Strategy &
Leadership

Exploring governance-driven sustainability accounting in a developing economy

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Abstract

Purpose – This study tests the operationalization of environmental and social sustainability accounting practices (ESAP) in the manufacturing sector and evaluates how internal and external governance mechanisms shape its adoption.

Design/methodology/approach – Grounded in stakeholder theory, this study employs advanced analytical approaches, specifically partial least squares structural equation modeling (PLS-SEM) alongside probit estimation, to examine the factors shaping ESAP adoption across a sample of 200 manufacturing firms in Ghana.

Findings – The findings indicate that although ESAP adoption remains modest, manufacturing firms more readily deploy activity-based costing (ABC), environmental management accounting (EMA) and lifecycle costing than customer profitability analysis or competitor accounting. Internal governance mechanisms, particularly IT capability, accounting department structure, and strategic orientation, significantly shape ESAP implementation. Externally, only market competition intensity exerts a discernible influence, with market orientation and environmental uncertainty proving negligible. Collectively, these findings underscore how governance architectures condition firms' capacity to embed sustainability accounting within strategic imperatives and align with evolving stakeholder demands.

Originality/value – The study contributes new empirical evidence on governance-driven sustainability accounting in a developing-country manufacturing context, an under-researched domain. It highlights the primacy of internal governance capabilities and market competition over conventional external pressures, offering a contextualized understanding of ESAP adoption in countries with weak regulatory environments. The findings inform policymakers, regulators and corporate leaders about structuring governance mechanisms to advance sustainability accounting and align with SDGs in emerging economies.

Keywords Sustainability accounting, Corporate governance, SDGs, Emerging economies, Business strategy, Environmental management

Paper type Research paper

1. Introduction

The global transition toward sustainable development has elevated the strategic role of businesses in addressing environmental and social challenges (Gyimah, Appiah, & Appiagyei, 2025). Anchored in the United Nations' 2030 Agenda, the Sustainable Development Goals (SDGs) articulate a global call to action, urging governments, civil society and corporate actors to pursue pathways that promote inclusive, resilient and environmentally sustainable economic growth. Among these efforts, environmental and social sustainability accounting practices (ESAP) have emerged as critical tools enabling firms to measure, manage and disclose their sustainability performance (Patel & Deshmukh, 2024; Di, Vaio, Zaffar, Chhabra, & Balsalobre-Lorente, 2024).

Sustainability accounting strategically integrates environmental, social and economic dimensions into decision-making by deploying modern management accounting tools,

Strategy & Leadership

1087-8572
DOI 10.1108/SL-07-2025-0203

thereby aligning organizational practices with evolving sustainability imperatives and performance expectations (Oyewo, Tawiah, & Hussain, 2023). These practices support firms in reducing environmental footprints, enhancing resource efficiency and strengthening stakeholder trust, thereby aligning financial goals with broader societal and ecological objectives. Consequently, ESAP has evolved from a peripheral practice into a core element of strategic corporate governance amid intensifying stakeholder scrutiny (Onat, Mandouri, Kucukvar, Kutty, & Al-Muftah, 2025).

Despite this growing importance, the adoption of ESAP varies markedly across institutional contexts. In developed economies, strong regulatory environments, investor pressure and advanced governance systems have catalyzed widespread uptake (Haque & Ntim, 2022). In contrast, firms in developing countries often operate within weaker institutional frameworks and face structural limitations that constrain the integration of sustainability accounting into core business processes (Kalia & Gill, 2023; Oyewo et al., 2023). Though existing literature has extensively examined the link between corporate governance and sustainability accounting in high-income contexts, there is limited empirical insight into how such mechanisms function in low- and middle-income countries—particularly within sectors critical to industrialization and environmental risk, such as manufacturing. Moreover, while the SDGs explicitly call for corporate engagement in advancing sustainability, relatively few studies have assessed the extent to which internal and external governance structures influence firms' ability to implement ESAP in ways that contribute meaningfully to these global goals (Tauringana & Chithambo, 2020; Erin, Bamigboye, & Oyewo, 2022). This oversight is particularly salient in developing-country contexts, where sustainability reporting frequently remains voluntary, weakly regulated, or largely symbolic (Mishra & Kumar, 2024). As a result, there is a pressing need to examine how governance mechanisms affect firms' commitment to sustainability accounting in a developing-economy context, Ghana. The study focuses on corporate governance because ESAP's institutionalization hinges on organization-level architectures—IT systems, the design and capability of the accounting function and strategic orientation—that allocate decision rights and integrate sustainability information into control and reporting cycles. In developing economies, where public enforcement is weak, these private governance mechanisms are the primary conduits through which stakeholder expectations become operational ESAP routines (Oyewo et al., 2023).

Why study a developing-economy context, and why Ghana? In developed economies, ESAP diffusion is supported by relatively stronger regulatory expectations, investor pressure and mature governance/assurance arrangements (Haque & Ntim, 2022; Borghei, Linnenluecke, & Bui, 2024). By contrast, firms in developing contexts face weaker institutional infrastructures and structural constraints that impede the embedding of sustainability accounting into core routines (Kalia & Gill, 2023; Hussain, Tunyi, & Agyemang, 2024). Ghana exemplifies these frictions, combining rapid industrial growth with mounting ESG risks and uneven enforcement or absence of mandatory disclosure in key sectors (World Bank, 2023). Under such conditions, firms must rely more heavily on internal governance capacity—notably IT capability, accounting function architecture and deliberate strategy—to operationalize ESAP and meet stakeholder expectations (Beusch, Frisk, Rosén, & Dilla, 2022; Oyewo et al., 2023). Studying Ghana therefore surfaces boundary conditions for stakeholder-oriented sustainability accounting by showing when private governance substitutes for limited public enforcement and how governance mechanisms translate into practice in low-institutional settings (Bebbington & Unerman, 2020; Di et al., 2024). This study fills these gaps by testing how corporate governance shapes the adoption of sustainability accounting practices of manufacturing firms in Ghana. Manufacturing firms

are particularly relevant due to their substantial environmental impact and strategic potential to drive sustainable industrial transformation. Drawing on stakeholder theory, the study evaluates how four internal governance mechanisms—information technology (IT) capability, the structure of accounting departments, strategic orientation and market orientation—and two external factors—market competition and environmental uncertainty—influence the adoption of ESAP.

This research makes three key contributions. First, it offers empirical evidence on ESAP adoption within Ghana's manufacturing sector, a context where scholarly inquiry remains limited. Second, it examines how governance mechanisms enable or constrain the effective institutionalization of sustainability accounting, offering a more nuanced understanding of contextual factors in shaping corporate sustainability behavior. Finally, it enriches the sustainability discourse by demonstrating how strategic governance capabilities can be mobilized to align business practices with the SDGs.

The paper is structured as follows: Section 2 provides the theory and hypotheses; Section 3 outlines the methodology; Section 4 presents and analyses the results; Section 5 concludes; Section 6 discusses theoretical and practical implications; and Section 7 identifies limitations and avenues for future research.

2. Theory and hypotheses

This study is anchored in stakeholder theory, which offers a rigorous lens for explaining how corporate governance mechanisms shape ESAP. Stakeholder theory holds that firms operate within a constellation of actors whose salience varies by interests and power, necessitating calibrated managerial responses (Gaur & Tawalare, 2024). Accordingly, governance architectures—decision rights, information systems and control routines—secure accountability and align managerial behaviour with stakeholder expectations, mitigating agency problems and strengthening transparency and trust (Kavadis & Thomsen, 2023). From this vantage, corporate governance is not merely a compliance apparatus but a strategic enabler of sustainability integration, consistent with the view that firms must deliver value to a broad set of stakeholders beyond shareholders (Van Buren & Schrempf-Stirling, 2025).

Stakeholder theory also elucidates the organizational uptake of sustainability accounting techniques—EMA, ABC, lifecycle and quality costing, customer and competitor accounting and integrated performance measurement—as instruments that translate external expectations into decision-useful information supporting ecological stewardship and social equity (Latifah & Soewarno, 2023). EMA, in particular, embeds sustainability considerations in financial and operational choices to enhance accountability and long-term value creation; customer/competitor accounting and integrated metrics supply market-facing intelligence for sustainable value creation; ABC traces environmental costs to processes; and lifecycle costing extends assessment across the product value chain.

Consistent with Dmytriyev & Freeman (2023), firms are impelled—through regulation or normative pressures—to fulfil environmental and social responsibilities. This impetus shapes the adoption of internal governance mechanisms (strategic orientation, IT capability, market orientation, accounting-function structure) and external governance pressures (competition intensity, perceived environmental uncertainty). Together, these elements condition firms' capacity to institutionalize ESAP in ways that enhance legitimacy, accountability and stakeholder engagement. In this context, stakeholder theory predicts that ESAP adoption will be positively associated with the quality of both internal and external governance mechanisms. The next section develops the study's hypotheses.

2.1 Accounting department structure and ESAP implementation

ESAP implementation turns on the design and capability of the finance–accounting function; diversified expertise improves sustainability data quality, reporting and managerial decision-making (Gomez-Conde, Lunkes, & Rosa, 2019). In developing countries, the technical complexity of SATs often necessitates specialized competencies, which are not always readily available (Qian, Tilt, & Belal, 2021). Firms with robust accounting functions are more likely to institutionalize ESAP substantively, whereas capacity-constrained units risk superficial compliance, consistent with evidence that accounting-function maturity correlates with stronger sustainability performance (Orobia, Nturaninshaba, Bananuka, & Reuel Dakung, 2023; Oyewo et al., 2023).

From stakeholder theory standpoint, organizations are increasingly accountable to diverse stakeholders for environmental and social outcomes, necessitating governance structures that translate strategic intent into operational execution (Van Buren & Schrempf-Stirling, 2025). The accounting department, central to capturing, processing and reporting sustainability data, plays a critical governance role in this process (Oyewo et al., 2023). A well-structured accounting function not only ensures ESG compliance but also embeds sustainability into financial and strategic decision-making. Empirical evidence supports this claim. For instance, Harasheh & Provasi (2023) show that role specialization and robust internal controls improve decision accuracy and sustainability outcomes. Conversely, Ascani, Ciccola, & Chiucchi (2021) document competency gaps among management accountants on sustainability issues, underscoring the need for structural reform. In developing economies, where technical capacity is often constrained, the structure and staffing of accounting functions operate as critical governance levers for advancing sustainability practice:

H1. Accounting department structure is positively associated with ESAP implementation.

2.2 IT capability and ESAP implementation

Organizational resources—particularly IT—are central to strategic agility and decision-making of ESAP (Kraft, Lindeque, & Peter, 2022). Viewed through a dynamic-capabilities lens, firms that rapidly reconfigure IT resources are better positioned to sustain competitive advantage (Liang, You, & Liu, 2010). State-of-the-art IT capability underpins SAT adoption, yielding more timely and accurate sustainability disclosures (Maelah, Al Lami, & Ghas, 2021). IT is critical to ESAP uptake; specifically, Vărzaru (2022) documents that cloud and big data adoption significantly bolster the transparency and efficiency of EU sustainability reporting. Similarly, Gyimah, Appiah, & Appiagyei (2023) show that IoT devices and analytics facilitate real-time environmental decision-making, aligning IT deployment with sustainability objectives. Alsulami (2025), in a comprehensive review of digital innovations such as AI and blockchain, finds that these technologies strengthen data integrity and traceability, thereby supporting more robust sustainability accounting practices. However, contextual factors may mediate these outcomes. Oyewo et al. (2023), examining manufacturing firms in Nigeria, observe that IT capability alone does not ensure effective ESAP implementation, emphasizing the need for complementary governance mechanisms and technical capacity. These mixed findings suggest that while IT is a powerful enabler, its impact on ESAP—particularly in developing countries—depends on its integration within broader organizational systems and stakeholder-oriented strategies:

H2. IT capability is positively associated with ESAP implementation.

2.3 Strategic orientation and ESAP implementation

Strategic orientation is a business strategy on the differentiation–cost leadership continuum (Oyewo et al., 2023). Differentiation emphasizes innovation, quality and stakeholder value propositions that typically require richer non-financial information and broader SATs; cost leadership prioritizes efficiency and cost control, often emphasizing cost-focused SATs (e.g. ABC, QC) but not necessarily the wider ESAP architecture. Firms' strategic posture determines the emphasis and implementation of sustainability, influencing both the mix and depth of SATs employed (Jaradat, Al-Hawamleh, & Altarawneh, 2025). Firms pursuing differentiation strategies tend to adopt more advanced and sustainability-aligned accounting practices (Elbanna & Elsharnouby, 2025). By leveraging ESAP for legitimacy, stakeholder confidence and SDG alignment, firms realize performance gains and sustainable value creation (Oyewo et al., 2023). Strategic orientation, through the lens of stakeholder theory, plays a central role in shaping firms' responses to growing sustainability expectations (Dmytriyev & Freeman, 2023).

In developing economies with weak or evolving regulation (Alshbili & Elamer, 2020), firms deploy ESAP to secure legitimacy and address stakeholder claims. A sustainability-oriented strategy enables differentiation, competitive advantage and progress toward the SDGs (Danso, Adomako, Lartey, Amankwah-Amoah, & Owusu-Yirenkyi, 2020; Alessa, Akparep, Sulemana, & Agyemang, 2024). Rather than treating ESAP as compliance, strategy-led firms embed it in core operations to improve decision quality and build stakeholder trust. Strategic orientation thus functions both as a performance lever and a governance mechanism aligning organizational purpose with environmental and social accountability (Elbanna & Elsharnouby, 2025; Van Buren & Schrempf-Stirling, 2025):

H3. Strategic orientation is positively associated with ESAP implementation.

2.4 Market orientation and ESAP implementation

Market orientation refers to the extent to which organizations adapt their activities to meet evolving customer and stakeholder needs (Irún, Monferrer, & Moliner, 2020). Market orientation—through intensive acquisition and use of external market information—promotes customer-centric SATs (e.g. lifecycle costing, customer accounting, integrated performance metrics) (O'Cass, Ngo, & Siahtiri, 2012) and is associated with stronger ESAP integration under sustainability pressures (Alet Vilaginés, 2023; Shankar, 2025).

Conceptually, market orientation functions as a governance lens for sensing and responding to shifting stakeholder claims (Irún et al., 2020), aligning with stakeholder theory's injunction to attend to diverse constituencies beyond profit (Van Buren & Schrempf-Stirling, 2025). A market-oriented firm continuously scans customer preferences and trends, integrating sustainability into strategic and operational decisions. This proactive approach enhances legitimacy, builds stakeholder trust and aligns with broader objectives of environmental and social accountability (Dmytriyev & Freeman, 2023). In developing countries, where regulatory pressures are often limited, market orientation may act as a substitute governance force, prompting firms to adopt sustainability accounting practices in response to consumer expectations and reputational concerns. Thus, market orientation not only underpins competitive advantage but also reinforces the firm's social license to operate in dynamic environments:

H4. Market orientation is positively associated with ESAP implementation.

2.5 Competitive intensity and ESAP implementation

Competitive intensity shapes firms' strategic responses to market dynamics, including their adoption of ESAP. In highly competitive environments, sustainability initiatives can serve as differentiators that enhance brand reputation and stakeholder loyalty (Oyewo et al., 2023). SATs—particularly competitor accounting and integrated performance metrics—are used to benchmark sustainability outcomes and optimize strategic choices (Magnacca, Giannetti, & Cinquini, 2024; Oyewo et al., 2023). Firms in volatile markets tend to be more proactive in implementing ESAP to retain competitive advantage (Ikpor et al., 2022; Dupire & M'Zali, 2018).

Competitive intensity acts as an external pressure that drives firms to address the interests of broader stakeholder groups. In highly competitive markets, firms must differentiate not only through innovation or pricing but also via socially responsible practices that resonate with ethically conscious consumers and investors (Dmytriyev & Freeman, 2023). Sustainability accounting facilitates this by enhancing transparency, demonstrating accountability and building stakeholder trust—factors that reinforce brand equity and strategic positioning. Stakeholder-responsive firms increasingly adopt ESAP to meet rising demands for environmental and social disclosures. In developing countries such as Ghana, where regulatory enforcement may be limited, competitive pressures function as a market-based governance mechanism, motivating ESAP adoption to sustain legitimacy, reputation and resilience with local and global stakeholders (Oyewo et al., 2023):

H5. Competition intensity is positively associated with ESAP implementation.

2.6 Perceived environmental uncertainty and ESAP implementation

Perceived environmental uncertainty (TPEU) reflects firms' interpretations of volatility in their operating environments including regulatory, economic and ecological dimensions (Ahmad & Mohamed Zabri, 2015). Under high uncertainty, firms often increase their reliance on non-financial and externally oriented information to manage risk, leading to the greater use of SATs (Abaidoo & Agyapong, 2022; Oyewo et al., 2023). Conversely, firms in stable contexts may not feel the urgency to adopt advanced sustainability practices, relying instead on conventional systems (Dupire & M'Zali, 2018). A strong governance framework can moderate the impact of uncertainty by enhancing responsiveness and resilience (Dupire & M'Zali, 2018).

From a theoretical standpoint, perceived environmental uncertainty (PEU) functions as a catalyst for adaptive governance mechanisms. Within stakeholder theory, external uncertainties—whether regulatory, market-based, or ecological—create information asymmetries that firms must address to maintain stakeholder trust and operational resilience (Dmytriyev & Freeman, 2023). ESAP offers a strategic response by enabling firms to monitor, interpret and respond to non-financial risks in dynamic environments. Rising uncertainty amplifies stakeholder demands—investors, regulators and communities—for transparent, forward-looking disclosure. In this setting, PEU exerts indirect governance by pressuring firms to adopt sustainability practices that bolster legitimacy and accountability. This dynamic is accentuated in emerging economies, where institutional weakness elevates PEU's signaling role and prompts firms to institutionalize ESAP to secure strategic agility and reputational protection (Abaidoo & Agyapong, 2022; Dupire & M'Zali, 2018; Oyewo et al., 2023):

H6. Perceived environmental uncertainty is positively associated with ESAP implementation.

3. Methodology

3.1 Study context

Developed economies provide a high-enforcement baseline in which ESAP mechanisms are analyzed against formal reporting and assurance regimes (Haque & Ntim, 2022; Maroun, 2022; Borghei et al., 2024). By contrast, Ghana offers an informative counterfactual: weaker mandates and institutional gaps require firms to rely on internal governance—particularly IT capability and the accounting function—to implement ESAP and address stakeholder demands (World Bank, 2023; Oyewo et al., 2023). This study therefore selects Ghana as a theoretically salient yet underexamined setting for governance-driven sustainability accounting. Ghana's rapid growth alongside rising environmental and social pressures from industrialization, urbanization and resource extraction underscores the stakes (World Bank, 2023). Despite heightened ESG exposure, ESAP adoption and institutionalization remain nascent, with weak enforcement and largely absent mandatory disclosure across key sectors (Oyewo et al., 2023). These conditions elevate the role of internal governance capabilities—such as IT capability, accounting architecture and strategic orientation—in catalyzing ESAP where public regulatory scaffolding is limited. In parallel with AfCFTA, SDG and Paris Agreement commitments, Ghana's National Climate Change Policy and Sustainable Banking Principles advance the institutionalization of sustainability within corporate and financial governance (Gyimah & Owusu-Afriyie, 2025). Yet the literature on Ghanaian firms' ESAP uptake remains sparse; most African evidence concentrates on Nigeria, South Africa and Kenya, leaving Ghana underrepresented. By centering Ghana, this study addresses that geographical imbalance and clarifies how firms in transitional institutional settings operationalize ESG under regulatory and market uncertainty.

3.2 Design and sample

We employ a quantitative design and structured questionnaire to examine ESAP adoption and governance mechanisms across manufacturing firms, with adequate statistical power. Using purposive sampling, 200 firms were selected under clear inclusion criteria: (i) ≥10 years of operation to ensure mature governance and meaningful ESAP practices; (ii) medium or large size (≥50 employees) to reflect capacity and complexity for structured ESAP; (iii) location in key industrial regions—Greater Accra, Ashanti and Western—to capture geographic variation; (iv) evidence of at least one sustainability accounting technique (e.g. EMA, ABC, lifecycle costing); and (v) access to knowledgeable respondents (senior finance/accounting officers) to maximize data accuracy. Eligibility was verified through the Ghana Business Directory, Ghana Company Registry, publicly available sustainability reports and direct contact with firms. This sampling approach accords with methodological precedents in sustainability accounting research (e.g. Oyewo et al., 2023), enhancing the reliability, validity and generalizability of the study's findings.

The sample comprises highly qualified professionals, predominantly postgraduates: 47% hold a master's degree, 38.5% a BSc/HND, 8.5% a PhD and 6% other qualifications, indicating strong capacity to assess SAT/ESAP practice. Work experience is substantial: 46.5% report >20 years, 41.5% have 11–20 years and 12% have 5–10 years, yielding a mature respondent base capable of evaluating complex organizational practices. Seniority is pronounced: CFOs/Financial Directors constitute 58.5% of respondents, Chief Accountants 24.5%, Senior Accountants/Finance managers 12% and Management Accountants 5%, roles with direct authority over reporting, governance and strategy. Also, most firms are domestically headquartered (88%; 12% foreign), consistent with the developing-economy focus and the salience of local institutional conditions for ESAP adoption. A majority (64.5%) maintain a dedicated management accounting department, an organizational enabler

for ESAP through non-financial metric generation and integrated reporting; 35.5% do not. Among firms without such departments ($n = 71$), 51% assign management accounting to the Financial Controller as needed, while 49% decentralize to functional units—a hybrid arrangement that offers flexibility but complicates standardization and consistency in sustainability data and disclosures. Appendix Table A2 provides a summary of respondents and organizational context.

3.3 Data and measures

Data were collected through a 38-item questionnaire adapted from validated instruments in sustainability accounting and management control research (Al-Mawali, 2015). Appendix Table A1 summarizes the measures; subsequent sections detail each construct.

3.3.1 Sustainability accounting practice (ESAP). ESAP was assessed on a 7-point Likert scale (1 = "not at all," 7 = "to an extremely great extent"), capturing adoption of seven SATs—EMA, ABC, Lifecycle Costing (LCC), Customer Profitability Analysis (CPA), Integrated Performance Measurement (IPM), Quality Costing (QC), Competitive Position Monitoring (CPM)—using definitions adapted from validated instruments (Al-Mawali, 2015; Oyewo et al., 2023). Following Owusu-Afriyie, Awunyo-Vitor, Gyimah, & Appiah (2024), EFA results (see Table A3 in the Appendix) established the latent structure (KMO = 0.780; Bartlett's $\chi^2 = 233.952$, df = 6, $p < 0.001$) and CFA via PLS-SEM confirmed the model: all seven indicators (SAP1–SAP7) loaded strongly (standardized loading = 0.767), with high internal consistency (Cronbach's $\alpha = 0.858$; CR = 0.867) and convergent validity (AVE = 0.588). Model fit was excellent (SRMR = 0.0000) and multicollinearity was not a concern (VIF < 2.0).

3.3.2 Governance factors. Consistent with prior work (Al-Mawali, 2015; Oyewo et al., 2023), we examine six governance-related predictors of ESAP—four internal: IT capability (TQIT), market orientation (TMKT), strategic orientation (TSTRG) and accounting-department structure (TSKILL); and two external: perceived environmental uncertainty (TPEU) and competition intensity (TCMPT). TMKT follows Al-Mawali (2015) scale (alignment of internal processes with market needs). TQIT adapts Teng, Cheon, and Grover (1995) to capture integration, functionality and strategic use of IT. TSTRG employs Oyewo et al. (2023) taxonomy (cost leadership vs differentiation) as it relates to management-accounting practice. TSKILL modifies Oyewo et al. (2023) to reflect accessibility/specialization of accounting personnel; respondents selected one organizational arrangement: (1) dedicated management-accounting unit; (2) functional departments manage their own; (3) financial controller oversees when needed; (4) functional areas rely on financial-accounting data; (5) management-accounting information not required. Options were coded 1–5, where lower values denote more specialized or structured functions and higher values indicate limited expertise and weaker institutional support. TPEU uses a modified Kren & Kerr (1993) scale (perceived environmental unpredictability). TCMPT follows Hansen & Van der Stede (2004) (industry competitive pressure). All scales showed acceptable psychometric properties; operational definitions appear in Appendix tables.

3.4 Model and analysis

A Structural Equation Modelling (SEM) was adopted from the study of Oyewo et al. (2023) and modified to analyze the connection between ESAP and corporate governance procedures. The model has the following specifications:

$$ESAP = \gamma + \beta_1 TQIT + \beta_2 TSKLL + \beta_3 TSTRG + \beta_4 TMKT + \beta_5 TPEU + \beta_6 TCMPT + \beta_7 TOSTR + \sigma \quad (1)$$

The ESAP score was computed as the mean of the seven SAT items, summing item scores and dividing by the number of techniques. In addition to internal and external governance predictors, we include organizational (de)centralization as a control, given evidence that decentralized structures are more conducive to ESAP adoption than centralized ones (Gerdin, 2005). Following the scale adapted by Oyewo et al. (2023), respondents rated on a 5-point scale (1 = not at all; 5 = very high extent):

- authority granted to department heads/divisional managers;
- autonomy of branches/subsidiaries in formulating key decisions; and
- the extent of responsibility sharing across branches/subsidiaries.

3.5 Validity and reliability

Construct validity and reliability were assessed using established procedures. For ESAP, detailed EFA and CFA results appear in Section 3.3.1. The remaining constructs exhibit acceptable reliability (Cronbach's $\alpha > 0.70$). Sampling adequacy and inter-item correlations were supported by KMO and Bartlett's tests. Full diagnostics are reported in Appendix Table A5.

4. Results and discussions

4.1 Implementation level of sustainability accounting practices

The analysis of the implementation level of SATs reveals a moderate but uneven adoption across the sampled manufacturing firms. As shown in Table 1, the mean scores for all seven assessed techniques fall between 3.21 and 3.94 on a 7-point Likert scale, indicating partial integration of ESAP tools into organizational routines. Among the techniques, ABC exhibits the highest mean adoption level (M = 3.94), suggesting its relative popularity as a tool for allocating environmental and overhead costs more accurately. This is followed closely by QC (M = 3.81), EMA (M = 3.77) and IPM (M = 3.76)—all of which reflect a growing, albeit still evolving, commitment to tracking and improving environmental and social performance within core operational metrics. Other practices such as CPM (M = 3.66) and LC (M = 3.54) show slightly lower utilization, potentially due to their higher technical demands or the limited strategic planning capacity in some firms. CPA (M = 3.21) ranks the lowest in average usage, suggesting that customer-centric sustainability metrics remain underdeveloped in the sector. These findings may reflect challenges in capturing and utilizing granular customer data for sustainability decision-making, particularly in markets where consumer demand for responsible production remains low. The standard deviations, which range from 1.581–1.845, indicate substantial variation in the intensity of SAT implementation among firms. This variation is likely shaped by firm-specific governance structures, technological capabilities and strategic orientation—factors explored in the subsequent sections.

Additionally, Figure 1 presents a boxplot visualization of the distribution of responses for the seven SATs, offering insights into the central tendency and variability in usage across firms. Among the techniques, ABC is represented by the most compressed box—indicating lower variability—and is positioned closest to the upper end of the scale, extending primarily between values 2.0 and 5.0. This suggests that a significant proportion of firms report moderate to moderately high engagement with ABC, consistent with its highest mean score

Table 1. Usage rate of sustainability accounting techniques (SAT)

Sustainability accounting techniques	Min.	Max.	Mean	Standard deviation
Activity based costing (ABC)	1	7	3.94	1.634
Quality costing (QC)	1	7	3.81	1.845
Environmental management accounting (EMA)	1	7	3.77	1.616
Integrated performance measurement (IPM)	1	7	3.76	1.684
Competitive position monitoring (QPM)	1	6	3.66	1.778
Life cycle costing (LCC)	1	6	3.54	1.581
Customer profitability analysis (CPA)	1	7	3.21	1.795
Overall mean (ESAP)			*3.67*	

Source(s): Authors' own work

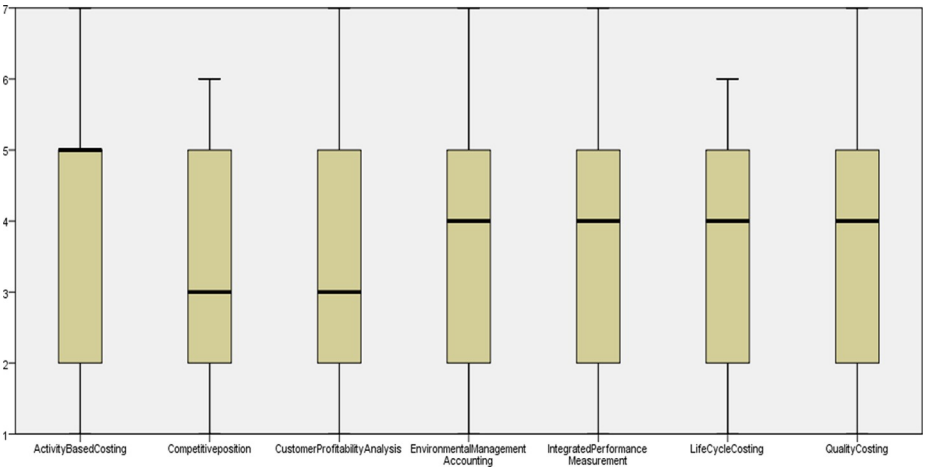

Figure 1. Boxplot of usage rate of SATs
Source: Authors' own work

of 3.94 in Table 1. In contrast, CPA exhibits a box that is located closer to the lower bound of the scale, primarily between values 2.0 and 3.0. This positioning affirms its status as the least utilized technique, corroborating its lowest mean score of 3.21. Other techniques—including EMA, IPM, LCC and CPA—cluster within a mid-range span of 2.0–4.0, reflecting more modest and heterogeneous adoption levels. The spread across techniques highlights differing levels of familiarity, technical capacity and strategic integration within firms. The relatively compressed distribution for ABC may suggest that it has become a more standardized tool within management accounting routines, whereas the wider spread in techniques like lifecycle costing and customer profitability indicates varying degrees of organizational readiness or perceived relevance.

The overall mean ESAP score of 3.67, equivalent to approximately 52.4% on the 7-point scale, reinforces the earlier conclusion that sustainability accounting adoption remains moderate and uneven. These findings signal the need for sector-wide interventions to deepen and harmonize the adoption of SATs, particularly those that remain underutilized despite their potential strategic value in advancing sustainable business models.

4.2 Factors affecting sustainability accounting practice

We employed PLS-SEM to estimate the effects of governance mechanisms on ESAP. Diagnostics supported this choice because Shapiro–Wilk tests indicated non-normality in key variables (Brekumi, Sarpong-Danquah, Owusu-Afriyie, & Gyimah, 2023) and Spearman rank correlations were below 0.80, suggesting no multicollinearity concerns (Opoku, Appiah, & Gyimah, 2024). From Table 2, three internal mechanisms significantly predict ESAP. IT capability (TQIT) shows the largest effect ($\beta = 0.511$, t = 8.488, $p < 0.001$), followed by strategic orientation (TSTRG) ($\beta = 0.259$, t = 2.693, $p = 0.007$) and accounting-department structure (TSKILL) ($\beta = 0.205$, t = 3.541, $p < 0.001$), supporting *H1–H3*. Market orientation (TMKT) is not significant ($\beta = 0.162$, $p = 0.153$), rejecting *H4*. Among external drivers, competition intensity (TCMPT) is positive and significant ($\beta = 0.550$, $p < 0.001$), supporting *H5*, whereas perceived environmental uncertainty (TPEU) is not ($\beta = 0.205$, $p = 0.333$), rejecting *H6*. The control, organizational structure (TOSTR), is significant ($\beta = 0.260$, t = 2.650, $p = 0.008$), indicating that more decentralized structures are associated with greater ESAP adoption.

4.3 Robustness checks

4.3.1 Quantile regression. To enhance the robustness of the findings, the study employed quantile regression (QR) to examine the heterogeneous effects of governance mechanisms across different levels of ESAP implementation. Unlike ordinary least squares (OLS), QR accounts for non-linear and non-uniform relationships between the predictors and the dependent variable, thereby offering more granular insights. The analysis in Table 3 revealed that IT capability (TQIT) consistently exerted a statistically significant and positive influence on ESAP across most quantiles (0.20–0.90), with the strongest effects observed at moderate to high levels of ESAP implementation. This underscores the pivotal role of digital infrastructure in advancing sustainability accounting, particularly among firms already engaged in such practices.

Strategic orientation (TSTRG) was also significant across several middle and upper quantiles (0.30–0.80), suggesting that firms with a clearly defined strategic orientation are more likely to embed ESAP into their operational models, especially at intermediate stages of adoption. However, the relationship displayed a curvilinear pattern—its effect diminished at the upper quantiles, implying potential strategic inertia or diminishing returns if strategic review processes are not continuously updated.

The skills and structure of the accounting department (TSKILL) showed strong positive associations with ESAP at select quantiles (0.20, 0.40–0.80), indicating that technical expertise and departmental readiness are essential enablers of deeper ESAP engagement.

Table 2. Governance-driven sustainability accounting factors

Predictor → TSAP	Path coeff.	T	*p*-value	Decision
TQIT	0.511	8.488	0.000	Significant
TMKT	0.162	1.428	0.153	Insignificant
TSTRG	0.259	2.693	0.007	Significant
TSKILL	0.205	3.541	0.000	Significant
TPUE	0.205	0.968	0.333	Insignificant
TCMPT	−0.550	4.809	0.000	Significant
TOSTR	0.260	2.650	0.008	Significant

Source(s): Authors' own work

Table 3. Quantile regression results on governance-driven sustainability accounting factors

Variables	(1) SAP (0.10)	(2) SAP (0.20)	(3) SAP (0.30)	(4) SAP (0.40)	(5) SAP (0.50)	(6) SAP (0.60)	(7) SAP (0.70)	(8) SAP (0.80)	(9) SAP (0.90)
TQIT	0.305 (0.330)	679*** (0.223)	0.864*** (0.171)	0.876*** (0.144)	0.662*** (0.107)	0.693*** (0.067)	0.840*** (0.078)	0.990*** (0.114)	0.759*** (0.240)
TMKT	0.030 (0.270)	0.176 (0.208)	0.290 (0.204)	0.190 (0.189)	0.381** (0.184)	0.318** (0.146)	0.283 (0.201)	0.391 (0.346)	−0.194 (0.387)
TSTRG	0.033 (0.162)	−0.101 (0.142)	−0.277** (0.134)	−0.266*** (0.095)	−0.434*** (0.107)	−0.406*** (0.072)	−0.421*** (0.125)	−0.471** (0.231)	−0.128 (0.182)
TSKILL	0.409 (0.526)	1.240*** (0.461)	0.644 (0.489)	0.752** (0.376)	0.731 *** (0.269)	0.771*** (0.248)	1.235*** (0.379)	1.311** (0.540)	0.661 (0.458)
TPUE	−0.060 (0.158)	0.138 (0.127)	0.062 (0.126)	0.053 (0.109)	0.007 (0.118)	0.037 (0.107)	0.173 (0.122)	0.099 (0.200)	0.251 (0.204)
TCMPT	−0.183 (0.183)	−0.367*** (0.096)	−0.426*** (0.073)	−0.386*** (0.020)	−0.415*** (0.047)	−0.370*** (0.047)	−0.345*** (0.080)	−0.221 (0.200)	0.084 (0.161)
Control variable									
TOSTR	0.429* (0.223)	0.239 (0.149)	0.496*** (0.167)	0.489*** (0.180)	0.577*** (0.151)	0.460 *** (0.145)	0.246 (0.210)	−0.020 (0.289)	−0.323 (0.300)
_Constant	−0.351 (0.867)	−2.38** (0.982)	−2.690** (1.314)	−2.34** (0.980)	−1.55 ** (0.690)	- 1.270** (0.494)	−1.930*** (0.629)	−1.822 (1.313)	1.601 (1.039)
Pseudo *R*-square	0.232	0.318	0.369	0.410	0.408	0.365	0.311	0.250	0.205

Note(s): The standard errors are reported in parentheses. ***$p < 0.01$; **$p < 0.05$; *$p < 0.10$
Source(s): Authors' own work

Similarly, competitive intensity (TCMPT) was significant across the lower to middle quantiles (0.20–0.70), emphasizing market competition as a governance force encouraging sustainability reporting, especially among firms in transition stages.

Interestingly, organizational structure—captured as a control variable—was statistically significant across a range of quantiles (0.10–0.60), supporting the view that centralized governance structures enhance ESAP by enabling coordinated decision-making. By contrast, other governance variables such as market orientation and perceived environmental uncertainty did not exhibit statistically significant effects across the quantiles, suggesting limited influence within the observed sample.

The curvilinear nature of many relationships, as visualized in Figure 2, suggests that the influence of governance factors varies across ESAP levels—strengthening at certain adoption stages and tapering off at others. This non-linear effect highlights the need for firms to calibrate governance configurations to optimize sustainability outcomes. For instance, the impact of IT is most pronounced at moderate and high levels of ESAP, while the effectiveness of strategy and skills peaks only when continuously adapted and reinforced.

In summary, the QR results affirm that internal governance factors—particularly IT quality, strategic orientation and accounting department capabilities—alongside competitive pressure as an external driver, are critical for advancing ESAP. However, their impact is contingent on the firm's ESAP maturity level, reinforcing the need for dynamic and context-sensitive governance strategies.

4.3.2 Probit regression. To further test the robustness of the study's core findings, a probit regression analysis was conducted using the same binary dependent variable (Advanced vs Basic ESAP users) and predictor variables as in the logistic model. The probit model, which applies a cumulative normal distribution function, offers an alternative yet statistically rigorous approach for modeling binary outcomes and strengthens the credibility

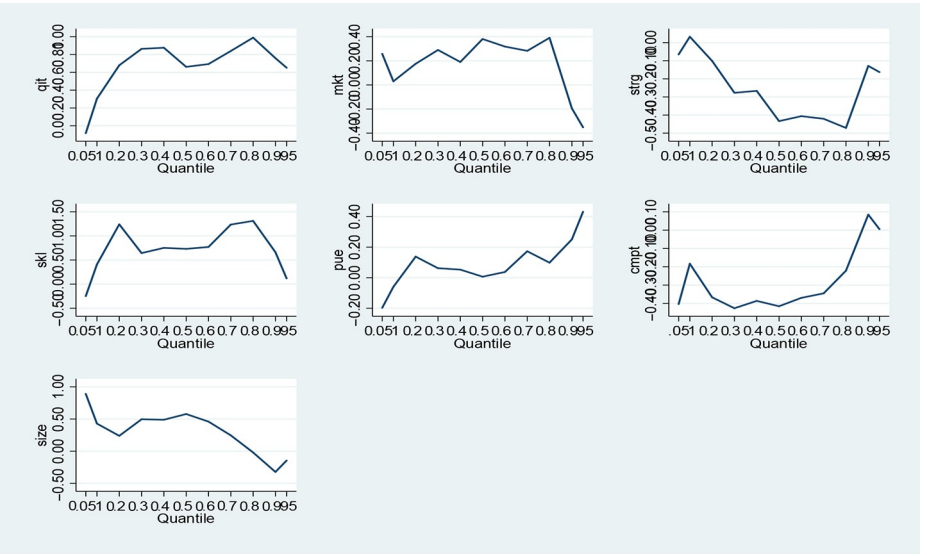

Figure 2. Quantile regression graph
Source: Authors' own work

of the results through triangulation. The outputs are presented in Table 4. The model was statistically significant [Wald $\chi^2(7) = 77.92$, $p < 0.001$], confirming that the selected predictors jointly explain a substantial share of the variance in ESAP adoption. The pseudo R^2 value of 0.3401 reflects a strong model fit by probit standards, indicating that approximately 34% of the variation in ESAP sophistication is attributable to governance-related variables.

Consistent with previous analyses, TQIT remained a strong predictor ($\beta = 1.18$, $p < 0.001$), reaffirming the foundational role of IT infrastructure in enabling data integration and the operationalization of sustainability accounting practices. Structure of the TSKILL also demonstrated a significant positive effect ($\beta = 1.47$, $p = 0.002$), emphasizing the importance of internal accounting expertise in advancing ESAP implementation. While TSTRG displayed a marginal negative relationship ($\beta = -0.42$, $p = 0.070$), its limited significance suggests that strategic orientation alone may be insufficient unless supported by operational and structural enablers. Additionally, TCMPT was positively and significantly associated with advanced ESAP usage ($\beta = 0.45$, $p < 0.001$), indicating that competitive pressure may incentivize sustainability-oriented innovations and disclosures. In contrast, TMKT ($\beta = 0.07$, $p = 0.740$) and TPUE ($\beta = 0.13$, $p = 0.335$) were not significant, suggesting that neither market responsiveness nor uncertainty exerts a direct effect on ESAP sophistication—echoing the results of the SEM, logistic and quantile models.

The probit model demonstrated strong predictive accuracy, correctly classifying 75.5% of firms, with an AUC (Area Under the ROC Curve) of 0.8655, signifying excellent discriminatory power between basic and advanced ESAP users. These results provide further empirical support for *H1*, *H2*, *H3 and H5*, while reaffirming the rejection of *H4* and *H6*. Collectively, the findings reinforce the robustness of the conclusion that internal governance capabilities—particularly IT quality, accounting structure and strategic focus—alongside external competitive pressures, are key enablers of sustainability accounting adoption in developing country contexts.

4.4 Discussion

These findings extend the literature on sustainability accounting in developing economies and offer practical guidance for advancing the SDGs by 2030. ESAP adoption among Ghanaian manufacturers is moderate: techniques such as EMA, ABC, lifecycle costing, customer accounting and competitor accounting are used to varying degrees, yet none is fully institutionalized. This pattern accords with prior evidence that ESAP in such contexts often remains compliance or symbolically oriented rather than embedded as core practice

Table 4. Probit regression analysis on governance-driven ESAP

Variable	Coef. (β)	Std. Err.	Z	$p > \|z\|$	(95% conf. interval)	
TQIT	1.182	0.239	4.95	0.000	0.714	1.650
TMKT	0.074	0.226	0.33	0.740	−0.362	0.510
TSTRG	−0.275	0.152	−1.81	0.070	−0.572	0.022
TSKL	1.475	0.471	3.13	0.002	0.552	2.397
TPUE	0.134	0.140	0.96	0.335	−0.138	0.406
TCMPT	0.450	0.111	4.05	0.000	0.668	0.232
TOSTRG	0.199	0.173	1.15	0.252	−0.141	0.538

Note(s): Wald Chi^2 (7) = 77.92, $p < 0.001$; Pseudo $R^2 = 0.340$; ROC AUC = 0.866
Source(s): Authors' own work

(Ng, Wut, Lit, & Cheung, 2022; Amoako, Adam, Arthur, & Tackie, 2021; Oyewo et al., 2023). The results reflect weak regulatory enforcement, limited institutional capacity and largely voluntary reporting regimes. Thus, in Ghana, weaker mandates and enforcement gaps limit reliance on public disclosure scaffolding, compelling firms to lean on internal governance capacity—notably IT capability, accounting-function architecture and strategic orientation—to operationalize ESAP and meet stakeholder demands. This mechanism logic helps explain why internal governance factors carry disproportionate weight in our model. At the same time, market-based pressures, particularly competition intensity, operate as external disciplining forces that complement limited regulatory enforcement and further catalyze ESAP uptake. Although ongoing national commitments (AfCFTA, SDGs, Paris Agreement), together with the National Climate Change Policy and Sustainable Banking Principles, signal gradual institutionalization of sustainability in corporate and financial governance, in the near term private, firm-level governance remains the decisive lever for ESAP in this transitional setting.

Among internal corporate governance mechanisms, market orientation (TMKT) did not have a significant impact on ESAP adoption. This contrasts with findings from contexts such as Nigeria, where market orientation has been shown to influence sustainability initiatives (Oyewo et al., 2023). The limited influence of TMKT in Ghana may reflect relatively weak consumer and market pressure for sustainability reporting and accountability, underscoring stakeholder theory's emphasis on the importance of strong external stakeholder expectations in shaping firm behaviour. By contrast, deliberate strategic orientation formulation (TSTRG) emerged as a significant driver of ESAP implementation. Firms that actively formulate and pursue sustainability-oriented strategies are more likely to adopt ESAP, supporting the argument that internal strategic intent is critical for embedding sustainability into organizational practices. This result aligns with earlier studies (Danso et al., 2020; Oyewo et al., 2023; Elbanna & Elsharnouby, 2025) and reinforces stakeholder theory, which posits that firms align governance mechanisms with stakeholder expectations to enhance legitimacy and accountability.

The structure of the accounting department, particularly in terms of personnel skills, was also a significant predictor of ESAP. Firms with well-resourced accounting departments and skilled personnel demonstrated stronger ESAP adoption, highlighting the importance of internal technical capacity in implementing complex sustainability accounting techniques. This supports the view that capacity building within the accounting function is essential for advancing ESAP, especially in developing countries where expertise in sustainability accounting remains limited (Gomez-Conde et al., 2019; Orobia et al., 2023). Similarly, the IT capability (TQIT) had a significant positive influence on ESAP. Firms with advanced IT capability were better able to collect, process and report sustainability-related data, thereby facilitating the adoption of ESAP (Alsulami, 2025). This finding aligns with prior research identifying IT capability as a critical enabler of sustainability reporting and integrated decision-making (Maelah et al., 2021; Oyewo et al. (2023).

Among external governance mechanisms, market competition significantly influenced ESAP implementation. Firms operating in more competitive environments were more likely to adopt ESAP—likely as a means of differentiation and to meet increasing stakeholder demands for transparency and accountability. This finding contrasts with evidence from contexts such as Malaysia and Nigeria, where competition has not consistently driven ESAP adoption (Ikpor et al., 2022). It suggests that Ghanaian manufacturing firms may be beginning to view sustainability reporting as a potential source of competitive advantage. On the other hand, perceived environmental uncertainty did not have a significant impact on ESAP adoption. This implies that firms in Ghana do not perceive environmental volatility or

regulatory unpredictability as strong drivers of sustainability accounting—a finding that may reflect the weak enforcement of environmental regulations and limited institutional pressure to adopt ESAP as a risk management tool.

The study also highlights the role of organizational structure, where decentralization was associated with stronger ESAP adoption. Decentralized structures appear to facilitate cross-functional collaboration, managerial autonomy and responsiveness to sustainability challenges consistent with prior research on the benefits of flexible governance structures for sustainability initiatives (Harasheh & Provasi, 2023).

With respect to the theoretical underpinning, the emergence of IT capability, deliberate strategic orientation, skilled accounting departments and intensity of market competition as significant drivers of ESAP provides strong empirical support for stakeholder theory. This theory posits that firms adopt governance mechanisms to align with stakeholder expectations and achieve sustainability outcomes (Magnacca et al., 2024; Oyewo et al., 2023).

5. Conclusion

This study assesses the extent of ESAP in Ghana's manufacturing sector and evaluates how internal and external governance mechanisms shape its implementation. Grounded in stakeholder theory, the evidence indicates moderate adoption—techniques such as EMA, ABC and lifecycle costing are applied unevenly—signaling early-stage integration into core operations in a developing-country context.

The empirical results underscore the critical role of internal governance mechanisms specifically, IT capability, the structure of the accounting department and deliberate strategic orientation—in promoting the adoption of sophisticated ESAP. Additionally, the intensity of market competition emerged as a significant external factor encouraging firms to adopt sustainability practices. In contrast, market orientation and perceived environmental uncertainty were not significant drivers, suggesting that competitive pressure and internal capabilities may be more influential than broader market responsiveness or environmental volatility in Ghana's institutional setting.

In sum, aligning corporate governance with sustainability objectives is pivotal in emerging economies. By coupling robust internal structures with external pressures, firms can move from symbolic uptake to substantive integration of sustainability accounting, advancing long-term environmental goals and the UN SDGs.

6. Implications

6.1 Theoretical implications

This study refines stakeholder theory by demonstrating that, in developing-country settings marked by regulatory ambiguity and institutional voids (e.g. Ghana), internal governance capabilities—specifically IT capability, the architecture of the accounting function and deliberate strategic orientation—are the primary conduits of stakeholder responsiveness and ESAP uptake. Stakeholder salience under these conditions appears mediated less by external regulatory pressure than by firm-level governance capacity. The null effects for market orientation and perceived environmental uncertainty problematize standard assumptions in the strategic and contingency literatures, indicating that, in low-institutional environments, such factors are insufficient to mobilize ESAP absent formalized internal governance. These results delineate boundary conditions on the generalizability of stakeholder and resource-based theories and foreground the rising significance of private, firm-level governance as an engine of sustainability outcomes in the Global South.

6.2 Practical implications

The findings of this study offer critical practical implications for corporate managers, policymakers, professional bodies and sustainability practitioners in developing country contexts such as Ghana. These implications provide a roadmap for translating governance mechanisms into actionable strategies that enhance the implementation of ESAP.

First, the study underscores the importance of strengthening internal governance as a strategic driver of ESAP. The quality of a firm's internal structures—particularly its IT systems, strategic orientation and accounting department—was found to significantly influence the extent of ESAP adoption. Firms are therefore encouraged to institutionalize dedicated sustainability accounting units within their finance or management accounting functions, staffed by professionals with cross-functional expertise in ESG reporting, cost management and strategic planning. At the leadership level, boards and executives should integrate ESAP metrics into performance reviews and strategic planning processes. In the absence of strong regulatory mandates, such internal leadership is essential to embedding sustainability into corporate decision-making.

Second, firms should prioritize investments in digital infrastructure to support ESG data integration and sustainability reporting. The study identifies IT capability as the most influential enabler of ESAP implementation. Corporate managers should therefore allocate resources toward the acquisition and upgrading of integrated digital systems—such as ERP platforms, cloud computing solutions and environmental data analytics tools. Donor agencies and development partners can complement these efforts by supporting digital transformation through grants or public-private partnerships. Such investments are critical for enabling real-time monitoring, improving reporting quality and enhancing accountability in sustainability performance.

Third, the findings highlight the urgent need to develop sustainability-related competencies within the accounting and finance functions. The structure and technical capacity of the accounting department emerged as a key internal determinant of ESAP success. As such, professional accounting bodies (e.g. ICAG, ACCA Ghana) should embed ESG modules and sustainability accounting content into certification programs. Universities and continuing professional development (CPD) providers should offer targeted training in techniques such as EMA), lifecycle costing and integrated performance measurement. Firms themselves must also invest in ESG upskilling programs for their finance personnel to ensure that sustainability practices are not only understood but effectively applied.

Fourth, the study reveals that competitive intensity acts as a significant external motivator for ESAP adoption, especially in contexts where formal regulatory enforcement is limited. This suggests that firms in highly competitive markets view sustainability reporting as a source of differentiation and reputational advantage. Industry associations and business chambers can leverage this insight by introducing voluntary sustainability benchmarks, sector-wide disclosure scorecards and recognition schemes that reward ESG leadership. Similarly, trade authorities may consider linking export incentives or access to regional markets (e.g. under AfCFTA) with demonstrable ESG performance. These market-based mechanisms can help drive ESAP adoption in the absence of mandatory regulations.

Finally, the findings call for the development of a national ESAP readiness framework to guide and support firms in their sustainability accounting journey. Policymakers and regulators should work collaboratively with industry and academia to design a national roadmap that outlines ESG disclosure guidelines, sector-specific reporting standards and capacity-building programs. Incentives such as tax relief, preferential procurement access and technical support can be used to encourage early adopters and mainstream ESAP practices across the manufacturing sector. Such a coordinated effort will accelerate progress

toward key SDGs, particularly SDG 9 (Industry, Innovation and Infrastructure), SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action).

7. Research limitations and future research direction

Notwithstanding its contributions, this study has limitations that open productive lines of inquiry. First, the study's focus on Ghana's manufacturing sector may constrain the generalizability of the findings to other sectors or geographical contexts with different institutional environments. Future research could undertake comparative cross-sectoral or cross-country studies, particularly across other African economies, to assess whether the observed governance-ESAP relationships hold in varying regulatory and cultural contexts.

Second, while this study examined ESAP as a composite construct, it did not disaggregate the specific sustainability accounting techniques (SATs) included in the broader measure. Future studies could explore the distinct drivers, barriers and organizational impacts of individual techniques—such as EMA, lifecycle costing, or customer profitability analysis—to provide a more granular understanding of sustainability accounting adoption.

Third, the study focused primarily on internal and external governance mechanisms but did not incorporate board-level attributes or formal stakeholder engagement structures. Subsequent research could integrate additional governance dimensions such as board composition, diversity, ESG expertise, stakeholder consultation processes and the role of external assurance in shaping ESAP implementation. Such extensions would offer a more holistic view of the governance-sustainability interface and contribute further to theory development and practical insights.

References

Abaidoo, R., & Agyapong, E. K. (2022). Institutional quality, macroeconomic uncertainty and efficiency of financial institutions in Sub-Saharan Africa. *Journal of Financial Regulation and Compliance*, *31*(2), 200–219.

Ahmad, K., & Mohamed Zabri, S. (2015). Factors explaining the use of management accounting practices in Malaysian medium-sized firms. *Journal of Small Business and Enterprise Development*, *22*(4), 762–781.

Alessa, N., Akparep, J. Y., Sulemana, I., & Agyemang, A. O. (2024). Does stakeholder pressure influence firms' environmental, social and governance (ESG) disclosure? Evidence from Ghana. *Cogent Business & Management*, *11*(1), 2303790.

Alet Vilaginés, J. (2023). Share of purchases in B2B: Relative customer satisfaction indicators and customer characteristics as main influencers. *Journal of Business & Industrial Marketing*, *38*(5), 1029–1040.

Al-Mawali, H. (2015). Contingent factors of strategic management accounting. *Research Journal of Finance and Accounting*, *6*(11), 130–137.

Alshbili, I., & Elamer, A. A. (2020). The influence of institutional context on corporate social responsibility disclosure: A case of a developing country. *Journal of Sustainable Finance & Investment*, *10*(3), 269–293.

Alsulami, F. (2025). Digital innovation and sustainable accounting practices: A systematic literature review through the governance context. *Journal of Governance and Regulation*, *14*(1), 38–48.

Amoako, G. K., Adam, A. M., Arthur, C. L., & Tackie, G. (2021). Institutional isomorphism, environmental management accounting and environmental accountability: A review. *Environment, Development and Sustainability*, *23*(8), 11201–11216.

Ascani, I., Ciccola, R., & Chiucchi, M. S. (2021). A structured literature review about the role of management accountants in sustainability accounting and reporting. *Sustainability*, *13*(4), 2357.

Bebbington, J., & Unerman, J. (2020). Advancing research into accounting and the UN sustainable development goals. *Accounting, Auditing & Accountability Journal*, *33*(7), 1657–1670.

Beusch, P., Frisk, J. E., Rosén, M., & Dilla, W. (2022). Management control for sustainability: Towards integrated systems. *Management Accounting Research*, *54*, 100777.

Borghei, Z., Linnenluecke, M., & Bui, B. (2024). The disclosure of climate-related risks and opportunities in financial statements: The UK's FTSE 100. *Meditari Accountancy Research*, *32*(3), 1031–1063.

Brekumi, H. A., Sarpong-Danquah, B., Owusu-Afriyie, R., & Gyimah, P. (2023). Nexus among internal audit quality, corporate governance and performance of selected banks in Africa. *Global Business Review, Ahead-of-Print*, 1–12.

Danso, A., Adomako, S., Lartey, T., Amankwah-Amoah, J., & Owusu-Yirenkyi, D. (2020). Stakeholder integration, environmental sustainability orientation and financial performance. *Journal of Business Research*, *119*, 652–662.

Di Vaio, A., Zaffar, A., Chhabra, M., & Balsalobre-Lorente, D. (2024). Carbon accounting and integrated reporting for net-zero business models towards sustainable development: A systematic literature review. *Business Strategy and the Environment*, *33*(7), 7216–7240.

Dmytriyev, S.D. and Freeman, R.E. (Eds) (2023), *R. Edward Freeman's selected works on stakeholder theory and business ethics*, Springer Nature, Cham, *53*.

Dupire, M., & M'Zali, B. (2018). CSR strategies in response to competitive pressures. *Journal of Business Ethics*, *148*(3), 603–623.

Elbanna, S., & Elsharnouby, T. H. (2025). Practical relevance of innovativeness: A mixed-method field study on the role of strategic orientation and strategic learning in the hospitality industry. *Management & Sustainability: An Arab Review*, *4*(2), 362–382.

Erin, O. A., Bamigboye, O. A., & Oyewo, B. (2022). Sustainable development goals (SDG) reporting: An analysis of disclosure. *Journal of Accounting in Emerging Economies*, *12*(5), 761–789.

Gaur, S., & Tawalare, A. (2024). Stakeholder management and its role on value creation in construction projects: A cross-case analysis. *Asian Journal of Civil Engineering*, *25*(4), 3763–3776.

Gerdin, J. (2005). Management accounting system design in manufacturing departments: An empirical investigation using a multiple contingencies approach. *Accounting, Organizations and Society*, *30*(2), 99–126.

Gomez-Conde, J., Lunkes, R. J., & Rosa, F. S. (2019). Environmental innovation practices and operational performance: The joint effects of management accounting and control systems and environmental training. *Accounting, Auditing & Accountability Journal*, *32*(5), 1325–1357.

Gyimah, P., & Owusu-Afriyie, R. (2025). Bank sustainability: Do corporate governance and internal audit quality matter? *World Development Sustainability*, *6*(100222), 1–10.

Gyimah, P., Appiah, K. O., & Appiagyei, K. (2023). Seven years of United Nations' sustainable development goals in Africa: A bibliometric and systematic methodological review. *Journal of Cleaner Production*, *395*, 136422.

Gyimah, P., Appiah, K. O., & Appiagyei, K. (2025). Unravelling contemporary trends on United Nations sustainable development goals: A new global bibliometric and literature review analysis. *Sustainable Development*, *33*(2), 2579–2598.

Hansen, S. C., & Van der Stede, W. A. (2004). Multiple facets of budgeting: An exploratory analysis. *Management Accounting Research*, *15*(4), 415–439.

Haque, F., & Ntim, C. G. (2022). Do corporate sustainability initiatives improve corporate carbon performance? Evidence from European firms. *Business Strategy and the Environment*, *31*(7), 3318–3334.

Harasheh, M., & Provasi, R. (2023). A need for assurance: Do internal control systems integrate environmental, social, and governance factors? *Corporate Social Responsibility and Environmental Management*, *30*(1), 384–401.

Hussain, T., Tunyi, A. A., & Agyemang, J. (2024). Corporate governance transfers: The case of mergers and acquisitions. *International Journal of Disclosure and Governance*, *21*(4), 543–567.

Ikpor, I. M., Bracci, E., Kanu, C. I., Ievoli, R., Okezie, B., Mlanga, S., & Ogbaekirigwe, C. (2022). Drivers of sustainability accounting and reporting in emerging economies: Evidence from Nigeria. *Sustainability*, *14*(7), 3780.

Irún, B., Monferrer, D., & Moliner, M. Á. (2020). Network market orientation as a relational governance mechanism to public-private partnerships. *Journal of Business Research*, *121*, 268–282.

Jaradat, Z., Al-Hawamleh, A. M., & Altarawneh, M. (2025). Investigating the impact of technological orientation and innovation orientation on the sustainability and development the industrial sector. *Competitiveness Review: An International Business Journal*, *35*(2), 409–433.

Kalia, A., & Gill, S. (2023). Corporate governance and risk management: A systematic review and synthesis for future research. *Journal of Advances in Management Research*, *20*(3), 409–461.

Kavadis, N., & Thomsen, S. (2023). Sustainable corporate governance: A review of research on long-term corporate ownership and sustainability. *Corporate Governance: An International Review*, *31*(1), 198–226.

Kraft, C., Lindeque, J. P., & Peter, M. K. (2022). The digital transformation of Swiss small and medium-sized enterprises: Insights from digital tool adoption. *Journal of Strategy and Management*, *15*(3), 468–494.

Kren, L., & Kerr, J. L. (1993). The effect of behaviour monitoring and uncertainty on the use of performance-contingent compensation. *Accounting and Business Research*, *23*(90), 159–167.

Latifah, S. W., & Soewarno, N. (2023). The environmental accounting strategy and waste management to achieve MSME's sustainability performance. *Cogent Business & Management*, *10*(1), 2176444.

Liang, T. P., You, J. J., & Liu, C. C. (2010). A resource-based perspective on information technology and firm performance: A meta analysis. *Industrial Management & Data Systems*, *110*(8), 1138–1158.

Maelah, R., Al Lami, M. F. F., & Ghas, G. (2021). Usefulness of management accounting information in decision making among SMEs: The moderating role of cloud computing. *Asia – Pacific Management Accounting Journal*, *16*(1), 59–92.

Magnacca, F., Giannetti, R., & Cinquini, L. (2024). Improving organisational capabilities: A cost maturity model for enhanced intra- and inter-organisational performance. *International Journal of Productivity and Performance Management*, *73*(11), 325–354.

Maroun, W. (2022). Corporate governance and the use of external assurance for integrated reports. *Corporate Governance: An International Review*, *30*(5), 584–607.

Mishra, P., & Kumar, K. (2024). Uncovering the sustainability reporting: Bibliometric analysis and future research directions. *International Journal of Disclosure and Governance*, *21*(4), 520–542.

Ng, P. M., Wut, T. M., Lit, K. K., & Cheung, C. T. (2022). Drivers of corporate social responsibility and firm performance for sustainable development—an institutional theory approach. *Corporate Social Responsibility and Environmental Management*, *29*(4), 871–886.

O'Cass, A., Ngo, L. V., & Siahtiri, V. (2012). Examining the marketing planning–marketing capability interface and customer-centric performance in SMEs. *Journal of Strategic Marketing*, *20*(6), 463–481.

Onat, N. C., Mandouri, J., Kucukvar, M., Kutty, A. A., & Al-Muftah, A. A. (2025). Driving sustainable business practices with carbon accounting and reporting: A holistic framework and empirical analysis. *Corporate Social Responsibility and Environmental Management, Ahead-of-Print*, *32*(2).

Opoku, S., Appiah, K. O., & Gyimah, P. (2024). Can we predict the financial distress of banks in Sub-Saharan Africa? *Sage Open*, *14*(3), 1–14.

Orobia, L., Nturaninshaba, R., Bananuka, J., & Reuel Dakung, K. (2023). The association between accountant's competences, organisational culture and integrated reporting practices. *Journal of Financial Reporting and Accounting*, *21*(2), 193–216.

Owusu-Afriyie, R., Awunyo-Vitor, D., Gyimah, P., & Appiah, K. O. (2024). Monitoring and audit quality: Does quality standards compliance matter? *Cogent Business & Management*, *11*(1), 2416095.

Oyewo, B., Tawiah, V., & Hussain, S. T. (2023). Drivers of environmental and social sustainability accounting practices in Nigeria: A corporate governance perspective. *Corporate Governance: The International Journal of Business in Society*, *23*(2), 397–421.

Patel, J., & Deshmukh, A. K. (2024). Corporate social responsibility (CSR) nudge: A SAP-LAP-IRP inquiry into the discretion to mandate. *Global Journal of Flexible Systems Management*, *26*(1), 1–30.

Qian, W., Tilt, C., & Belal, A. (2021). Social and environmental accounting in developing countries: Contextual challenges and insights. *Accounting, Auditing & Accountability Journal*, *34*(5), 1021–1050.

Shankar, V. (2025). Marketing of technology-intensive products: An AI-driven approach. *Marketing Strategy Journal*, *2*, 100008.

Tauringana, V., & Chithambo, L. (2020). Determinants of risk disclosure compliance in Malawi: A mixed-method approach. *Journal of Accounting in Emerging Economies*, *10*(1), 66–87.

Teng, J. T., Cheon, M. J., & Grover, V. (1995). Decisions to outsource information systems functions: testing a strategy-theoretic discrepancy model. *Decision Sciences*, *26*(1), 75–103.

Van Buren, H. J., & Schrempf-Stirling, J. (2025). Making the invisible visible: Stakeholder capitalism and powerless stakeholders. *Corporate Governance: The International Journal of Business in Society*, *25*(1), 128–143.

Vărzaru, A. A. (2022). Assessing artificial intelligence technology acceptance in managerial accounting. *Electronics*, *11*(14), 1–13.

World Bank. (2023). *Ghana economic update: Preserving the future – why investing in children is important for Ghana*, Washington, DC: World Bank.

Further reading

Boakye, D. J., Tingbani, I., Ahinful, G. S., & Damoah, I. S. (2021). The relationship between environmental management performance and financial performance of firms listed in the alternative investment market (AIM) in the UK. *Journal of Business Research*, *125* , 489–497.

Braun, V., & Clarke, V. (2021). *Thematic analysis: a practical guide*, London: SAGE Publications Ltd.

Diamastuti, E., Muafi, M., Fitri, A., & Faizaty, N. E. (2021). The role of corporate governance in the corporate social and environmental responsibility disclosure. *The Journal of Asian Finance, Economics and Business*, *8*(1), 187–198.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2021). *Multivariate data analysis*, 8th ed., Hampshire: Cengage Learning.

Hinson, R., Agbleze, S., & Kuada, J. (2020). Corporate social responsibility and employer attractiveness: Perspectives of prospective jobseekers in Ghana. *African Journal of Business Ethics*, *12*(2), 1–17.

Lakhani, L., & Herbert, S. L. (2022). Theoretical frameworks applied in integrated reporting and sustainability reporting research. *South African Journal of Economic and Management Sciences*, *25*(1), 4427.

Quinlan, C., Babin, B., Carr, J., & Griffin, M. (2023). *Business research methods*, 3rd. ed., Hampshire: Cengage Learning.

Saad, A. (2024). Exploring of the gender variations in 4Cs skills among primary students. *Thinking Skills and Creativity*, *52* , 101510.

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Appendix

Table A1. Measurement of study variables

S/N	Abbreviation	Variables	No. of items	Sources
1	ESAP	Sustainability accounting practices	7	Ahmad & Mohamed Zabri, 2015; Oyewo et al., 2023
2	TQIT	IT capability	5	Teng et al., 1995
3	TSKILL	Structure of accounting department	5	Oyewo et al., 2023
4	TSTRG	Strategic orientation	4	Oyewo et al., 2023
5	TMKT	Market orientation	3	Al-Mawali, 2015
6	TPEU	Environmental uncertainty	4	Kren & Kerr, 1993
7	TCMPT	Market competition	1	Hansen & Van der Stede, 2004
8	TOSTR	Degree of decentralization or centralization	3	Oyewo et al., 2023

Source(s): Authors' own work

Table A2. Respondents' and companies' context ($n = 200$)

Variable	Categories	Freq.	%
Panel A: Respondent characteristics			
Education qualification	B.SC./HND	77	38.5
	Master's degree	94	47
	PhD	17	8.5
	Other	12	6
Length of work experience	5–10 years	24	12
	11–20 years	83	41.5
	Above 20 years	93	46.5
Job title	Chief finance officer (CFO)/financial director	117	58.5
	Chief accountant	49	24.5
	Senior accountant / financial director	24	12
	Management accountant	10	5
Panel B: Company characteristics			
Location of company's head office	Ghana	24	12
	Outside Ghana	24	12
Availability of management accounting department	Yes	129	64.5
	No	71	35.5
How management accounting information is handled	Every functional department handles its own management accounting requirement	35	49
	The financial controller oversees management accounting when needed	36	51

Source(s): Authors' own work

Table A3. Diagnostics test results

Metric	Value
Factor Loadings (SAP1–SAP7)	0.767
Cronbach's alpha	0.858
Composite reliability (CR)	0.867
Average variance extracted (AVE)	0.588
SRMR (model fit)	0.0000
VIF	<2.0
KMO (EFA precondition)	0.780
Bartlett's test of sphericity	$p < 0.001$

Note(s): CFA was conducted via PLS-SEM; KMO and Bartlett's results reflect the preliminary EFA stage. Accordingly, a latent variable labeled Sustainability Accounting Practice Implementation (ESAP) was created by aggregating the scores of the seven ESAP items for further analysis
Source(s): Authors' own work

Table A4. Spearman's correlation coefficients among the variables

Variables	SAP	TQIT	TMKT	TSTRG	TSKILL	TPUE	TCMPT	OSTRG
(1) SAP	1.000							
(2) TQIT	0.544***	1.000						
(3) TMKT	0.014	0.371	1.000					
(4) TSTRG	0.094**	0.127*	0.240***	1.000				
(5) TSKILL	0.243***	0.040	−0.107	0.345***	1.000			
(6) TPUE	0.039	0.342	0.837	0.018	−0.100	1.000		
(7) TCMPT	0.036***	0.359***	0.788***	−0.092	−0.117*	0.809***	1.000	
(8) TOSTR	0.261***	0.462***	0.560***	0.457***	0.426***	0.581***	0.505***	1.000

Note(s): Spearman rho = 0.505. ***$p < 0.01$; **$p < 0.05$; *$p < 0.10$
Source(s): Authors' own work

Table A5. Reliability and sampling adequacy of constructs

Construct	Cronbach's alpha	KMO	Bartlett's test sig
ESAP	0.86	0.78	0.000
TQIT	0.84	–	–
TMKT	0.76	–	–
TSTRG	0.79	–	–
TSKILL	0.81	–	–
TPUE	0.83	–	–
TCMPT	0.78	–	–
TOSTR	0.85	–	–

Note(s): KMO and Bartlett's test were assessed at the construct level for ESAP as the dependent latent variable. Cronbach's Alpha values for all constructs exceed the 0.70 reliability threshold, indicating strong internal consistency
Source(s): Authors' own work