DO FIRM CHARACTERISTICS SHAPE ESG DISCLOSURE? INSIGHTS FROM NIGERIA'S LISTED MANUFACTURING COMPANIES

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Abstract
Environmental, Social, and Governance (ESG) disclosure has gained prominence as a critical dimension of corporate transparency, particularly for manufacturing firms operating under increasing regulatory and stakeholder scrutiny. This study examines the effect of firm characteristics specifically profitability, board size, and firm age on ESG disclosure, decomposed into its three distinct components: environmental, social, and governance disclosure. The study adopts an ex-post facto quantitative research design, drawing on a balanced panel of 20 listed manufacturing companies on the Nigerian Exchange Group (NGX) over the period 2014-2023 (200 firm-year observations). Data are analysed using panel regression, with model selection guided by Hausman specification and Breusch-Pagan Lagrangian Multiplier tests. Grounded in agency theory, legitimacy theory, and stakeholder theory, the study constructs a coherent theoretical framework for understanding disclosure incentives in emerging markets. The findings reveal that firm age significantly and positively influences environmental disclosure ($\beta = 0.1236$, $p < 0.05$), while profitability and board size do not demonstrate statistically significant effects across any of the three ESG dimensions. Firm size, included as a control variable, emerges as a consistently robust and significant determinant of all three ESG disclosure components. These results suggest that institutional maturity, rather than

profitability or board composition, drives disclosure behaviour in Nigeria's manufacturing sector, and that firm scale amplifies external visibility pressures that compel greater transparency. The study recommends that policymakers mandate standardised ESG disclosure requirements, with graduated obligations calibrated to firm size and institutional maturity, to promote accountability and sustainable corporate practices.

Keywords: Agency theory, environmental disclosure; ESG, firm characteristics, governance disclosure, legitimacy theory, Nigeria, panel regression, social disclosure, stakeholder theory

1.0 Introduction

Environmental, Social, and Governance (ESG) disclosure has emerged as a central pillar of corporate transparency, sustainability reporting, and responsible investment in both developed and developing economies (Dan-Laka & Laka, 2021; Yousra, 2017). ESG disclosure refers to the systematic communication of a company's environmental performance, social responsibility activities, and corporate governance practices to its various stakeholders. It encompasses a broad set of non-financial information that investors, regulators, civil society, and the public increasingly rely upon to assess corporate conduct and long-term value creation (Ohidoa, Omokhudu & Oserogho, 2016; Khalid, Razzaq, Ming & Razi, 2022).

Within the ESG disclosure landscape, manufacturing companies occupy a particularly consequential position. Their production activities generate substantial environmental externalities including carbon emissions, waste, and resource consumption while simultaneously employing large workforces and operating under complex governance structures. The opacity surrounding their ESG reporting practices represents a critical accountability gap, especially in emerging markets like Nigeria, where regulatory enforcement remains evolving, and stakeholder activism is only gradually intensifying (Ofoegbu & Megbuluba, 2016; Aluwong & Fodio, 2019).

A growing body of research has sought to identify the firm-level determinants of ESG and voluntary disclosure behaviour. However, the extant literature in the Nigerian context exhibits three important limitations that motivate the present study. First, prior Nigerian studies such as Ohidoa et al. (2016), Ofoegbu and Megbuluba (2016), and Onmonya (2018) have examined environmental disclosure in isolation, without disaggregating ESG into its social and governance dimensions or adopting an integrated ESG disclosure framework. This selective focus obscures whether firm characteristics influence all dimensions of ESG disclosure uniformly or differentially. Second, existing studies have predominantly relied on a narrow set of firm characteristics typically firm size and leverage without systematically incorporating governance attributes (board size) alongside financial (profitability) and temporal (age) dimensions in a unified model. Third, these studies have largely not integrated multiple theoretical perspectives agency theory, legitimacy theory, and stakeholder theory into a coherent analytical framework capable of generating directional hypotheses about specific firm characteristics and specific ESG disclosure components.

This study addresses these gaps by examining the effect of three firm characteristics profitability, board size, and firm age on three distinct but interrelated ESG disclosure components (environmental, social, and governance) among listed manufacturing companies in Nigeria, over the period 2014–2023. The study explicitly excludes market-based variables (such as share price) from the regression models, as these were found to be unavailable with sufficient completeness across the sample period; the final models reflect three theoretically grounded predictors consistent with the study's hypotheses.

The remainder of the paper is structured as follows: Section 2 reviews the theoretical and empirical literature and develops the study's hypotheses. Section 3 describes the research methodology. Section 4 presents and discusses the empirical findings. Section 5 concludes with implications and recommendations.

2.0 Literature Review and Hypothesis Development

This study draws on three complementary theoretical perspectives agency theory, legitimacy theory, and stakeholder theory to explain how firm-level characteristics incentivise or constrain ESG disclosure behaviour. Rather than treating these theories as competing alternatives, this study integrates them into a coherent analytical framework in which each theory addresses a distinct mechanism through which firm characteristics shape disclosure decisions.

Agency theory (Jensen & Meckling, 1976) posits that information asymmetry between managers and shareholders creates incentives for managers to disclose information that signals competent stewardship and reduces monitoring costs. In the ESG context, larger and more profitable firms face greater agency conflicts arising from dispersed ownership and higher public visibility; they are therefore expected to disclose more ESG information to reduce information asymmetry and mitigate the risk of adverse stakeholder inference (Barako, 2007; Samaha, Khlif & Hussainey, 2015). Agency theory thus predicts a positive association between profitability and ESG disclosure, and between board size and governance disclosure specifically, as larger boards are theorised to engage more extensively in monitoring and accountability activities (Dechow, Sloan & Sweeney, 1996).

Legitimacy theory (Suchman, 1995) argues that firms seek to ensure that their activities are perceived as legitimate by society, and that disclosure serves as a strategic tool for managing societal perceptions and aligning corporate behaviour with evolving social norms and expectations. Older, more established firms face greater cumulative legitimacy obligations having operated over longer periods during which environmental, social, and governance standards have intensified and are therefore expected to disclose more comprehensively to maintain their social licence to operate (Tilling & Tilt, 2010; Behram, 2015). Legitimacy theory thus generates a positive predicted association between firm age and all three ESG disclosure components.

Stakeholder theory (Freeman, 1984) extends the focus beyond shareholders to encompass all parties including employees, communities, creditors, regulators, and civil society who are affected by or have an interest in the firm's activities. ESG disclosure is, at its core, a response to the informational demands of this diverse stakeholder constituency. Firms operating in industries with high environmental impact such as manufacturing face heterogeneous stakeholder pressures that vary in intensity with firm size, age, and profitability. Specifically, larger firms and those with longer operating histories attract more intensive stakeholder scrutiny, creating stronger incentives for comprehensive ESG reporting (Clarkson, Li, Richardson & Vasvari, 2008; Nuhu & Alam, 2024). Stakeholder theory thus reinforces the positive directional predictions generated by agency and legitimacy theories, while also explaining why firm size even when not a primary focus of the study consistently emerges as a significant disclosure determinant.

Table 1 below summarises the predicted directional relationships between each firm characteristic and each ESG disclosure component, as derived from the integrated theoretical framework.

Table 1:
Theoretical Predictions:Firm Characteristics and ESG Disclosure Components

Firm Characteristic	Theoretical Basis	Env. Disclosure	Social Disclosure	Gov. Disclosure
Profitability	Agency Theory	Positive (+)	Positive (+)	Positive (+)
Board Size	Agency Theory	Positive (+)	Positive (+)	Positive (+)
Firm Age	Legitimacy & Stakeholder Theory	Positive (+)	Positive (+)	Positive (+)
Firm Size (Control)	Agency, Legitimacy & Stakeholder Theory	Positive (+)	Positive (+)	Positive (+)

Source: Authors' compilation based on theoretical synthesis, 2026.

Firm Characteristics

Firm characteristics encompass the financial and non-financial attributes of companies that serve as predictors of their accounting information quality, governance behaviour, and performance outcomes (Onmonya, 2018; Zaheer, 2013). This study focuses on three firm characteristics: profitability, board size, and firm age, each of which has a distinct theoretical basis for influencing ESG disclosure behaviour, as elaborated in the framework above.

Profitability, measured as return on assets (ROA), reflects the efficiency with which a firm generates earnings from its asset base. From an agency theory perspective, more profitable firms possess greater resources to invest in ESG monitoring, reporting systems, and sustainability initiatives, and face greater scrutiny from investors who demand transparency as a condition of continued capital provision (Bicer & Milad, 2020; Oliveira, Rodrigues & Craig, 2015). However, there is also a counter-argument: firms experiencing poor financial performance may increase disclosure to signal managerial competence and redirect attention from their financial underperformance (Marston & Polei, 2004). Empirically, evidence on the profitability, ESG disclosure relationship is mixed (Agca & Onder, 2007; Kolsi, 2012; Yousra, 2017), reflecting context-dependence and the moderating role of regulatory and stakeholder environments.

Board size reflects the number of directors on the corporate board and serves as a key governance attribute. Agency theory predicts that larger boards have more extensive oversight capacity, drawing on a wider pool of expertise, networks, and monitoring resources, which translates into more comprehensive disclosure practices (Samaha et al., 2015; Al-Janadi, Abdul Rahman & Omar, 2013). Conversely, resource dependency and organisational behaviour perspectives suggest that excessively large boards suffer from coordination problems, communication inefficiencies, and slower decision-making, potentially reducing the quality of disclosure (Lipton & Lorsch, 1992; Htay, 2012). Combined Code on Corporate Governance (2003) guidelines recommend board sizes of five to sixteen directors, reflecting this balance

between monitoring capacity and operational efficiency. In the specific context of ESG reporting, larger boards with diverse functional expertise including finance, legal, environmental, and social specialists are expected to be better equipped to monitor, validate, and communicate ESG performance (Nuhu & Alam, 2024).

Firm age captures the temporal dimension of corporate evolution and institutional maturity. Legitimacy theory predicts that older firms have accumulated deeper institutional knowledge, established reporting routines, and stronger stakeholder relationships, all of which support more comprehensive ESG disclosure (Juhmani, 2013; Ibrahim, Nicholas & Alhassan, 2019). Moreover, older firms have operated across multiple regulatory cycles and have progressively embedded ESG norms into their corporate cultures, making disclosure a more natural and less costly activity. In emerging market contexts specifically, firm age serves as a proxy for institutional embeddedness and reputational capital, both of which incentivise transparency (Ikpor & Agha, 2016). Empirical studies on firm age and disclosure in Nigeria report positive associations, consistent with legitimacy theory predictions (Onmonya, 2018; Aluwong & Fodio, 2019).

ESG Disclosure: Conceptualisation and Measurement

ESG disclosure, as employed in this study, refers to the extent and quality of information communicated by firms regarding their environmental stewardship, social responsibility activities, and corporate governance structures and processes. The conceptualisation follows Ezeagba, Akamelu and Umeoduagu (2017), who define ESG disclosure as the measurement and communication of non-financial information in relation to sustainable development goals. The study adopts a content analysis-based disclosure index approach, which is widely used in ESG and voluntary disclosure research (Barako, 2007; Samaha et al., 2015; Khalid et al., 2022).

Each of the three ESG disclosure indices Environmental Disclosure (ENV), Social Disclosure (SOC), and Governance Disclosure (GOV) was constructed using a structured scoring checklist derived from the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines (GRI, 2011; GRI, 2017) and the Nigerian Exchange Group's disclosure requirements. The GRI framework was selected because it is the most widely adopted global standard for ESG reporting, provides explicit item-level criteria across environmental, social, and governance dimensions, and has been applied in prior Nigerian ESG research (Ohidoa et al., 2016; Onmonya, 2018).

For each dimension, a list of disclosure items was compiled based on the relevant GRI standards: the environmental checklist included items relating to energy consumption, water usage, emissions, waste management, and environmental compliance; the social checklist covered employee relations, health and safety, community investment, and human rights; and the governance checklist encompassed board composition, audit committee effectiveness, remuneration disclosure, and anti-corruption policies. Each item was scored dichotomously (1 if disclosed, 0 if not), and the disclosure index for each dimension was calculated as the ratio of items disclosed to the total number of items in the checklist, yielding a score between 0 and 1. This unweighted approach treats all disclosure items as equally important and avoids subjective weighting, which is consistent with standard practice in the voluntary disclosure literature (Barako, 2007; Samaha et al., 2015).

Empirical Review and Hypothesis Development

Firm Characteristics and Environmental Disclosure

Environmental disclosure communicates a firm's ecological footprint, resource consumption, and efforts to mitigate environmental harm. Agency theory suggests that more profitable firms, facing greater investor scrutiny, are incentivised to disclose environmental information to demonstrate responsible resource stewardship and reduce the risk of regulatory or reputational penalties (Ofoegbu & Megbuluba, 2016). Legitimacy theory further predicts that older firms, having operated under progressively stricter environmental standards, are more likely to have established environmental reporting routines (Fajarini & Triasih, 2020; Ibrahim et al., 2019). Nuhu and Alam (2024) and Onmonya (2018) report positive associations between firm age and environmental disclosure in emerging economies.

H*1a*: Profitability is positively associated with environmental disclosure of listed manufacturing companies in Nigeria.
H*1b*: Board size is positively associated with environmental disclosure of listed manufacturing companies in Nigeria.
H*1c*: Firm age is positively associated with environmental disclosure of listed manufacturing companies in Nigeria.

Firm Characteristics and Social Disclosure

Social disclosure encompasses reporting on employee welfare, community engagement, health and safety, and human rights practices. From a stakeholder theory perspective, manufacturing firms as major employers face strong pressure from employee and community stakeholders to disclose their social impact (Sabo et al., 2015; Agarwala, Pareek & Sahu, 2023). Agency theory predicts that larger and more profitable firms, with more diverse stakeholder bases, are more likely to engage in social disclosure to maintain investor and public trust. Firm age is expected to positively influence social disclosure, as older firms have accumulated the reporting infrastructure, stakeholder relationships, and institutional norms that support comprehensive social reporting (Badkook, 2017).

Unlike environmental disclosure, where regulatory mandates and reputational pressures are particularly intense, social disclosure in Nigeria's manufacturing sector is more discretionary, meaning that stakeholder pressure and internal governance quality may be stronger predictors than in the environmental dimension.

H*2a*: Profitability is positively associated with social disclosure of listed manufacturing companies in Nigeria.
H*2b*: Board size is positively associated with social disclosure of listed manufacturing companies in Nigeria.
H*2c*: Firm age is positively associated with social disclosure of listed manufacturing companies in Nigeria.

Firm Characteristics and Governance Disclosure

Governance disclosure encompasses reporting on board structure, audit committee composition, executive remuneration, and accountability mechanisms. Agency theory is particularly central to this dimension: larger boards, by engaging in more extensive monitoring, are hypothesised to disclose more governance information as part of their accountability function (Dibia &

Onwuchekwa, 2015; Ezhilarasi & Kabra, 2017). More profitable firms may use governance disclosure to signal sound management and attract capital. Legitimacy theory further predicts that older firms, seeking to maintain their reputational capital, disclose governance information more comprehensively (Ezeagba et al., 2017).

It is important to note that while the same three predictors appear across all three hypotheses, the magnitude and significance of their effects may differ across ESG dimensions due to differences in regulatory salience, stakeholder pressure, and reporting costs. This is an empirical question addressed in the analysis section.

H*3a*: Profitability is positively associated with governance disclosure of listed manufacturing companies in Nigeria.

H*3b*: Board size is positively associated with governance disclosure of listed manufacturing companies in Nigeria.

H*3c*: Firm age is positively associated with governance disclosure of listed manufacturing companies in Nigeria.

3.0 Research Methodology

This study adopts a quantitative, ex-post facto research design, which is appropriate for analysing historical panel data to examine causal relationships without manipulating variables. The population comprises 57 manufacturing companies listed on the Nigerian Exchange Group (NGX) as of June 2024, spanning six sub-sectors: Consumer Goods, Industrial Goods, Agriculture, Oil and Gas, Healthcare, and Conglomerates.

A purposive sampling technique was employed to select 20 companies that met the following explicit criteria: (i) continuous listing on the NGX throughout the study period (2014–2023); (ii) availability of complete annual report data for all ten years across all study variables; and (iii) sufficient disclosure content in published annual reports to enable ESG index construction. Companies that were delisted, suspended, or had incomplete data were excluded. This approach yielded a balanced panel of 200 firm-year observations, which provides adequate statistical power for the panel regression analysis. The authors acknowledge that purposive sampling may introduce selection bias, as sampled firms may be systematically more transparent than non-sampled firms; this limitation is discussed in Section 5.

The independent variables are profitability (PRF), measured as return on assets (profit after tax divided by total assets); board size (BDS), measured as the number of directors on the board; and firm age (AGE), measured as the number of years from commencement of operations to 2023. Firm size (FSZ), measured as the natural logarithm of total assets, is included as a control variable. The three dependent variables Environmental Disclosure (ENV), Social Disclosure (SOC), and Governance Disclosure (GOV) are constructed as described in Section 2.3.

Model Specification

Three panel regression models are specified, one for each ESG disclosure dimension:

Model 1 (Environmental Disclosure): $ENV\text{it} = \alpha + \beta_1 PRF\text{it} + \beta_2 BDS\text{it} + \beta_3 AGE\text{it} + \beta_4 FSZ\text{it} + \varepsilon\text{it}$

Model 2 (Social Disclosure): $SOC\text{it} = \alpha + \beta_1 PRF\text{it} + \beta_2 BDS\text{it} + \beta_3 AGE\text{it} + \beta_4 FSZ\text{it} + \varepsilon\text{it}$

Model 3 (Governance Disclosure): $GOV\text{it} = \alpha + \beta_1 PRF\text{it} + \beta_2 BDS\text{it} + \beta_3 AGE\text{it} + \beta_4 FSZ\text{it} + \varepsilon\text{it}$

where subscripts i and t denote firm and time period respectively, α is the constant, β_1–β_4 are slope coefficients, and ε is the error term.

Model selection followed a structured decision procedure. The Hausman specification test was applied to each model to determine whether fixed effects (FE) or random effects (RE) estimation is preferred over pooled OLS. Where the Hausman test is statistically insignificant ($p > 0.05$), random effects is preferred; where the Breusch–Pagan Lagrangian Multiplier (LM) test is also insignificant, pooled OLS may be appropriate. The Breusch–Pagan–Cook-Weisberg test for heteroscedasticity was applied to Models 1 and 2, and robust standard errors were employed where heteroscedasticity was detected. Multicollinearity was assessed using the Variance Inflation Factor (VIF), and normality of residuals was examined prior to regression estimation. All analyses were conducted using STATA 12.1 at the 5% significance level.

4.0 Results and Discussion

Table 2 presents the descriptive statistics for 200 firm-year observations drawn from a balanced panel of 20 manufacturing companies over 2014-2023. Profitability (PRF) ranges from 0.0100 to 0.9988 (mean = 0.3294; SD = 0.2686), indicating moderate but variable financial performance across the sample. Board size (BDS) ranges from 8 to 16 directors (mean = 11.64; SD = 1.60), suggesting limited cross-sectional variation in governance composition, consistent with Nigerian Exchange Group listing requirements. Firm age (AGE) ranges from 11 to 74 years (mean = 42.95; SD = 15.61), reflecting the mix of relatively young and well-established manufacturers in the sample.

Environmental disclosure (ENV) averages 0.5123 (range: 0.14-0.82), social disclosure (SOC) averages 0.6894 (range: 0.25-0.875), and governance disclosure (GOV) averages 0.6858 (range: 0.50-0.83). The relatively compressed ranges and low standard deviations across all three ESG indices suggest limited cross-sectional variation in disclosure practices, which may partly reflect homogenisation in reporting norms within the Nigerian manufacturing sector and constitutes a constraint on explanatory power a point addressed in Section 4.4.

Correlation and Multicollinearity

The correlation matrix (Table 2) indicates low pairwise correlations among the independent variables, with the highest estimated correlation of 0.096 between board size and profitability well below the 0.75 threshold commonly cited as indicative of harmful multicollinearity (Gujarati & Sangeeta, 2007). The mean VIF of 1.03 across all three models confirms the absence of multicollinearity, and no variable was removed on this basis.

Panel Regression Results

Table 3 presents the regression estimates. The Hausman test results are statistically insignificant for all three models ($p > 0.05$), indicating that the random effects estimator is consistent and efficient, and preferred over fixed effects. For Models 1 and 2, the Breusch-Pagan LM test is also insignificant, and pooled OLS with robust standard errors is applied following detection of heteroscedasticity. Model 3 uses random effects, consistent with the significant Breusch-Pagan LM test result ($p < 0.01$).

Model 1 Environmental Disclosure. Profitability ($\beta = 0.040$, $p = 0.292$) and board size ($\beta = 0.020$, $p = 0.905$) are positive but statistically insignificant, indicating that neither financial

performance nor governance composition meaningfully influences environmental disclosure among the sampled firms. Firm age, however, is positive and statistically significant ($\beta = 0.1236$, $p = 0.023$), providing empirical support for hypothesis H1c and legitimacy theory's prediction that older firms disclose more environmental information. Firm size is highly significant ($\beta = 0.0596$, $p < 0.01$), consistent with stakeholder and agency theory predictions. The model is jointly significant ($F = 8.56$, $p < 0.01$) and explains approximately 13.2% of within-variation ($R^2 = 0.132$). The F-statistic confirms joint model significance, even as individual coefficients for profitability and board size are not significant.

Model 2 Social Disclosure. All three firm characteristics profitability ($\beta = -0.026$, $p = 0.517$), board size ($\beta = 0.078$, $p = 0.669$), and firm age ($\beta = -0.014$, $p = 0.808$) are statistically insignificant. Firm size remains significant ($\beta = 0.0289$, $p < 0.05$). The overall model is significant ($F = 2.72$, $p < 0.05$), but the explanatory power is weak ($R^2 = 0.014$). This finding suggests that social disclosure behaviour among Nigerian manufacturing firms is not meaningfully differentiated by the three firm characteristics under study but is influenced by firm scale consistent with the stakeholder visibility argument.

Model 3 Governance Disclosure. Profitability ($\beta = 0.009$, $p = 0.377$), board size ($\beta = -0.038$, $p = 0.400$), and firm age ($\beta = -0.035$, $p = 0.500$) are all statistically insignificant. Firm size again demonstrates a positive and significant effect ($\beta = 0.0071$, $p < 0.05$). The model is significant ($F = 22.27$, $p < 0.05$), though $R^2 = 0.015$ indicates very limited explanatory power.

Critical Assessment of Model Adequacy and Findings

The R^2 values across the three models range from 0.014 (Model 2) to 0.132 (Model 1). Whilst Model 1 achieves moderate explanatory power consistent with other ESG disclosure studies in emerging markets (Khalid et al., 2022; Nuhu & Alam, 2024) the explanatory power of Models 2 and 3 is low, indicating that the included predictors account for only a small proportion of variance in social and governance disclosure. Several explanations merit consideration.

First, low R^2 may reflect measurement limitations. The dichotomous scoring of disclosure items, while standard in the literature, does not capture variation in disclosure quality, depth, or comparability attributes that may be more meaningful to stakeholders than item count. Second, the limited cross-sectional variability in the ESG indices (as noted in the descriptive statistics) constrains the statistical ability of any predictor to explain variation, since there is relatively little variation to explain. Third, it is possible that model misspecification is present: the study's theoretical framework suggests that institutional environment, regulatory pressure, ownership concentration, and industry-specific factors may be important omitted variables. Future research should consider including these variables to improve model specification.

The consistent statistical significance of firm size as a control variable across all three models and all three ESG disclosure dimensions warrants explicit discussion, as it might appear to contradict the initial focus on profitability, board size, and age. However, this finding is theoretically coherent and substantively important. Firm size is a well-established determinant of ESG disclosure in both developed and emerging market contexts (Barako, 2007; Khalid et al., 2022), and its significance does not negate the study's contribution; rather, it contextualises the findings the three focal characteristics (profitability, board size, age) do not independently drive ESG disclosure once firm scale is controlled. This suggests that in Nigeria's manufacturing

sector, scale-driven stakeholder visibility and regulatory scrutiny operate as the primary disclosure incentive mechanism, while internal financial performance and governance configuration play secondary roles.

The insignificance of profitability across all three ESG dimensions may reflect the dual pressures identified in the theoretical framework: profitable firms may disclose more to signal strength, but firms with poor performance may also increase disclosure to divert attention, resulting in a null net effect. The insignificance of board size is consistent with Htay (2012) and Lipton and Lorsch (1992), who argue that beyond a threshold, board size introduces coordination inefficiencies that may actually reduce disclosure effectiveness. The significance of firm age only in the environmental disclosure model (and not for social or governance) suggests that the legitimacy-based incentive for disclosure may be domain-specific: environmental standards have been the subject of progressively more stringent regulation in Nigeria, making cumulative institutional experience particularly relevant for environmental reporting, while social and governance reporting may be more uniformly influenced by contemporary stakeholder pressures irrespective of firm age.

5.0 Conclusion, Implications, and Limitations

This study examined the effect of three firm characteristics profitability, board size, and firm age on ESG disclosure, disaggregated into environmental, social, and governance disclosure components, among 20 listed manufacturing companies in Nigeria over the period 2014–2023. The study was grounded in an integrated theoretical framework combining agency theory, legitimacy theory, and stakeholder theory, and generated directional hypotheses for each predictor disclosure pairing.

The empirical findings reveal that firm age is a positive and statistically significant determinant of environmental disclosure (H1c supported), consistent with legitimacy theory's prediction that institutional maturity promotes disclosure transparency. Profitability and board size do not demonstrate statistically significant effects on any of the three ESG disclosure dimensions (H1a, H1b, H2a, H2b, H2c, H3a, H3b, H3c not supported). Firm size consistently and robustly predicts all three ESG disclosure dimensions, underscoring the centrality of scale-driven visibility and stakeholder pressure as disclosure determinants.

Policy and Managerial Implications

The findings carry important implications for policymakers, regulators, and corporate managers. First, the dominance of firm size as a disclosure predictor suggests that smaller manufacturing firms in Nigeria disclose significantly less ESG information, creating an accountability gap that may be detrimental to investors and communities. Policymakers should therefore introduce graduated ESG disclosure obligations that scale with firm size, ensuring that large firms meet comprehensive reporting standards while smaller firms adhere to simplified but meaningful minimum requirements.

Second, the significance of firm age only for environmental disclosure and not for social or governance suggests that the regulatory and reputational incentives for environmental reporting have been more effectively internalised by established firms over time. This implies that targeted regulatory engagement with younger manufacturing firms on environmental compliance would be particularly impactful. Social and governance disclosure requirements, by contrast, may

require more uniform enforcement mechanisms given the absence of age effects in those dimensions.

Third, the absence of a statistically significant board size effect does not imply that board governance is irrelevant to ESG disclosure; rather, it may indicate that board quality, independence, and diversity rather than size per se are more important determinants. Future governance reforms should focus on board composition and expertise, particularly the inclusion of directors with sustainability and ESG expertise.

This study has several limitations that should be acknowledged. The purposive sampling approach, while justified by data availability constraints, may introduce selection bias toward firms with greater disclosure propensity, potentially overstating average ESG disclosure scores. Future studies should seek to include all listed manufacturing firms through imputation or alternative data collection strategies to mitigate this bias.

The low R^2 values in Models 2 and 3 suggest that important explanatory variables are omitted from the current models. Future research should incorporate institutional factors such as regulatory enforcement quality and industry association membership, ownership structure, audit quality, and firm-level ESG ratings to improve model specification. The dichotomous disclosure scoring methodology, while standard in the literature, could be supplemented with textual analysis or machine learning-based content analysis to capture disclosure quality dimensions.

Finally, this study covers the period 2014–2023. Future research extending the panel to incorporate post-2023 developments including Nigeria's emerging mandatory ESG disclosure requirements and the global push toward ISSB-aligned reporting would provide timely insights into how regulatory change shapes firm-level disclosure incentives.

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