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The Determinants of Sustainability Disclosure Performance of Ghanaian Public Sector Entities

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ABSTRACT

Sustainability disclosure in public sector entities (PSEs) is increasingly critical in developing economies, where fiscal transparency, environmental stewardship, and social legitimacy integrate with public governance. Yet, most empirical evidence remains concentrated on private firms in developed markets. This study investigates the determinants of disclosure-based sustainability performance in Ghanaian public sector entities using an unbalanced panel of 47 public entities from 2017 to 2023. To address unobserved endogeneity, heterogeneity, and long-run dynamics, the study employs Fixed Effects, Robust Least Squares, dynamic panel generalised method of moments (GMM) and dynamic ordinary least squares (DOLS) estimation. The results reveal that leverage and audit quality consistently and positively influence sustainability disclosure performance. In contrast, liquidity exhibits a negative association in the dynamic specification. Board size and gender diversity reveal a positive long-run governance effect, whereas profitability and firm size exhibit limited explanatory power. The findings suggest that internal financial characteristics and institutional governance framework are key factors in shaping sustainability disclosure within Ghana's public entities. The study contributes to the sustainability accounting literature by extending agency and institutional theory into the public sector domain in Sub-Saharan Africa and by offering actionable policy recommendations for strengthening sustainability governance frameworks.

Keywords: Sustainability, Public Sector Entities, Governance, Dynamic Panel, Agency Theory
JEL Classifications: M40, M41, M14, Q56

1. INTRODUCTION

Globally, sustainability disclosure has increasingly become a central mechanism through which organisations communicate their environmental, social, and governance (ESG) commitments to a wide range of stakeholders (Chopra et al., 2024; Khamisu et al., 2024). Furthermore, within the accounting literature, such disclosures are commonly framed as instruments of transparency that enhance organisational accountability and legitimacy (Rusu et al., 2024; Al-Shaer and Hussainey, 2022). While it is common for businesses to publish their sustainability information in integrated reports, sustainability reporting has transformed from a voluntary-based corporate social responsibility into a critical component of the contemporary governance framework in contemporary business settings (Lee et al., 2025; Hurghiș et al., 2025). This drive is intensified to reflect the growing societal expectations that organisations (both public and private) demonstrate responsible stewardship and agents of economic, environmental, and social resources to ensure long-term preservation (Villamor and Wallace, 2024; Naciti et al., 2022).

Moreover, while sustainability disclosure has been extensively examined in private-sector contexts. Despite significant coverage, less research has been devoted to public sector entities (PSEs) to gain a proper understanding of their drivers for sustainability disclosure. This dearth is critical and should be addressed, given that public organisations control key economic resources. Additionally, they play a pivotal role in managing infrastructure, public services, societal welfare and national development programmes (Shittu, 2023). In developing economies such as Ghana, state-owned and public sector entities represent important instruments through which governments achieve development objectives (Attiogbe et al., 2025; Owusu-Akomeah et al., 2022). Therefore, transparency in sustainability-related reporting is required not only to enhance governance credibility but also to inspire public confidence and establish accountability (Darteh and Fiorani, 2026; Kazemi et al., 2025).

Furthermore, the growing demand for sustainability disclosure is directly linked to intensifying global concerns about climate change, climate adaptation, and environmental preservation, evidenced by volatile rainfall and extreme temperatures (Octavio and Setiawan, 2025; Shui et al., 2025). Importantly, as governments and institutions seek to address growing ecological issues, organisations are increasingly motivated to disclose their environmental impacts, their responsibilities, and sustainable governance processes. Furthermore, such disclosures are seen to drive transparency, support informed decision-making, and ensure institutional accountability across diverse organisational contexts (Izzo et al., 2025; Sari and Muslim, 2024).

Nonetheless, despite these developments, the empirical literature on sustainability disclosure remains dominated by studies of private organisations operating within market and profit-driven institutional environments (Alinda et al., 2026; Alodat et al., 2024; Mirza et al., 2023; Osunbor et al., 2023; Carnini Pulino et al., 2022). Conventionally, sustainability reporting is typically interpreted through the lens of stakeholder theory postulations, including investor activism, reputational concerns, and market competition (Zaccone, 2026; Maldonado et al., 2025; Dincer and Dincer, 2024). However, such models may not fully capture the dynamics of sustainability disclosure in public sector entities, where governance structures, incentive systems, and accountability mechanisms differ significantly compared to those in private sector firms (Yuan and Chen, 2025; Fagbadebo, 2025; Akinsola, 2025).

Importantly, this study addresses several gaps within the sustainability accounting and reporting debate. First, it contributes to the limited empirical investigation on sustainability disclosure within PSEs, particularly in developing economies. Second, it extends existing research by examining how internal financial structures and governance mechanisms influence sustainability disclosure in institutional environments characterised by evolving regulatory frameworks and public accountability pressures. Third, the study advances the methodological literature by employing multiple panel estimation techniques (including dynamic panel estimation and long-run models) to account for potential endogeneity, persistence effects, and heterogeneity across entities. This multi-estimator methodology ensures robust research findings and prevents spurious regression.

Furthermore, drawing on insights from agency theory and institutional theory, and using panel data from 47 Ghanaian PSEs covering the period 2017-2023, the study investigates whether financial characteristics (liquidity, leverage, profitability, and organisational size) and governance attributes (board size, gender diversity, and audit quality) shape sustainability disclosure behaviour in Ghanaian PSEs. Moreover, the agency theory suggests that financial structures and monitoring mechanisms can influence managerial disclosure incentives, while institutional theory emphasises the role of governance arrangements and regulatory norms in shaping organisational reporting practices and choices.

Similarly, the study significantly contributes to a growing body of research seeking to broaden the geographical and institutional scope of sustainability accounting scholarship, especially in Africa, where unique institutional and structural issues prevail. Importantly, the study contributes to three key dimensions in the literature. First, it enriches sustainability accounting research by providing empirical evidence on disclosure determinants within PSEs in Ghana. Second, it extends governance research by examining how internal governance mechanisms shape sustainability transparency in environments with limited market disciplines. Third, the study offers policy insights relevant to public sector governance reforms, particularly for developing economies seeking to strengthen sustainability reporting frameworks, institutional accountability, and contribute to the Sustainable Development Goals (SDGs).

2. LITERATURE REVIEW

2.1. Theoretical Review

Over the years, studies have employed diverse theories and lenses in the motivation for and interpretation of sustainability disclosure, including legitimacy theory, agency theory, institutional theory, stakeholder theory, and others. This diversity is due to the multifaceted nature of sustainability reporting, and no single theory is comprehensive enough to interpret its mechanisms and impact on corporate outcomes.

Importantly, the stakeholder theory provides the main analytical lens for examining sustainability disclosure performance in Ghanaian State-Owned Enterprises (SOEs). Moving beyond the shareholder-primacy model (Friedman, 1970), the theory conceptualises organisations as networks of interdependent relationships among actors whose interests possess legitimacy and strategic relevance. In Ghana's public sector, SOEs operate under hybrid mandates that combine commercial objectives with developmental, environmental and social responsibilities. Also, their accountability extends beyond financial performance to include public value creation, environmental stewardship, equitable service delivery, and governance transparency.

Furthermore, the stakeholder landscape of Ghanaian SOEs is therefore pluralistic, comprising internal actors (management, employees, boards) and external stakeholders (government oversight bodies, regulators, communities, civil society groups, and increasingly, transnational institutions influencing sustainability standards and financial outcomes). Also, in this context, stakeholder theory provides the conceptual structure for understanding how sustainability expectations are sharpened, negotiated and institutionalised within performance models.

Likewise, the tripartite categorisation of stakeholder theory into descriptive, normative and instrumental elements (Donald and Preston, 1995) is particularly instructive for sustainability governance in Ghana. The descriptive strand explains how SOEs currently engage stakeholders within politically embedded governance settings; the normative strand justifies sustainability as an ethical obligation founded in public accountability and responsibility; and the instrumental strand links systematic stakeholder engagement to improved sustainability outcomes, institutional legitimacy, and long-term organisational resilience.

In contrast, Garriga and Melé (2004) argue that, within the normative strand, all stakeholders must be treated equally, irrespective of the power they wield. Thus, accountability is to all stakeholders, not those who have the power to influence the operations of the entity. Stakeholders in this regard will include customers, creditors, suppliers, government, donor agencies, and managers (Freeman et al., 2007). These stakeholders, regardless of power, expect entities to be socially and environmentally responsible and to play a critical role in addressing other sustainability-related functions. To address this function, entities report on sustainability through their annual reports or standalone reports. The impact of stakeholders in developed nations appears more pronounced than in developing nations (Dissanayake et al., 2019) due to the overall public financial management, credit risk, the nature of entities and the macroeconomic framework. These factors, whether individually or collectively, will lead to different pressures on an entity. In addressing this, the instrumental and descriptive strand requires the need for stakeholder engagement in which the entity is construed to have a central role, which allows an interplay between various stakeholders in order to maximise wealth and meet sustainability demands. In this study, the stakeholder theory provides insights to policymakers and academics on the need to engage stakeholders so as to meet the sustainability needs of all stakeholders, irrespective of their power and roles. Thus, the adoption of the Ibrahim and Ambe (2025) sustainability framework as a benchmark to measure the sustainability performance of public entities. In furtherance of this, various stakeholder relationships are discussed subsequently in order to develop a hypothesis.

Nonetheless, despite its relevance, stakeholder theory has been insufficiently operationalised within structured sustainability performance management frameworks in developing economies' SOEs, where engagement is reactive and fragmented. This study, therefore, addresses this gap by positioning stakeholder identification, prioritisation, and structured engagement as core mechanisms within a sustainability performance management framework (SPMF), thereby extending stakeholder theory from a governance framework to an operational model for enhancing sustainability performance in Ghanaian SOEs. This is comprehensively presented in Figure 1 below.

2.2. Conceptual Review

Extant literature continues to discuss the need to explore the factors that influence sustainability performance. Studies such as Goyal and Datta (2022), Rosati and Faria (2019) and Curea et al. (2025) have explored various factors that determine sustainability performance. For instance, Datta and Goyal (2022) classify these factors into regulatory-level determinants (which include sustainability committees and compliance with international framework); report-level factors (such as reporting choices and processes); and firm-level factors (such as financial performance, size, risk, industry sector, regulatory context and stakeholder orientation).

On the other hand, Rosati and Faria (2019) also identify the factors influencing sustainability performance to include institutional

Figure 1: Conceptual framework

factors at the country level (such as politics and law, society and culture, education and workforce, sustainability, technology and innovation, economy and finance) together with organizational factors (such as higher proportion of female directors on the board, younger board of directors, firm size, a higher proportion of intangible assets, commitment to sustainability frameworks and their external assurance). These notwithstanding, Pizzi et al. (2021) and Zampone et al. (2022) have focused on governance-related factors (such as gender diversity, the presence of independent directors and board structure) as determinants of sustainability performance.

2.2.1 Sustainability performance and firm size

Previous studies such as Ashrafi et al. (2019), Kouloukoui et al. (2019), Hahn and Kühnen (2013), da Silva Monteiro and Aibar-Guzmán (2010) report a positive relationship between firm size and sustainability reporting. Compared to small firms, large firms have a reputation within the industries they operate and seek to maintain legitimacy within their operating environment. The focus of most small firms on increasing profitability without a focus on gaining trust through sustainability performance appears a bit worrisome. The need for external funding arrangements, which brings about conflict of interest between shareholders, creditors and managers (Kılıç et al., 2022), aimed at propelling firm size, has increased the need for companies to engage in sustainability performance. Equally, it is argued that as firms grow in size, there is a need for an increase in the investment towards sustainability performance (Kılıç et al., 2022) in an attempt to gain legitimacy and shore up performance. Per the foregoing discussions and relative to Ghanaian public sector entities, this study hypothesises that:

- H_1: There is a positive relationship between the size of a firm and sustainability reporting.

2.2.2. Sustainability performance and profitability

Orazalin et al. (2019) argue that profitability is a significant determinant of voluntary disclosures as profitable firms tend to publish more sustainability information to legitimise their operations. As an accounting measure, Widyatami et al. (2021) contend that profitability is used by investors to assess the need to invest in a company. It suffices to mean that entities seeking to attract investment will work to increase profit levels, especially when profitability is a key driver of sustainability performance. It is also a component for assessing sustainability performance. Consequently, the higher the level of profit, the greater the need for an entity to engage in sustainability performance reporting. Previous studies have documented positive and negative associations between profitability and sustainability performance. For instance, Kumar et al. (2021), Kouloukoui et al. (2019), Orazalin et al. (2019), and Ruhnke and Gabriel (2013) report a positive relationship. Contrary to this, Al-Qudah and Houcine (2023), Kumar et al. (2021), and Coffie et al. (2018) report a negative association, whereas Wachira, et al. (2019), Karaman et al. (2018) and Dissanayake et al. (2016) report no association between profitability and sustainability performance. Based on the foregoing and pursuant to the operations of public sector entities in Ghana, it is stated that:

- H_2: There is a positive relationship between the profitability of the company and sustainability performance.

2.2.3 Sustainability performance and leverage

Leverage focuses on the debt levels of a firm and its ability to honour its short-term, medium-term and long-term debt obligations. To this extent, various stakeholders, including creditors, pay greater attention to companies with high leverage (Fernandes and Barbosa, 2021). The literature indicates that firms with high leverage tend to provide information to supplement the information needs of investors and external capital providers, while at the same time alleviating the fears of borrowers relative to the transfer of resources to shareholders and managers from providers of debt (Masum et al., 2021). For instance, sustainability performance is used as an avenue to reduce information asymmetry and ensure reliability, owing to the fact that creditors could need non-financial information (Girella et al., 2019) in order to analyse and understand the debt situation of a company. The above notwithstanding, studies on the relationship between sustainability performance and leverage have provided mixed results (Masum et al., 2021), with some studies indicating no relationship (Girella et al., 2019). In contrast, some studies report a negative relationship between sustainability performance and leverage (Khalid et al., 2021). Regardless of this, other studies report a positive relationship (Masum et al., 2021). Premised on the inconclusive findings between the two variables, this study assumes a positive relationship between sustainability performance and leverage. The reason is that when an analysis of the capital structure of a company reveals a high leverage ratio, the company is compelled to report on sustainability in order to minimise agency costs (Masum et al., 2021; Elfeky, 2017). Equally, a company with high leverage incurs high monitoring cost, thereby releasing or disclosing more information (Jensen and Meckling, 1976). Thus, in relation to public sector entities in Ghana, the study asserts and hypothesises that:

- H_3: There is a positive relationship between the leverage of the company and sustainability performance.

2.2.4 Sustainability performance and liquidity

Liquidity measures the ability of the company to pay or meet its day-to-day expenses and short- term obligations (Okeke et al., 2025) without curtailing its operations or liquidating its non-current assets (Masum et al., 2021). Primarily, high liquidity dictates the creation of a positive image for the company, which requires a high disclosure of sustainability performance information to stakeholders. The decision or motivation for managers to disclose information when liquidity is high is noted to include: Strengthening the position of managers towards the business, ensuring smooth remuneration, and signalling organisational potentials (Sonia and Khafid, 2020; Rouf and Akhtaruddin, 2018). Just as with leverage, empirical studies on the relationship between liquidity and sustainability performance reporting have reported mixed results. Other studies report a significant relationship (Putri & Christiawan, 2014). Based on the findings of previous studies (Masum et al., 2021), establishing a positive relationship between the two variables and the earlier assertions on the motivation of managers to disclose information due to high liquidity, while dwelling on public sector entities in Ghana, this study hypothesises that:

- H_4: There is a positive relationship between the liquidity of the company and sustainability performance.

2.2.5. Sustainability performance and board size

The boards of directors of a company perform numerous functions. As part of these functions, they are responsible for providing oversight and direction to the management of the company. This responsibility is even more pronounced when the company is expected to engage in and report on its sustainability performance. Within the ambit of corporate governance and sustainability reporting, it can be argued that larger board sizes are preferable to smaller boards. Githaiga and Kosgei (2023) explain that board size is the total number of directors that serve on a corporate board, and the diversity of large boards helps to attain corporate success. Haladu and Bin-Nashwan (2022) found a negative relationship between board size and sustainability performance. Other studies (Correa-Garcia et al., 2020; Masud et al., 2018; Mudiyanselage, 2018) report a positive relationship between the two variables. Although there continues to be a debate on the board size; whether small or large, large board sizes have always been preferred due to the issue of leveraging on diverse expertise, diverse interest representation and quality board decisions (Githaiga and Kosgei, 2023), the study aligns with entities having large boards in line with the nature of public sector entities in Ghana and postulates that:

- H_5: There is a positive relationship between board size and sustainability performance.

2.2.6 Sustainability performance and auditor type

Because auditors are entrusted with the responsibility to examine the quality of disclosed financial information through annual reports, the activities of auditors are considered critical (Abo El Matey et al., 2026). The literature suggests that companies or entities audited by large audit firms disclose greater amounts of information (Zaid et al., 2020) and for the purposes of this study, sustainability performance information. Again, big audit firms arguably influence the decision of the public in legitimising the activities of entities (Ruiz-Barbadillo and Martínez-Ferrero, 2022). As with other variables, the relationship between the two variables is mixed. Whereas studies such as Zaid et al. (2020), Orazalin and Mahmood (2018) show a positive relationship, other studies, such as Alotaibi and Hussainey (2016), document a negative relationship, while Habbash et al. (2016) report no relationship. Following from the above and the activities of public sector entities in Ghana, the study contends and states that:

- H_6: There is a positive relationship between auditor type (big four) and sustainability performance.

2.2.7 Sustainability performance and board gender diversity

Board gender diversity is gaining momentum among researchers in sustainability. As discussed above, the advantages of large and diverse boards for corporate development and success cannot be downplayed. Githaiga and Kosgei (2023) opine that board gender diversity must be considered a strategic tool which links the internal and external environments to drive performance as well as a competitive advantage for the business. They further state that "board diversity entails the heterogeneity of board members based on different dimensions that are to the advantage of the firms" (Githaiga and Kosgei, 2023). The representation of females on boards helps enhance stakeholder management and shapes the approach to community engagements (Adeola and Ajasa-Adeoye, 2025); increases the probability of adopting sustainability performance (Vitolla et al., 2020); and reduces common mistakes during financial reporting (Wahid, 2019). Studies on gender diversity and sustainability do not appear encouraging. This notwithstanding, Amran et al. (2014) and Shamil et al. (2014) found a negative relationship, while Githaiga and Kosgei (2023), Buallay et al. (2022) show a positive association. Given the nature of public sector entities in Ghana, the study therefore hypothesises that:

- H_7: There is a positive relationship between board gender diversity and sustainability performance.

3. METHODOLOGY

This study adopts a quantitative longitudinal research design to examine the determinants of sustainability disclosure among Ghanaian public sector entities (PSEs). A panel design is appropriate because it allows the analysis to capture both cross-sectional differences across entities and temporal changes in disclosure behaviour over time. Furthermore, the empirical strategy combines short-run and long-run estimators to ensure robustness and to align with the study's objective of identifying the drivers of sustainability disclosure among PSEs in Ghana.

3.1. Data Source, Sample Selection and Scope

The empirical analysis is based on an unbalanced panel dataset of 47 Ghanaian PSEs observed over the period of 2017 to 2023. The entities included comprise state-owned and publicly controlled organisations operating in economically and socially strategic sectors such as utilities, transport, communications, infrastructure, and public service delivery. Furthermore, these entities were selected for their significant role in national development and revenue utilisation, while also being subject to public accountability and governance oversight.

Furthermore, the sample was determined using a purposive selection approach, based on three criteria. First, entities were required to publicly publish their annual reports for accessibility for at least part of the study period. Second, the reports had to contain sufficient governance and financial information to permit reliable measurement of the explanatory variables. Third, the entities needed to provide sufficient narrative disclosure to enable content-based assessment of sustainability reporting. Furthermore, data were manually extracted from audited annual reports, financial statements, and publicly accessible reporting databases to ensure transparency and replicability.

3.2. Measurement of Sustainability Disclosure

The sustainability disclosure performance (SREP) was operationalised as a disclosure index score derived from content analysis of sampled companies' annual reports of PSEs in Ghana. Specifically, the variable captures the extent to which entities disclose sustainability-related information. Likewise, a structured disclosure checklist was adopted from Ibrahim and Ambe (2025). Based on prior sustainability reporting and disclosure studies and adaptation to the public-sector specifications, Ibrahim and Ambe (2025) developed a framework for measuring sustainability performance. Importantly, the index captures the presence of disclosure items (relating to environmental responsibility, social accountability, governance, ethics, economic and legal factors). Additionally, each disclosure item was scored using a five-point scale multichotomous approach based on the approach's ability to allow for assignment of different scores. The scale was operationalised, with 0 indicating no disclosure and 5 indicating a detailed and comprehensive disclosure.

Consequently, the total disclosure score for each entity's year observation was computed as the sum of disclosed items and, where necessary, standardised to facilitate comparability across observations. This approach is consistent with prior accounting and sustainability disclosure literature (Abdallah, 2021; Carvalho et al., 2020; Hassan and Marston, 2019) that employs content analysis to operationalise reporting quality and breadth. Additionally, since disclosure scoring can be subject to coder judgment, a coding framework was adopted using a predefined protocol to ensure consistency in interpretation and item classification. In essence, this strengthens measurement reliability and reduces subjective bias in the use of the disclosure index.

Specifically, the study estimates:

i. A baseline fixed-effects model to control for unobserved time-invariant entity effects across entities. This is critical in public-sector settings where structural and institutional differences across entities are likely to correlate with disclosure behaviour
ii. A robust least squares regression model to control the influence of outliers and non-normality. The Robust LS reduces sensitivity to influential observations and provides more stable estimates where the traditional OLS assumptions are violated
iii. A dynamic panel GMM model to address endogeneity and persistence in sustainability performance. This estimator is appropriate for panel datasets with larger cross-sections than time periods. The study also validates the GMM statistics using the Hansen J-statistic to test instrument validity and the Arellano-Bond AR(2) test to confirm the absence of second-order serial correlation.

The study uses an unbalanced panel dataset from 47 Ghanaian public sector entities (2017-2023) with published financial statements and governance disclosures. These entities are central to Ghana's development agenda and are responsible for utilities, transport, infrastructure, communication, and public service delivery. A purposive sampling technique was employed based on data availability, reporting consistency, and traceability of disclosure information, ensuring measurement validity and replicability. Furthermore, data were extracted from publicly available audited annual reports, financial statements and sustainability reports, and relevant public-sector reporting repositories.

3.3. Measurement of Variables

The Table 1 reports the operational definitions and measurements of all variables.

3.4. Model Specification

To estimate the association between internal determinants and sustainability performance, the study specifies the following model:

$$SREP_{it} = \alpha + \beta_1 LEV_{it} + \beta_2 LIQ_{it} + \beta_3 FSIZE_{it} + \beta_4 PROF_{it} + \beta_5 BSIZE_{it} + \beta_6 GDIV_{it} + \beta_7 AUD_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Where:
i = Indexes entity; t indexes year (2017-2023)
$SREP$ = Is the sustainability performance (disclosure score)
μ_i = Captures unobserved entity-specific effects
λ_t = Captures time effects
ε_{it} = The error term

This static model provides a benchmark estimate after controlling for entity heterogeneity and time effects.

3.5. Dynamic Model (Persistence and Heterogeneity)

Over time, sustainability disclosure may exhibit persistence, such that prior disclosure behaviour influences current disclosure practices. In addition, the relationship between governance characteristics and disclosure may be endogenous, arising from omitted variables, simultaneity, or reverse causality among the variables. To address these concerns, the study estimates a dynamic specification that takes into cognisance long-run interaction among the variables.

Table 1: Measurement of variables

Variable type	Variable	Code	Measurement/operational definition	Key supporting sources
Dependent	Sustainability performance	SREP	Total disclosure score (TDS) computed using SPMF disclosure items	Ibrahim and Ambe (2025)
Independent	Leverage	LEV	Total debt÷Total assets	Fernandes and Barbosa, 2022; Masum et al., 2024
Independent	Liquidity	LIQ	Current assets÷Current liabilities	Masum et al., 2024
Independent	Firm Size	FSIZE	Natural log of total assets	Kılıç et al., 2021; Gupta and Nagpal, 2023
Independent	Profitability (ROA)	PROF	Net Income÷Net assets	Adebanjo and Wisdom, 2024; Al-Qudah and Houcine, 2023
Control (Governance)	Board Size	BSIZE	Number of directors on board at year-end	Githaiga and Kosgei, 2023; Correa-Garcia et al., 2020
Control (Governance)	Gender Diversity	GDIV	Proportion of female directors to total directors on the board	Vitolla et al., 2020; Githaiga and Kosgei, 2023
Control (Assurance)	Auditor Quality	AUD	Measured by audit type and coded using a dummy variable; = 1 if audited by Big 4; 0 otherwise	Ruiz-Barbadillo and Martínez-Ferrero, 2022

Source: Authors' Computation (2026)

The dynamic specification is:

$$SREP_{it} = \delta SREP_{it}-1 + \beta_1 LEV_{it} + \beta_2 LIQ_{it} + \beta_3 FSIZE_{it} + \beta_4 PROF_{it} + \beta_5 BSIZE_{it} + \beta_6 GDIV_{it} + \beta_7 AUD_{it} + \mu_i + \varepsilon_{it}$$

The inclusion of the lagged dependent variable introduces dynamic panel bias under fixed effects, motivating the use of a GMM.

3.6. Diagnostic and Post-Estimation Checks

To ensure robustness and validity of inference, the study conducts and reports the following analyses:

i. Descriptive diagnostics and Normality tests (Jarque-Bera) to justify robust methods
ii. Correlation matrix and Variance Inflation Factors test (VIF) to confirm independent predictors are not redundant and assess potential multicollinearity.
iii. GMM specification tests: Hansen J-statistic and Arellano-Bond AR(2)
iv. Heteroskedasticity-robust standard errors (White/Huber-type) in relevant models.

4. RESULTS AND DISCUSSION

4.1. Descriptive Analysis

The descriptive statistic is presented in Table 2, providing preliminary insights into the dataset's features over the study period (2017-2023). From the analysis, sustainability disclosure performance (SREP) exhibits a mean of approximately 2.07 with relatively low dispersion (SD = 0.14), suggesting a generally consistent but modest level of sustainability disclosure across entities. This pattern may reflect standardised reporting practices and institutional benchmarks for disclosure behaviour within PSEs in Ghana. Furthermore, profitability (PROF) exhibits extreme variability (Mean = 0.68; S.D = 8.68) with strong negative skewness (−11.2). This indicates that while some entities generate modest returns, many PSEs are financially constrained. This is consistent with the non-profit-maximising nature of public sector entities.

Consequently, liquidity levels are relatively high on average (mean = 2.92; SD = 8.10) but exhibit considerable dispersion and extreme kurtosis (8.30), suggesting diverse short-term financial management practices across PSEs in Ghana. Likewise, leverage has a moderate mean (0.48), suggesting reliance on debt financing, which is common among service-oriented PSEs. Also, governance characteristics present a moderate board size of approximately 9 directors, consistent with Ghanaian governance codes, while Gender diversity remains relatively low, with female representation below approximately 27% of board positions. In addition, the proportion of entities audited by Big Four Firms suggests incomplete penetration of high-quality external assurance within the public sector.

4.2. Diagnostic Tests

The correlation matrix captured in Table 3 reveals that sustainability disclosure is positively associated with leverage, firm size, board size and auditor quality, while weak negative associations are observed with liquidity and gender diversity. Importantly, none of the correlations exceeds the 80% benchmark and conventional thresholds, suggesting the absence of severe multicollinearity and providing initial support for multivariate regression analysis. Table 4 below presents the VIF analyses, testing for multicollinearity.

The conclusion from the correlation analysis is reinforced in the VIF analysis above. The results confirm that multicollinearity is not a concern, with all VIF values well below the critical threshold of 5. This suggests that the independent variables are free from overlapping constructs and capture distinct measures in the dataset. Together, these diagnostics indicate that the explanatory

Table 2: Descriptive statistics

Variable	Mean	Median	Standard Deviation	Min	Max	Skewness	Kurtosis	Obs
Sustainability disclosure (SREP)	2.07	2.06	0.14	1.75	2.31	−0.09	2.19	313
Profitability (PROF)	0.68	0.06	8.68	−129	18.5	−11.2	165	313
Liquidity (LIQ)	2.92	1.37	8.10	0.00	102	8.30	87.1	313
Leverage (LEV)	0.48	0.40	0.44	0.00	3.32	2.50	12.5	313
Gender Diversity (GDIV)	0.27	0.25	0.16	0.00	0.85	0.95	4.74	313
Firm Size (FSIZE)	12.4	15.1	7.42	0.20	25.0	−0.22	1.63	313
Board Size (BSIZE)	9.04	9.00	2.35	0.00	15.0	−0.84	6.01	313
Auditor Type (AUD)	0.57	1.00	0.50	0.00	1.00	−0.29	1.08	313

Source: Authors' computation (2026)

Table 3: Correlation analysis

Variable	SREP	PROF	LIQ	LEV	GDIV	FSIZE	BSIZE	AUD
SREP	1.000							
PROF	0.013	1.000						
LIQ	−0.117	−0.000	1.000					
LEV	0.234	−0.115	−0.136	1.000				
GDIV	−0.091	0.152	0.006	−0.193	1.000			
FSIZE	0.111	0.098	−0.071	0.345	−0.038	1.000		
BSIZE	0.102	0.092	−0.026	0.018	0.094	0.090	1.000	
AUD	0.279	0.137	−0.062	0.172	−0.018	0.092	0.200	1.000

Source: Authors' computation (2026)

variables capture distinct elements of financial and governance characteristics and are suitable for multivariate analysis.

The diagnostic analysis in Table 5 indicates that the Arellano-Bond serial correlation test shows no second-order autocorrelation, as it is statistically insignificant. This validates the use of dynamic panel GMM estimation. Furthermore, the Hansen J-statistic is statistically insignificant, affirming the validity of the instrument set and mitigating concerns about over-identification bias. In general, this shows that there is no statistical evidence of misspecification employing the GMM estimator.

4.3. Regression Analysis

4.3.1. Dynamic panel results (GMM)

Table 6 presents a summary of the regression analyses, using multiple estimators to evaluate the determinants of sustainability disclosure in Ghanaian PSEs. The dynamic GMM results provide a strong basis for inference, as they explicitly account for persistence and potential endogeneity. From the analysis, it is seen that leverage has a positive (0.19), statistically significant (0.02) effect on sustainability disclosure performance in Ghanaian PSEs. In contrast, liquidity (LIQ) demonstrates a negative (−0.002), significant (0.05) relationship with sustainability disclosure. This depicts that entities with stronger short-term financial positions may not necessarily prioritise disclosure, thereby reflecting weaker or reduced pressure to justify resource utilisation. Additionally, the remaining variables (profitability, firm size, board size, gender diversity, and auditor quality) are not statistically significant within the GMM dynamic framework.

Table 4: Variance inflation factor test

Variable	VIF
PROF	1.343
LIQ	1.040
LEV	1.188
GDIV	1.266
FSIZE	1.453
BSIZE	1.305
AUD	1.175

Source: Authors' computation (2026)

Table 5: Summary of GMM model diagnostics

Statistic	Value
Observations	219
Instrument Rank	22
Hansen J-Statistic (P-value)	0.722
AR (2) Test (p-value)	0.389

Source: Authors' computation (2026)

4.3.2. Fixed effects and robustness results

First, the fixed-effects panel regression further confirms the importance of board size (BSIZE), gender diversity (GDIV), and auditor quality (AUD), revealing positive and statistically significant relationships with sustainability disclosure. These findings suggest that internal governance structures and board composition play vital roles in shaping disclosure practices when unobserved heterogeneity across entities is controlled for. Furthermore, the findings for audit quality (AUD) reinforce the role of external assurance in strengthening disclosure practices. That is, entities audited by Big Four firms appear more likely to provide comprehensive sustainability disclosures, thereby ensuring higher reporting standards and quality.

In contrast, profitability (PROF) shows a negative, significant association. This suggests that financially constrained entities may rely more heavily on disclosures as a legitimacy-enhancing mechanism and to justify resource allocation. Furthermore, the robust least squares estimation corroborates the positive association between leverage and additionally highlights auditor type as a significant determinant of sustainability disclosure in Ghanaian PSEs. This suggests that entities audited by Big Four firms tend to disclose more comprehensive sustainability information, likely due to tightened assurance standards and reputational considerations.

4.4. Discussion of Findings

From the analysis across models, the empirical findings demonstrate that sustainability performance in Ghanaian public sector entities is primarily driven by financial elements and governance mechanisms rather than market-based or stakeholder-driven incentives, deviating from prior literature findings, which focused on private organisations. Also, the positive effect of leverage suggests that debt obligations impose practical discipline on corporate management, encouraging greater transparency and sustainability disclosure as a means of signalling accountability to creditors and providers of funds. These findings align with the postulations of Masum et al. (2021) and Rouf and Akhtaruddin (2018), which posit that greater leverage can reduce information asymmetry and managerial opportunism.

Furthermore, the negative association between liquidity and sustainability performance suggests that financially weak entities may lack incentives to prioritise sustainability reporting, possibly due to weak monitoring and reduced stakeholder pressure to justify resource utilisation. This finding challenges the stakeholder-based

Table 6: Summary of key regression analysis

Variable	GMM (coefficient)	GMM (p-val)	Robust LS (coefficient)	Robust LS (p-val)	Fixed Effects (coefficient)	Fixed Effects (P-value)
PROF	0.01	0.25	0.00	0.71	**−0.00**	**0.01***
LIQ	**−0.002**	**0.05***	−0.001	0.18	−0.00	0.84
LEV	**0.19**	**0.02***	**0.06**	**0.001***	0.00	0.50
GDIV	0.05	0.37	−0.05	0.38	**0.02**	**0.01***
FSIZE	0.002	0.25	0.00	0.99	0.00	0.18
BSIZE	0.002	0.25	0.003	0.30	**0.003**	**0.00***
AUD	0.00	0.84	**0.07**	**0.00***	**0.01**	**0.01***

Source: Authors' computation (2026)

justifications and highlights the role of internal financial discipline in shaping disclosure behaviour. The findings of Masum et al. (2021), Rizki (2016) differ from those of this study.

Additionally, the consistent significance of auditor type reflects the critical role of external assurance in enhancing reporting quality within public sector entities, as reported in Zaid et al. (2020), Orazalin and Mahmood (2018), and Lu and Abeysekera (2014). That is, Big Four auditors appear to function as quasi-regulatory actors, enforcing higher disclosure standards even in the absence of strong market discipline. Likewise, board size also emerges as a governance enhancer, supporting the view that larger boards provide diverse expertise and monitoring capacity conducive to sustainability oversight in line with the findings of Correa-Garcia et al. (2020), Masud et al. (2018) and Mudiyanselage (2018). Consequently, the insignificance of profitability and gender diversity in some estimations suggests that ethical commitment and sustainability reporting in public entities are less influenced by performed incentives or symbolic representation, reinforcing the institutional theory postulation rather than the market-driven structures of sustainability practices in the Ghanaian public sector.

4.5. Theoretical and Practical Implications

The study contributes to theory by extending agency and institutional theories to the context of public-sector sustainability disclosure. It demonstrates that internal control mechanisms and governance structures can substitute for stakeholder pressure in motivating disclosure practices (Al Astal et al., 2024; Meng et al., 2023). From an agency perspective, the positive association between leverage and disclosure suggests that financial obligations can serve as a monitoring mechanism that limits managerial discretion and encourages greater transparency (Maharani et al., 2025; Gisladottir et al., 2022). This supports the assertion that disclosure can function as a tool for reducing information asymmetry and strengthening accountability in PSEs where stakeholder pressure and activism are absent.

Furthermore, from an institutional perspective, the significance of governance structures and audit quality suggests that disclosure behaviour is shaped by formal oversight systems and broader expectations of public accountability (O'Regan et al., 2022). This affirms that the goal of sustainability reporting in public entities is embedded within institutional environments defined by regulatory norms, governance codes, and legitimacy expectations from stakeholders. Practically, the findings have important implications for managers and governing bodies within PSEs; therefore, this underscores the importance of strengthening board capacity and external audit quality to enhance sustainability performance in public entities.

Additionally, the significance of governance variables suggests that sustainability disclosure should not be treated as a peripheral or symbolic communication exercise. Instead, it should be embedded within broader governance and accountability systems. For public managers, the results highlight the need to integrate sustainability considerations into financial and governance decision-making rather than treating them as compliance-driven mechanisms. Consequently, the positive association between audit quality and disclosure underscores the importance of assurance and reporting discipline. Also, public sector entities seeking to improve transparency and credibility may benefit from strengthening the role of external auditors in relation to sustainability-related disclosures.

Moreover, the relevance of board characteristics suggests that disclosure quality may improve where boards are structured to provide stronger oversight, broader expertise, and more inclusive representation. This denotes that governance reform remains an important strategy for enhancing public-sector sustainability transparency.

4.6. Policy Implications

The findings have important policy implications for public sector governance reforms in Ghana and similar developing-country contexts. Regulators should prioritise mandatory sustainability reporting guidelines tailored to public entities and strengthen oversight mechanisms that link debt financing to disclosure quality. Also, policies encouraging the engagement of high-quality external auditors can significantly improve transparency and accountability. Furthermore, governance reforms aimed at optimising board composition and size can enhance sustainability oversight without imposing excessive administrative burdens. In essence, strengthening these institutional features may be more effective than relying solely on symbolic commitments to sustainability.

5. CONCLUSION AND RECOMMENDATIONS

This study examined the determinants of sustainability disclosure among Ghanaian public sector entities using panel data covering the period from 2017 to 2023. Motivated by limited empirical evidence on sustainability reporting in PSEs, the study provides robust empirical evidence that sustainability performance in Ghanaian public sector entities is primarily driven by leverage, governance capacity, and audit quality rather than stakeholder influence. The findings suggest that internal financial discipline and institutional oversight mechanisms play a decisive role in shaping sustainability disclosure practices. In contrast, profitability, firm size, and liquidity do not exhibit uniform explanatory power across all estimated models, highlighting that disclosure behaviour of PSEs is not driven solely by resource abundance or firm size.

Overall, the results suggest that sustainability disclosure within Ghana's public sector is better understood as an accountability and governance practice than as a purely strategic or market-responsive reporting activity. It is recommended that policymakers strengthen disclosure requirements tied to public borrowing, enhance the role of external auditors in sustainability assurance, and invest in board capacity development. Also, public sector managers should embed sustainability reporting within core financial and governance frameworks to ensure long-term accountability and value creation.

6. LIMITATIONS OF THE STUDY

As with all empirical studies, despite key contributions, the study is subject to several limitations. The study measures sustainability disclosure using a content-based disclosure index, which focuses on the extent of reporting and may not fully capture actual sustainability outcomes. Also, while the study adopts a dynamic panel approach to address endogeneity concerns, the possibility of omitted institutional or political variables cannot be fully ruled out. Likewise, the relatively short time dimension of the panel limits the strength of long-run inference and suggests that any long-run interpretations should be applied cautiously and require further robustness tests for result stability.

7. DIRECTIONS FOR FUTURE RESEARCH

Several avenues for future research emerge from this study. Therefore, future research could incorporate qualitative assessments or impact-based indicators to move beyond disclosure-based measures, providing evidence on organisational processes as regards sustainability disclosure. Additionally, extending the analysis to comparative public sector settings across Africa would enhance generalisability and provide deeper insights. In essence, future studies could also explore the interaction between political oversight and sustainability performance, incorporating variables such as political turnover and ministry oversight intensity. Finally, future studies can consider other measures of diversity such as ethnicity, age, educational level and so on.

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