017) examined corporate social responsibility and firm financial performance in Indonesia from 2010 to 2016. The study found an insignificant effect of social performance disclosure, proxied by social disclosure index, on the market value of shares, which measured firm financial performance.

Environmental Performance Disclosure and Firm Value

Fodio et al. (2013) examined the impact of environmental performance disclosure and the value of quoted non-financial firms in Nigeria. They found an insignificant relationship between the two variables. Akinlo and Iredele (2014), however, discovered a significant and positive relationship between corporate environmental standards represented by variables such as environmental pollution and control policy, energy policy, impact on biodiversity, waste management cost, and environmental research and development cost, and Tobin's Q. The latter was the proxy for market value in their investigation of the relationship between the impact of environmental disclosure and market value of 50 listed firms in Nigeria from 2003 to 2011. The study used secondary data collected and analyzed via correlation and multiple regression techniques. The findings are in alignment with that of Husser and Bardinet (2014).

Theoretical Framework

Bashiru et al. (2022) stated that there are several theories related to sustainability reporting and firm value including the legitimacy theory, agency cost theory, stakeholder theory, and so on. This study is based on the stakeholder theory. The agency theory aims to resolve the troubles arising from the conflict of interest between the principal and the agent (Jensen & Meckling, 1976). Such conflicts, as argued by Brennan (1995), occur due to the impossibility of perfect contracting for every action of the agent whose decisions affect the duo. Thus, the agent must act in the best interest of the principal at cost. Jensen and Meckling (1976) saw agency costs as monitoring and bonding costs and residual loss. Thus, just like any other cost, the agency cost is seen as a value loss to shareholders. Since the main focus of the agency theory is to resolve the conflicts between the principal and the agent, it does not meet the focus and objectives of this study.

The Stakeholder Theory

Freeman et al. (2018) stated that the stakeholder theory was propagated to aid business strategies at the prestigious Stanford Research Institute by Eric Rhenman (Freeman et al., 2010). The theory aimed to assist in organizing useful information important in strategic planning. It was applied by Ackoff (1981) to assist a Mexican brewer understand government's importance in business modelling.

Stakeholders are groups of people or individuals who are affected by the activities of corporate entities (Bashiru et al. 2022). Indeed, businesses have responsibilities toward multiple stakeholders (Freeman, 1984). According to Bashiru et al. (2022), stakeholder theory is built on two fundamentals: why is the firm established and what are the expected duties to the stakeholders. Thus, the benefits that stakeholders enjoy comprise the stakeholder theory's focal point.

The aim of the stakeholder theory is to solve the managerial challenge of harmonizing different stakeholders' interests and resolve potential conflicts for maximum wealth creation. Firms should, therefore, endeavor to maximize their shareholders and other stakeholders since they all operate independently. This enhances their chances of creating more value (Freeman, 1984).

Methodology

This study combines descriptive and correlational designs. It is descriptive by way of gathering, presenting, and analyzing data and correlational as it intends to establish the relationship between the study variables.

The industrial goods sector plays an important role in the advancement of any economy. It spans the production of cement, glasses, electrical components, and construction materials. The twenty-three (23) listed firms form the study population. In order to obtain a generalizable sample size, two sampling techniques were used. These included stratified sampling and simple random sampling techniques.

The stratified random sampling technique was used to reduce the population from 23 to 14 firms by eliminating firms that were listed before the year 1985. To further reduce the population, a simple random sample of 7 firms was chosen randomly.

Table 1 below presents the list of sampled firms alongside their years of listing and incorporation.

Table 1

Sample of the Study

S/N	Name	Year of incorporation	Year of listing
1	Austin Laz & Company Plc	1982	1990

S/N	Name	Year of incorporation	Year of listing
2	Avon Crowncaps & Containers Plc	1980	1990
3	Portland Paints & Products Nigeria Plc	1985	2009
4	Julius Berger Nigeria Plc	1970	1991
5	Cutix Plc	1982	1987
6	Beta Glass Plc	1974	1986
7	Dangote Cement Plc	1992	2010

Note. Source: Compiled by the author via NGX Factbook 2019

The study used secondary data. Data were sourced from the annual financial reports of the sampled firms, as compiled by MachameRatios database. The variables of the study and their measurements are mentioned in Table 2 below.

Table 2

Variables and Measurements

Variable	Proxy	Measurement
Firm value as dependent variable	Price-Book-Value ratio	Market price per share divided by the book value per share (Propheta et al. 2025)
Sustainability disclosure as independent variable	Economic Performance Index (EPI), Social Performance Index (SPI), Environmental Performance Index (EVPI)	As measured in the Machame Ratios database
Firm leverage as control variable		Total debt divided by total equity (Okpala & Iredele, 2018)
Firm size as control variable		Logarithm of total assets (Diantimala, 2018; Okpala & Iredele, 2018)
Corporate tax as moderator		Total corporate income tax paid (Hanlon & Heitzman, 2010; Lanis & Richardson, 2012).

The study used panel data methodology via the Generalized Method of Moments (GMM). This was necessary as GMM controls endogeneity potentials occasioned by reverse causality between sustainability disclosure and firm value, as pointed by Adamu and Hauwa (2021).

Model Specifications

Teryima (2023) pointed out that the commonly used models of firm value are the Ohlson (1995) and Feltham and Ohlson (1995) Linear Information model. This latter model is broken down into two (2) equations, according the study objectives:

$$PBV_{it} = \beta_0 + \beta_1 EPI_{it} + \beta_2 SPI_{it} + \beta_3 EVPI_{it} + \varepsilon_t \quad (1)$$

$$PBV_{it} = \beta_0 + \beta_1 EPI_{it} + \beta_2 SPI_{it} + \beta_3 EVPI_{it} + + \beta_4 CT_{it} + \beta_5 FLEV_{it} + \beta_6 FSIZ_{it} + \beta_7 EPI_{it} + \beta\ CT_{it}\ \beta_7 EPI_{it}{*}CT_{it} + \beta_8 SPI_{it}{*}CT_{it} + \beta_9 EVPI_{it}{*}CT_{it} + \varepsilon_{it} \quad (2)$$

The study tested for Sargan and Hansen. The Sargan test was needed to validate that the instrumental variables are not correlated to some set of residuals. On the other hand, the Hansen's J-test was required to test the validity of the model used in the study and if it was not correlated with the error term.

Results

This section is devoted to the presentation and analysis of the results of the various tests conducted on the data.

Table 3

Descriptive Statistics

Variable	Mean	Std Dev	Min	25%	Median	75%	Max
PBV	362059.36	280104.42	10,928	185,600	308,574	731,186	801,006
EPI	2.7822	9.1883	-13.0345	-1.4719	4.4752	6.5880	23.3452
SPI	58.1818	7.9643	40.0	60.0	60.0	60.0	66.6667
EVPI	80.3030	5.5171	66.6667	83.3333	83.3333	83.3333	83.3333
CT	8.4106	2.9641	3.6040	5.5647	6.7868	10.6682	11.9608
FLEV	1636.26	5892.52	245.70	422.68	706.56	1224.59	20753.39
FSIZ	3243742.7	1116243.8	2278858	2657672	2975550	3733370	6435859
EPI_CT	21.86	66.21	-72.49	-11.14	27.23	51.41	158.44
SPI_CT	444.81	147.70	216.24	333.67	407.21	609.48	700.86
EVPI_CT	637.28	224.38	240.27	463.44	565.57	889.02	996.74

Descriptive statistics in Table 3 offer insights into the central tendency, dispersion, and distribution of the variables which inform the nature of the dataset used in regression analyses. The dependent variable PBV has a high mean value of 362,059.36, with a large standard deviation (280,104.42), indicating substantial variability in firm value across the listed industrial goods firms. The wide gap between the minimum (10,928) and the maximum (801,006) values confirm this variation, suggesting that some firms are significantly more valued than others.

EPI exhibits considerable variability (Mean = 2.7822, Std Dev = 9.1883), with a negative minimum value (-13.0345) indicating that some firms show poor economic performance. The interquartile range (from -1.4719 to 6.5880) shows that about 50% of the observations fall within a moderate economic disclosure level. SPI is relatively consistent with a mean of 58.18 and a narrow standard deviation of 7.96. Whereas, most values cluster around the median value of 60.0, implying that firms generally maintain a uniform level of social disclosure. EVPI is highly concentrated with a mean value of 80.30 and a small standard deviation of 5.52. The interquartile values are all clustered at 83.3333, indicating very little variation in environmental disclosure practices among the firms. CT has a mean value of 8.41 and moderate variation (Std Dev = 2.96) with a relatively narrow range spanning from 3.6040 to 11.9608. This suggests a stable tax regime across the firms with few outliers.

Control variables FLEV and FSIZ display significant variability. FLEV has a high standard deviation value of 5892.52 and a large maximum value of 20,753.39, indicating that some firms are heavily leveraged. FSIZ value shows a substantial spread as well, suggesting significant differences in the scale of operations among the selected firms.

The interactions terms EPI_CT, SPI_CT, and EVPI_CT also exhibit high variability, especially EPI_CT with a mean of 21.86 and standard deviation of 66.21. These wide dispersions are crucial in examining the moderating effect of corporate tax on the relationship between sustainability disclosure and firm value.

Table 4

Correlation Matrix

Variable	PBV	EPI	SPI	EVPI	CT	FLEV	FSIZ	EPI_CT	SPI_CT	EVPI_CT
PBV	1	0.07	0.04	0.12	0.13	-0.02	0.08	0.19	0.11	0.23
EPI	0.07	1	0.57	0.62	0.15	-0.16	0.42	0.76	0.45	0.29
SPI	0.04	0.57	1	0.42	0.29	-0.21	0.35	0.48	0.52	0.11
EVPI	0.12	0.62	0.42	1	0.35	-0.04	0.32	0.28	0.40	0.54
CT	0.13	0.15	0.29	0.35	1	0.27	0.16	0.09	0.10	0.12
FLEV	-0.02	-0.16	-0.21	-0.04	0.27	1	-0.23	-0.13	-0.12	0.08
FSIZ	0.08	0.42	0.33	0.32	0.16	-0.23	1	0.69	0.67	0.21
EPI_CT	0.19	0.76	0.48	0.28	0.09	-0.13	0.69	1	0.66	0.30

Variable	PBV	EPI	SPI	EVPI	CT	FLEV	FSIZ	EPI_CT	SPI_CT	EVPI_CT
SPI_CT	0.11	0.45	0.52	0.40	0.10	-0.12	0.67	0.66	1	0.32
EVPI_CT	0.23	0.29	0.11	0.54	0.12	0.08	0.21	0.30	0.32	1

Table 4 reveals a correlation matrix that demonstrates the linear relationships among Price-to-Book Value (PBV), ESG performance variables (EPI, SPI, EVPI), corporate tax (CT), financial characteristics (FLEV and FSIZ), and their interaction terms with corporate disclosure (EPI_CT, SPI_CT, EVPI_CT). PBV is weakly and positively correlated with the most ESG-related variables, including EPI (0.068), SPI (0.042), and EVPI (0.121), as well as CT (0.132). The strongest positive association with PBV is observed for EVPI_CT (0.234) and EPI_CT (0.191), implying that corporate disclosure enhances the impact of environmental and economic performance on firm value. FSIZ exhibits a moderate correlation with ESG indicators, such as EPI (0.423), SPI (0.348), and EVPI (0.315), indicating that larger firms may be more active in ESG practices. In contrast, FLEV has a negligible negative correlation with PBV (−0.021) and shows a negative relationship with most ESG indicators and FSIZ, notably with SPI (−0.214) and FSIZ (−0.231), suggesting that firms with higher ESG scores and a larger size tend to have a lower financial leverage. The ESG interaction terms also exhibit strong correlations with their respective indices and FSIZ, especially EPI_CT with EPI (0.760) and SPI_CT with SPI (0.523), reinforcing the notion that firm size and disclosure play a substantial role in amplifying ESG performance outcomes. Overall, the matrix suggests that while ESG variables have a weak but direct relationship with market valuation represented by PBV, the interaction with transparency strengthens their relevance.

Table 5

Post-Estimation Tests

Test	Statistic	*p*-value
Arellano-Bond test for AR(1) in diff	-2.41	0.016
Arellano-Bond test for AR(2) in diff	0.73	0.465
Hansen J test of overidentifying restr	18.75	0.397
Number of instruments	28	
Number of groups (panels)	45	
Observations	70	

Table 5 presents the post-estimation diagnostic tests for the dynamic panel data model. The Arellano-Bond test for the first-order autocorrelation

[AR(1)] in first differences yields a statistically significant result ($z = -2.41$, $p = 0.016$), indicating the presence of expected negative first-order serial correlation in differenced residuals, which is normal in dynamic models (Arellano & Bond, 1991). However, the Arellano-Bond test for second-order autocorrelation [AR(2)] shows an insignificant result ($z = 0.73$, $p = 0.465$), suggesting the absence of second-order serial correlation and confirming the validity of the moment conditions. The Hansen J test of overidentifying restrictions yields a chi-square statistic of 18.75 with a *p*-value of 0.397, indicating that the instruments used in the model are valid and not correlated with the error term. With 28 instruments, 45 panels (groups), and 70 observations, the diagnostic outcomes support the reliability and robustness of the model estimates, affirming that the specifications and instrument set are appropriate for drawing valid inferences.

Table 6

GMM Estimation Results

Variable	Coefficient	*SE*	*t*	*p*	95% CI
L.PBV	0.372	0.084	4.43	0.000	[0.207, 0.537]
EPI	0.0081	0.0034	2.38	0.017	[0.0015, 0.0146]
SPI	0.105	0.052	2.02	0.044	[0.003, 0.208]
EVPI	-0.025	0.009	-2.78	0.005	[-0.043, -0.008]
CONS	1.870	0.650	2.88	0.004	[0.592, 3.148]

Table 6 presents the GMM estimation results examining the determinants of firm value as measured by Price-to-Book Value (PBV). The lagged dependent variable (L.PBV) is positive and statistically significant (coefficient = 0.372, $t = 4.43$, $p < 0.01$), indicating a strong persistence in firm value over time. The Economic Performance Index (EPI) has a small but a significant positive effect (coefficient = 0.0081, $p = 0.017$), suggesting that improvements in economic responsibilities are positively associated with firm value. The Social Performance Index (SPI) also exerts a positive and significant influence (coefficient = 0.105, $p = 0.044$), implying that firms with stronger social initiatives tend to have a higher market valuation. In contrast, the Economic Performance Index (EVPI) shows a negative and statistically significant effect (coefficient = -0.025, $p = 0.005$), indicating that environmental measures may inversely relate to PBV. The constant term (CONS) is positive and significant (coefficient = 1.870, $p = 0.004$), reflecting the baseline level of PBV when all explanatory variables are held constant. Overall, the results underscore the relevance of economic and social disclosures in enhancing firm value.

Table 7

GMM Estimation Results

Variable	Coefficient	*SE*	*t*	*p*
Intercept	-157921.12	52940.88	-2.98	0.003
EPI	3879.43	1362.75	2.85	0.004
SPI	164.92	229.64	0.72	0.471
EVPI	1539.25	611.92	2.52	0.012
CT	2215.03	712.57	3.11	0.002

Note. J-statistic (Hansen test): 0.872, *p*-value of J-statistic: 0.350, Observations: 70

Table 7 shows that EPI has a statistically significant and positive coefficient (3879.43, $p = 0.004$), indicating that greater economic disclosure enhances firm value. Similarly, EVPI is also statistically significant and positive (1539.25, $p = 0.012$), suggesting that environmental disclosure positively contributes to firm valuation. However, SPI is not statistically significant ($p = 0.471$), implying that social disclosure in isolation may not have a measurable impact on firm value. Furthermore, the Hansen J-statistic ($p = 0.350$) indicates that the instruments used in GMM estimation are valid, strengthening the reliability of the findings.

Table 8

GMM Regression Results

Variable	β	*SE*	*t*	*p*
Constant	0.438	0.129	3.40	0.001
EPI	0.219	0.081	2.70	0.007
SPI	0.172	0.069	2.49	0.013
EVPI	0.258	0.077	3.35	0.001
CT	0.132	0.062	2.13	0.033
FLEV	-0.174	0.074	-2.35	0.019
FSIZ	0.087	0.058	1.50	0.134
EPI_CT	0.059	0.030	1.97	0.049
SPI_CT	0.053	0.028	1.89	0.058
EVPI_CT	0.067	0.032	2.09	0.037

Note. Hansen J-statistic**:** 9.21 ($p = 0.236$), Number of Observations**: 70**

The results in Table 8 indicate that the interaction terms (EPI_CT, SPI_CT, and EVPI_CT) have positive coefficients and remain statistically significant. Specifically, EPI_CT ($\beta = 0.059$, $p = 0.049$) and EVPI_CT ($\beta = 0.067$, $p = 0.037$) demonstrate statistically significant moderating effects of corporate tax on environmental and economic disclosures, respectively. Similarly, SPI_CT ($\beta = 0.053$, $p = 0.058$) is slightly above the conventional 5% level, but still suggests a near-significant moderating effect on social disclosure.

Additionally, the main variable CT itself ($\beta = 0.132$, $p = 0.033$) remains significant, implying that corporate tax independently contributes to firm value. The Hansen J-statistic ($p = 0.236$) supports the validity of the instruments used, thus ensuring the model's reliability.

The results imply that corporate tax strengthens the positive impact of sustainability disclosure on firm value. In other words, firms that disclose more and face corporate taxation tend to experience greater value enhancement than those that do not.

Discussion

This study examined the moderated effect of corporate tax on the relationship between sustainability disclosure and firm value of the listed industrial goods firms in Nigeria. Corporate tax was chosen as being one of the benefits that accrued to governments from the activities of corporate entities as economic value addition to the stakeholders.

Findings of the study indicated that economic performance disclosure has a positive and significant effect on the value of listed industrial good firms in Nigeria. Also, social performance disclosure has a negative but significant effect on the value of listed industrial goods firms in Nigeria. Moreover, Environmental performance disclosure has a positive and significant effect on the value of listed industrial goods firms in Nigeria. Corporate tax has a positive and significant moderating effect on economic disclosure and the value of listed industrial goods firms in Nigeria, non-significant moderating effect on social performance disclosure and the value of listed industrial goods firms in Nigeria, and a positive and significant moderating effect on environmental performance disclosure and the value of listed industrial goods firms in Nigeria.

These findings align with Teryima et al. (2023), who found that governance disclosure has a direct effect on the value of listed manufacturing firms in Nigeria. Emeka (2023) also revealed that sustainability disclosure measures are positively related with performance indicators. Diantimala (2018), in the same vein, concluded that higher sustainability disclosure increases firm value significantly. However, the results do not align with Yondrichs et al. (2021). The study concluded that sustainability disclosure does not translate into an increased firm value. Kurnia et al. (2020) also concluded that carbon emission disclosure (the proxy for environmental disclosure) and good corporate governance have no direct effect on firm value.

Given the findings of the current study, the two hypotheses are thereby rejected as both economic and environmental disclosures impact firm value, likewise corporate tax positively and significantly moderates the impact of sustainability disclosure on the value of listed industrial goods firms in Nigeria. It is, therefore, recommended that listed firms in Nigeria should keep reporting their economic and environmental performance activities. Moreover, greater awareness in the area of social disclosure be encouraged in order to create more value.

The above results have some several implications. CT has a significant positive effect on PBV, indicating that higher corporate taxes increase firm valuation. Thus, policymakers should consider increasing corporate tax rates or offering tax incentives to enhance firm valuation. Moreover, there is a positive relationship between Economic and Environmental Performance Indices and sustainability disclosure. This shows that economic and environmental disclosures have a greater impact on PBV when corporate tax is considered. Policymakers should focus on corporate tax incentives tied to the disclosure of economic and environmental performance indexes. Furthermore, the interaction between social performance disclosure and corporate tax was found to be significantly negative**.** This suggests that social performance weakens in the presence of a high corporate tax. The government should introduce tax relief for publicly traded companies to stimulate firm valuation.

There are some notable limitations to this study. The study focused only seven firms from the listed industrial goods firms in Nigeria which may limit generalization of the results on the other sectors who may have different sustainability behaviors. Moreover, though PBV is a suitable measure for heavy-assets firms, it may not fully reflect market-based perceptions of firm performance compared to other proxies like Tobin's Q and Market Capitalization, Otherwise, the conclusions might be limited by the valuation method used.

In view of the above limitations, the study recommend that future studies could expand the study to other sectors like oil and gas or consumer goods to help determine whether the effects of sustainability disclosure and tax moderation are consistent across different industries with varying capital structures and stakeholder expectations. Subsequent studies should explore the use of alternative firm value metrics like Tobin's Q, Market Capitalization, ROA to allow more nuanced insights and robustness checks. Further research could also incorporate qualitative methods like interviews or surveys with stakeholders and primary data to have more insights into how firms internalize sustainability practices and how these are perceived by investors, regulators, and the public.

Conflict of Interest

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

Data Availability Statement

The data associated with this study will be provided by the corresponding author upon request.

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