“ESG performance, tax reform, and accrual earnings management: Evidence from Saudi Arabia’s VAT reform”

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ESG PERFORMANCE, TAX REFORM, AND ACCRUAL EARNINGS MANAGEMENT: EVIDENCE FROM SAUDI ARABIA'S VAT REFORM

Abstract

This study investigates whether fiscal reforms influence the effectiveness of Environmental, Social, and Governance performance in the control of accrual-based earnings management. Previous studies report inconsistent findings about the relationship between sustainability performance and earnings management, while limited attention has been paid to the role of tax policy reforms in this relationship. Using an unbalanced panel of 334 non-financial companies listed on the Tadawul exchange over the period 2017–2024 (2,128 firm-year observations), the study investigates the moderating role of value-added tax reforms introduced in 2018 and increased in 2020. The empirical analysis employs feasible generalized least squares and a difference-in-differences approach. The findings indicate that Environmental, Social, and Governance performance is negatively associated with earnings management ($\beta = -0.0147$, $p < 0.05$). The result indicates that stronger sustainability engagement reduces discretionary reporting practices. In contrast, the value-added tax rate variable is positively associated with earnings management ($\beta = 0.2094$, $p < 0.05$). However, the interaction term between Environmental, Social, and Governance and value-added tax reforms is negative ($\beta = -0.1542$, $p < 0.05$). The results suggest that sustainability-oriented governance practices reduce the adverse effect of fiscal reforms on earnings manipulation. These findings demonstrate that Environmental, Social, and Governance performance serves as an effective internal governance mechanism during periods of fiscal transition. The study also provides policy-relevant implications for improving financial transparency in emerging markets subject to tax reforms.

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INTRODUCTION

Corporate sustainability has changed from a voluntary philanthropic activity into a strategic governance framework that promotes environmental stewardship, social responsibility, and accountability. This transformation has been driven by increasing demands from investors, regulators, and society for greater transparency and ethical corporate behavior. Consequently, Environmental, Social, and Governance (ESG) performance has emerged as a key indicator of firms' commitment to responsible governance, sustainable value creation, and the mitigation of agency conflicts (Fang & Guo, 2025; Huang, 2022). From a scientific perspective, the role of ESG in influencing financial reporting quality remains unresolved. On one hand, stewardship and stakeholder theories argue that ESG reflects genuine ethical commitment and stronger monitoring, which constrain earnings management and improve reporting quality (Vatis et al., 2025; Tohang et al., 2024; Adeneye et al., 2024). On the other hand, agency and legitimacy perspectives suggest that managers employ ESG disclosure as a symbolic tool to obtain legitimacy. Such behavior can coexist with opportunistic reporting practices such as accrual manipulation or income

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smoothing (Jhunjhunwala & Fatima, 2025; Al Amosh & Khatib, 2022). Prior studies report mixed evidence on whether ESG engagement limits managerial discretion (Houcine, 2026; Alahdal et al., 2025; Vatis et al., 2025; Gaio et al., 2022; Velte, 2019; Martínez-Ferrero et al., 2015).

Beyond this unresolved debate, fiscal reforms as an important contextual factor have received limited attention. Tax policy changes directly affect firms' cash flows, compliance costs, and reporting incentives. These effects modify managerial behavior. Prior research indicates that fiscal pressure can intensify incentives for earnings manipulation as managers attempt to stabilize reported performance or mitigate tax burdens. At the same time, ESG practices can either reinforce ethical discipline under such pressure or serve as a reputational defense that masks opportunistic behavior.

The question concerns the limited understanding of how fiscal reforms influence the effectiveness of ESG performance with earnings management. Without consideration of this institutional dimension, conclusions about the governance role of ESG remain incomplete.

This issue is particularly relevant in emerging economies with simultaneous regulatory and fiscal transformations. Saudi Arabia provides a particularly relevant context to address this problem. The introduction of Value Added Tax (VAT) in 2018 and the subsequent increase in the rate in 2020 represent major fiscal shocks, while the country simultaneously reinforced corporate governance, adopted IFRS, and promoted ESG disclosure under Vision 2030. These parallel reforms create a natural setting to examine whether ESG operates as a reliable governance mechanism or becomes symbolic when firms face heightened tax pressure.

1. LITERATURE REVIEW

The relationship between ESG performance, earnings management, and fiscal policy has attracted scholarly attention, yet several important gaps remain. This section reviews the theoretical foundations and empirical evidence of the relationship between ESG and earnings management, and identifies the moderating role of fiscal reforms in improving ESG's governance effectiveness.

The association between ESG performance and earnings management is commonly explained through agency, stakeholder–institutional, and political cost perspectives.

Agency theory (Jensen & Meckling, 1976) views earnings management as a consequence of information asymmetry and conflicting interests between managers and shareholders. Managers can manipulate accruals to maximize private benefits or protect compensation and job security. Within this framework, ESG can play a dual role. When ESG reflects a genuine strategic commitment, it tends to promote alignment between managerial actions and long-term firm value and enhances transparency. As a result, opportunistic reporting becomes more limited. Conversely, when ESG is symbolic, managers can use sustainability disclosure as a tool to protect their reputation and continue opportunistic accounting behavior (Al Amosh & Khatib, 2022).

Stakeholder and institutional theories (Freeman, 1984; DiMaggio & Powell, 1983) identify external accountability pressures from investors, regulators, and society. ESG disclosure increases legitimacy and signals ethical orientation, which can improve information credibility and reduce earnings management. Empirical evidence shows that firms with strong stakeholder orientation and sustainability engagement generally report higher earnings quality (Adeneye et al., 2024). ESG can therefore serve as an informal governance tool, especially in emerging markets where formal regulatory enforcement is relatively limited.

Political cost theory (Watts & Zimmerman, 1986) provides the basis for linking fiscal reforms to earnings management. New taxes or higher tax rates increase firms' political visibility, compliance costs, and profitability pressure. These conditions motivate income smoothing and accrual manipulation. Value Added Tax reforms represent exogenous policy shocks that can remake managerial reporting incentives.

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These perspectives suggest that ESG represents an ethical and legitimacy-driven force that reduces earnings management, whereas value-added tax reforms represent fiscal pressure associated with higher earnings management. When both operate simultaneously, ESG can either buffer or fail to offset it. This interaction forms the theoretical basis for this study.

Empirical studies examining the ESG–earnings management relationship provide inconsistent findings because the governance role of sustainability practices differs across institutional contexts. A substantial stream of international research supports the ethical perspective: higher ESG performance is associated with lower discretionary accruals and reduced real earnings management across both developed and emerging markets (Martínez-Ferrero et al., 2015; Velte, 2021; Tran et al., 2022; Wu et al., 2024). Sustainability-oriented firms tend to be more transparent and have lower incentives to distort financial information, consistent with stewardship and stakeholder-based explanations.

In contrast, another stream of literature supports an opportunistic view. Some studies find that ESG-active firms engage in higher earnings manipulation, suggesting that sustainability disclosure serves as a strategic tool to maintain legitimacy and conceal aggressive accounting practices (Prior et al., 2008; Muttakin & Subramaniam, 2015; Tohang et al., 2024). Evidence from emerging markets, including Saudi Arabia, indicates that ESG disclosure can at times function symbolically during regulatory transitions, such as IFRS adoption. In such a context, firms use sustainability signals to manage reputational perceptions rather than improve reporting integrity (Habbash & Haddad, 2020; Garfatta, 2021). More recent studies confirm that the ESG-earnings management relationship remains contested, with mixed findings reported across different markets and time periods (Houcine, 2026; Alahdal et al., 2025; Vatis et al., 2025; Gaio et al., 2022; Velte, 2019; Martínez-Ferrero et al., 2015; Jhunjhunwala & Fatima, 2025).

VAT reform can positively affect accrual-based earnings management, such that firms report higher levels of discretionary accruals in the post-reform period compared to the pre-reform period. This is consistent with the cash flow pressure channel. Specifically, the VAT reform increases working capital demands due to inherent timing mismatches between input VAT paid on purchases and output VAT collected on sales. To mitigate this liquidity squeeze and mask its adverse effects on reported performance, managers respond by using discretionary accruals to manage reported earnings. Fiscal pressure can increase earnings management as firms attempt to stabilize earnings or reduce perceived tax burdens (Yang, 2015; Li et al., 2017). Higher tax rates raise firms' political visibility and profitability pressure. During periods of major macroeconomic tax overhauls, corporate pricing strategies and profit margins face intensified regulatory inspection and public visibility. To avoid drawing negative political attention and public backlash during a sensitive tax transition, managers face a strong incentive to minimize public exposure to abnormal or volatile profitability. Consequently, executives engage in accrual-based earnings management to deliberately smooth reported net income. Conversely, some evidence indicates that VAT reforms accompanied by stronger enforcement and documentation requirements reduce earnings management by raising detection risk (Zhao & Wang et al., 2025).

These mixed findings imply that the effect of VAT reforms on earnings management depends on enforcement strength, firm-level governance characteristics, and the broader institutional environment in which reforms are implemented.

Although prior research examines ESG and earnings management, and recent evidence on tax reforms and reporting behavior, the interaction between these two forces has received no direct empirical attention. Whether VAT reforms influence the ability of ESG performance to limit earnings manipulation remains an open question. ESG can serve as a stabilizing governance mechanism under fiscal pressure and reinforce ethical discipline when firms face higher tax burdens. Alternatively, ESG may operate as a symbolic device that conceals opportunistic behavior, particularly when firms are under fiscal stress.

The Saudi Arabian context, which simultaneously introduced VAT and strengthened ESG and governance frameworks under Vision 2030, offers a unique natural setting to examine this interaction and assess whether ESG constitutes a credible or symbolic governance response during periods of fiscal reform.

H_1: *Firms with stronger Environmental, Social, and Governance performance are expected to exhibit lower levels of accrual-based earnings management.*

H_2: *The implementation of Value Added Tax reforms is expected to increase accrual-based earnings management.*

H_3: *Value Added Tax reforms are expected to influence the relationship between Environmental, Social, and Governance performance and earnings management.*

2. METHODS

2.1. Data description

The study focuses on non-financial companies listed on the Saudi stock exchange (Tadawul) during the period 2017–2024. This timeframe captures the mandatory adoption of International Financial Reporting Standards (IFRS), Tadawul's initiatives that encourage listed firms to improve ESG disclosure, the introduction of Value Added Tax at a rate of 5% in 2018, and the subsequent increase to 15% in 2020 under Vision 2030. These fiscal reforms were introduced to diversify government revenue streams and improve economic resilience. As a result, the period provides an appropriate context to examine how ESG disclosure interacts with earnings management behavior under changing tax policy conditions.

Financial and accounting data, together with ESG scores, were collected from the Refinitiv database. Financial institutions were excluded from the sample, as they are subject to specific prudential regulations. Firms with unavailable observations were removed, which resulted in a final sample of 334 firms and an unbalanced panel of 2,128 firm-year observations. Table 1 presents the sectoral distribution of the sample.

Table 1. Industry distribution of the sample

Industry	Number of firms	%
Communication services	10	2.99
Consumer Staples	45	13.47
Energy	6	1.79
Consumer Discretionary	50	14.97
Health Care	30	8.98
Industrials	58	17.36
Information Technology	18	5.39
Materials	67	20.06
Real Estate	43	12.90
Utilities	7	2.09
Total	334	100

2.2. Model specification

To analyze the effect of ESG performance on accrual-based earnings management and evaluate the moderating influence of Value Added Tax (VAT) reforms, two regression models are estimated using the Feasible Generalized Least Squares (FGLS) method. FGLS is preferred over pooled OLS or fixed effects given potential issues of heteroscedasticity and autocorrelation common in panel datasets of financial reporting studies (as noted in Tran et al., 2022; Rahman et al., 2024).

2.2.1. *Baseline model*

The baseline model assesses the direct link between ESG performance and earnings management after controlling for firm-specific attributes and time effects:

$$\begin{aligned} EM_{it} = {} & \alpha_0 + \alpha_1 ESG_{it} + \alpha_2 VAT_t + \alpha_3 Size_{it} \\ & + \alpha_4 ROA_{it} + \alpha_5 Lev_{it} + \alpha_6 Big4_{it} \\ & + \alpha_7 industry_{it} + \alpha_8 Year + \varepsilon_{it}, \end{aligned} \tag{1}$$

where EM_{it}: Earnings management for firm i in year t; ESG_{it}: ESG score assigned to firm i in year t; VAT_t: VAT reform percentage in year t (5% for 2018–2019, 15% for 2020–2024); $Size_{it}$: Firm size, proxied by the logarithm of total assets; ROA_{it}: Return on assets, a measure of profitability; Lev_{it}: Leverage, measured as total debt to total assets; $Big4_{it}$: A dummy variable indicating whether the firm is audited by a Big 4 audit firm (1 if yes, 0 otherwise); Industry Effect: Industry fixed effects

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included to account for differences across industries; *Year Effect*: Year fixed effects incorporated to capture macroeconomic conditions and regulatory changes over time; ε_{it}: The error term, capturing unobserved factors affecting earnings management.

2.2.2. Extended model with interaction term

To test whether VAT reforms alter the effectiveness of ESG in constraining earnings manipulation, an interaction term is introduced (ESG × VAT) into the baseline model. The extended model is specified as follows:

$$\begin{aligned} EM_{it} &= \alpha_0 + \alpha_1 ESG_{it} + \alpha_2 VAT_t \\ &+ \alpha_3 ESG_{it} \cdot VAT_t + \alpha_4 Size_{it} + \alpha_5 ROA_{it} \\ &+ \alpha_6 Lev_{it} + \alpha_7 Big4_{it} + \alpha_8 industry_{it} \\ &+ \alpha_9 Year_t + \varepsilon_{it}, \end{aligned} \tag{2}$$

where $ESG_{it} \times VAT_t$: The interaction term reflects the moderating influence of VAT reforms on the association between ESG performance and earnings management.

All other variables are as defined in the baseline model.

Here, α_3 captures the moderating effect of VAT reforms. A significant coefficient indicates that fiscal policy pressure modifies the ESG–earnings management relationship.

2.2.3. Difference-in-differences analysis

As an additional robustness test, this study employs Stata's official Difference-in-Differences estimator (xtdidregress) to estimate the Average Treatment Effect on the Treated (ATET). The objective is to examine whether earnings management responses to the VAT reform differ across firms with varying degrees of exposure to VAT-related operational and liquidity pressures.

The treatment and control groups are defined using an industry-based classification, which reflects firms' expected economic exposure to VAT implementation. The treatment group (242 firms) comprises Business-to-Business (B2B) and relatively price-sensitive sectors including Materials, Industrials, Consumer Discretionary, Real Estate, Information Technology, and Energy. These sectors are more likely to experience working capital pressures associated with VAT invoicing and cash flow timing effects. The control group (92 firms) includes other sectors characterized by more stable demand mechanisms and immediate cash collection.

The ATET measures the differential change in earnings management experienced by firms in the treatment group following the VAT reform relative to firms in the control group.

3. PRESENTATION OF VARIABLES

Table 2 defines and summarizes all variables.

3.2.1. Dependent variable

Earnings Management (EM_{it}): Earnings management is proxied by the absolute value of discretionary accruals, a measure frequently employed in the literature to capture variations in earnings quality (Dechow et al., 2010). In this study, discretionary accruals are estimated using the model developed by Kothari et al. (2005).

Unlike the original or modified Jones models, this model controls for firm performance through the inclusion of ROA, and reduces the risk of misclassifying performance-driven accruals as discretionary. Discretionary accruals are estimated by cross-sectional regression within each industry-year group:

$$\begin{aligned} \frac{TAC_{it}}{A_{it-1}} &= \alpha_0 \frac{1}{A_{it-1}} + \alpha_1 \frac{\left(\Delta REV_{it} - \Delta AR_{it}\right)}{A_{it-1}} \\ &+ \alpha_2 \frac{PPE_{it}}{A_{it-1}} + \alpha_2 ROA_{it} + \varepsilon_{it}, \end{aligned} \tag{3}$$

where: TAC_{it}: Total accruals of firm i in year t; A_{it-1}: Total assets of firm i in year t – 1; ΔRev_{it}: Change in revenue of firm i in year t; PPE_{it}: Total property, plant, and equipment of firm i in year t; ROA_{it}: Return on assets of firm i in year t; ΔAR_{it}: Change in accounts receivable of firm i in year t.

This approach has been validated for emerging market contexts (Mohmed et al., 2020; Tran et al., 2022), and it is appropriate for Saudi firms that operate under changing regulatory standards.

3.2.2. Independent variables

ESG Performance (*ESG*): ESG scores are collected from the Refinitiv database, where environmental, social, and governance performance metrics are integrated into one overall index. The original score was rescaled in the regression model to a 0-1 interval by dividing the score by 100. This transformation facilitates coefficient interpretation and improves comparability across variables.

VAT Reforms (VAT_t): A time-varying variable representing the VAT rate in each year:

It equals 0 before VAT implementation, 0.05 for 2018–2019 (initial VAT introduction), and 0.15 for 2020–2024 (VAT rate increase). Because it varies only by year, it cannot be estimated together with full-year fixed effects.

Interaction Term ($ESG_{it} \times VAT_t$): The product of the ESG score and the VAT rate. The sign and significance of this term will indicate whether the ESG-earnings management association differs across VAT reform periods.

3.2.3. Control variables

Firm Size ($Size_{it}$): This variable is proxied by the natural logarithm of total assets, a measure widely adopted in prior research (Adeneye et al., 2024; Yoon et al., 2019; Ben Amar & Chakroun, 2018; Garfatta, 2021). Larger companies may face greater analysis and control, which can lead to reduced earnings management. Therefore, a negative relationship is expected for this variable.

Return on Assets (ROA_{it}): This variable is computed as net income divided by total assets, a profitability indicator commonly used in prior studies (Tran et al., 2022; Garfatta, 2021; Ben Amar & Chakroun, 2018). Firms with more profitability may have stronger incentives to engage in earnings management practices (Boachie & Mensah, 2022).

Leverage (Lev_{it}): Financial leverage is measured as the ratio of total debt to total assets, following previous studies (Adeneye et al., 2024; Tran et al., 2022). Firms with higher leverage may have stronger incentives to engage in earnings management in order to comply with debt covenant requirements or reduce the risk of financial distress. Therefore, a positive association is expected for this variable.

Big 4 Auditor ($Big4_{it}$): This variable is defined as a dummy indicator equal to 1 when a firm is

Table 2. Summary of variables

Symbol	Variable	Measure	Expected sign
Dependent variable			
EM	Earnings management	The absolute value of discretionary accruals calculated using the Kothari et al. (2005) approach.	–
Independent variable			
ESG	Environmental, social, governance score	The ESG score, along with its three pillars (environmental, social, and governance) is sourced from the Refinitiv Datastream database	–
Envir	Environmental score		
Soc	Social score		
Gov	Governance score		
VAT	Value added tax rate	A time-varying variable representing the VAT rate in each year: 0.05 for 2018–2019 (initial VAT introduction). 0.15 for 2020–2024 (VAT rate increase).	–
Control variable			
Size	Firm size	Log(*Total assets*)	–
ROA	Return on assets	*Net Income / Total assets*	+
Lev	Leverage	*Total debt / Total asset*s	+
Big4	Big 4 auditor	A binary variable equal to 1 when the firm is audited by a Big Four audit firm and 0 otherwise	–
Industry	Industry effect	Dummy variables for each industry sector	
Period Control	Year effect	Dummy variables for each year	

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audited by a Big Four audit firm and 0 otherwise. Companies audited by Big Four auditors are generally subject to higher audit quality and stricter monitoring, which limit the likelihood of earnings management. Consequently, this variable is expected to negatively influence earnings management (Adeneye et al., 2024; Habib, 2023; Adeneye & Kammoun, 2022; Gavana et al., 2022; Velte, 2021).

Industry: Dummy variables for each industry sector. These controls are introduced to address industry-specific influences on firms' earnings management activities.

Period controls: Controls used to capture board time-related conditions. Full-year fixed effects are not included in VAT specifications because they would absorb the VAT variable.

4. RESULTS

Table 3 presents the descriptive statistics for the variables included in the analysis. Regarding their distribution, the earnings management measure has a mean value of 0.023 and a median of 0.019. ESG performance shows considerable variability, with an average score of 30.979. Comparable variation is observed for environmental, social, and governance scores. Firm-level characteristics show an average SIZE of 20.740, ROA of 0.062, leverage of 0.2534, and 82% of companies audited by Big 4 firms.

Table 3. Descriptive statistics

Stats	Mean	Median	SD	Min	Max
EM	0.023	0.019	0.024	0	0.185
ESG	30.979	29.352	19.853	0	82.246
ENV	24.004	13.617	24.702	0	85.209
GOV	44.438	42.763	22.986	0	91.284
SOC	27.688	23.501	21.273	0	86.050
VAT	0.085	0.15	0.067	0	0.15
SIZE	20.740	20.869	1.937	13.122	28.544
ROA	0.062	0.057	0.288	–0.314	0.945
LEV	0.2534	0.236	0.188	0	2.279
BIG4	0.820	1	0.241	0	1

As shown in Table 4, the pairwise correlations between the explanatory variables remain relatively low, indicating weak linear associations. The strongest correlations appear between SIZE and ESG (0.4776) and between SIZE and LEV (0.2782). In addition, variance inflation factors range between 1.05 and 1.83, indicating no multicollinearity concerns.

Table 4. Pearson correlation matrix

Variable	ESG	VAT	SIZE	ROA	LEV	BIG4
ESG	1					
VAT	–0.1005	1				
SIZE	0.4776	0.1643	1			
ROA	0.0228	–0.0437	–0.0338	1		
LEV	–0.0007	0.04	0.2782	–0.2938	1	
BIG4	–0.0856	0.0579	–0.0582	–0.0102	–0.1036	1
VIF	1.31	1.05	1.78	1.83	1.53	1.34

Table 5 reports the baseline regression results. ESG performance is negatively and significantly related to earnings management. When ESG is decomposed, environmental and social scores report

Table 5. The effect of ESG and VAT reform on earnings management

	Earnings management			
Variable	(1)	(2)	(3)	(4)
ESG	–0.0147**			
	(0.0067)			
ENV		–0.0142***		
		(0.0051)		
SOC			–0.0161***	
			(0.0061)	
GOV				–0.0011
				(0.0091)
VAT	0.2094**	0.2084**	0.2101**	0.2048**
	(0.0981)	(0.0983)	(0.0978)	(0.0984)
SIZE	–0.0045***	–0.0043***	–0.0045***	–0.0049***
	(0.0015)	(0.0016)	(0.0015)	(0.0015)
ROA	0.0677*	0.0683*	0.0695*	0.0711*
	(0.0365)	(0.0362)	(0.0363)	(0.0369)

Table 5 (cont.). The effect of ESG and VAT reform on earnings management

	Earnings management			
Variable	**(1)**	**(2)**	**(3)**	**(4)**
LEV	0.0098	0.0086	0.0101	0.0077
	(0.0131)	(0.0125)	(0.0132)	(0.0131)
BIG4	0.0067	0.0065	0.0068	0.0057
	(0.0045)	(0.0044)	(0.0046)	(0.0043)
Industry	Yes	Yes	Yes	Yes
Period controls	Yes	Yes	Yes	Yes
Intercept	0.0423**	0.0393**	0.0423**	.0444**
	(0.0167)	(0.0167)	(0.0167)	(0.0174)
R-squared	0.1368	0.1434	0.1406	0.1367
Wald chi2	25.97***	25.58***	23.97**	27.20***
Prob chi2	0.0066	0.0075	0.0129	0.0043

Note: Values reported in parentheses indicate the standard errors. *** p < 0.01, ** p < 0.05, * p < 0.1. Period controls do not represent a full set of year fixed effects in VAT specifications. ESG and its components are expressed as fractions (0-1) in regression models.

negative and statistically significant coefficients, whereas the governance score is not significant. VAT appears positively and significantly across all specifications. Because VAT varies only over time, this coefficient should be interpreted as evidence of a positive association between VAT reform periods and earnings management, not as a fully isolated causal tax effect. With respect to the control

Table 6. The effect of ESG and VAT regime on earnings management

	Earnings management			
Variable	**(1)**	**(2)**	**(3)**	**(4)**
ESG	–.0137**			
	(0.0066)			
ENV		–0.0146***		
		(0.0052)		
SOC			–0.0152**	
			(0.0059)	
GOV				0.0011
				(0.0089)
VAT5%	0.0422***	0.0423***	0.0422***	0.0421***
	(0.0072)	(0.0072)	(0.0071)	(0.0072)
VAT15%	0.0377***	0.0377***	0.0378***	0.0371***
	(0.0096)	(0.0083)	(0.010)	(0.0092)
SIZE	–0.0045***	–0.0042***	–0.0045***	–0.0049***
	(0.0015)	(0.0016)	(0.0015)	(0.0016)
ROA	0.0764**	0.0762**	0.0781**	0.0801**
	(0.0361)	(0.0359)	(0.0359)	(0.0364)
LEV	0.0072	0.0062	0.0074	0.0046
	(0.0128)	(0.0124)	(0.0129)	(0.0128)
BIG4	0.0045	0.0046	0.0047	0.0036
	(0.0042)	(0.0041)	(0.0043)	(0.0041)
Industry	Yes	Yes	Yes	Yes
Period controls	Yes	Yes	Yes	Yes
Intercept	0.0314***	0.0279***	0.0314***	0.0328***
	(0.0098)	(0.0099)	(0.0097)	(0.0421)
R-squared	0.2433	0.2479	0.2473	0.2441
Wald chi2	21.26***	19.93**	17.49**	20.77***
Prob chi2	0.0065	0.0106	0.0254	0.0078

Note: Values reported in parentheses indicate the standard errors. *** p < 0.01, ** p < 0.05, * p < 0.1. Period controls do not represent a full set of year fixed effects in VAT specifications.

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variables, SIZE shows a negative and significant coefficient, while ROA shows a positive and significant effect. LEV and BIG4 are not significant.

Table 6 reports the results when the continuous VAT variable is replaced with regime dummies. Both VAT5% and VAT15% are positive and significant. The estimated coefficient for ESG continues to be negative and significant, and the negative effects of ENV and SOC persist, while GOV remains insignificant.

Table 7 reports the results after introducing the interaction terms. The coefficient on ESG×VAT is negative and significant, whereas the main ESG effect becomes insignificant. At the component level, ENV×VAT and SOC×VAT are negative and significant, while GOV × VAT is not statistically significant. VAT remains positive and significant.

Table 8 reports the two-stage least squares (2SLS) estimates that address potential endogeneity using the industry-average ESG score as an instrumental variable. The coefficient of the instrumented ESG variable remains negative and significant in the earnings management model. The interaction term between instrumented ESG and VAT also shows a negative and significant effect, while VAT maintains a positive and significant coefficient.

Table 7. The moderating effect of VAT on the ESG-earnings management relationship

	Earnings management			
Variable	**(1)**	**(2)**	**(3)**	**(4)**
ESG	−0.0015			
	(0.0101)			
ENV		0.0025		
		(0.0061)		
SOC			−0.0033	
			(0.0090)	
GOV				−0.0006
				(0.0113)
ESG × VAT	−0.1542**			
	(0.0764)			
ENV × VAT		−0.1945***		
		(0.0608)		
SOC × VAT			−0.1506*	
			(0.0888)	
GOV × VAT				−0.0066
				(0.0903)
VAT	0.2525**	0.2457**	0.2471**	0.2078**
	(0.1054)	(0.1002)	(0.1058)	(0.1056)
SIZE	−0.0045***	−0.0042***	−0.0045***	−0.0049***
	(0.0015)	(0.0016)	(0.0015)	(0.0015)
ROA	0.0663*	0.0648*	0.0677*	0.07114*
	(0.0368)	(0.0368)	(0.0368)	(0.0369)
LEV	0.0089	0.0072	0.0092	0.0077
	(0.0131)	(0.0127)	(0.0133)	(0.0131)
BIG4	0.0067	0.0066	0.0068	0.0058
	(0.0045)	(0.0044)	(0.0046)	(0.0043)
Industry	Yes	Yes	Yes	Yes
Period controls	Yes	Yes	Yes	Yes
Intercept	0.0388**	0.0365**	0.0395**	0.0442**
	(0.0169)	(0.0169)	(0.0168)	(0.0175)
R-squared	0.1395	0.1464	0.1420	0.1369
Wald chi2	96.40***	311.77***	43.41***	28.90***
Prob chi2	0.0000	0.0000	0.0000	0.0041

Note: Values reported in parentheses indicate the standard errors. *** p < 0.01, ** p < 0.05, * p < 0.1. Period controls do not represent a full set of year fixed effects in VAT specifications.

Table 8. 2SLS estimation with industry mean ESG as an instrumental variable

Variable	ESG	EM	EM
	(1)	(2)	(3)
Industry-wide ESG	−0.1837*		
	(0.1071)		
Instrumented ESG		−0.3267**	−0.3012**
		(0.1296)	(0.1310)
Instrumented ESG × VAT			−0.5675**
			(0.2712)
VAT	0.3431	0.2942***	0.4610***
	(0.2304)	(0.0572)	(0.1022)
SIZE	0.0431***	0.0089	0.0098*
	(0.0089)	(0.0056)	(0.0057)
ROA	−0.3755**	−0.0426	−0.0510
	(0.1680)	(0.0601)	(0.0628)
LEV	0.1384**	0.0525**	0.0544*
	(0.0709)	(0.0244)	(0.0251)
BIG4	0.0608**	0.0255**	0.0267***
	(0.0255)	(0.0098)	(0.0101)
Industry	Yes	Yes	Yes
Period controls	Yes	Yes	Yes
Intercept	−0.2742***	−0.0573	−0.0738*
	(0.0817)	(0.0426)	(0.0442)
F	11.90***	3.90***	3.59***
R-squared	0.3589	0.1845	0.1987

Note: Values reported in parentheses indicate the standard errors. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Period controls do not represent a full set of year fixed effects in VAT specifications.

Table 9. Difference-in-differences regression

Parameter	coefficient	Std err.	T	P > t
ATET Treat (1 vs 0)	0.0315	0.0129	2.44	0.019

Table 9 reports the difference-in-differences estimates, which show that VAT reform leads to a significant rise in earnings management. The average treatment effect on the treated equals 0.0315 and is significant at the 5% level.

These findings support H_1. The positive VAT coefficient supports H_2. The interaction term confirms H_3.

5. DISCUSSION

This study examines whether ESG performance reduces accrual-based earnings management in Saudi-listed companies and whether Value Added Tax (VAT) reforms change this relationship. The findings support the view that sustainability engagement serves as an important governance mechanism influencing financial reporting practices, particularly under fiscal pressure. At the same time, the interpretation of VAT-related coefficients requires caution because VAT varies by year and cannot be separated from full year fixed effects.

First, the negative relationship between ESG performance and earnings management (Table 5) reinforces the ethical and stakeholder-oriented view of corporate sustainability. Firms with stronger ESG engagement appear less inclined to manipulate accruals. This finding suggests that sustainability practices are associated with higher reporting discipline and transparency. This result aligns with prior evidence showing that ESG-oriented firms present superior earnings quality and lower opportunistic behavior (Tran et al., 2022; Adeneye et al., 2024). From a theoretical standpoint, this finding aligns with stakeholder and stewardship theories. These perspectives argue that firms committed to broader stakeholder welfare internalize ethical norms. Such norms discourage opportunistic

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accounting practices. The present findings align with this evidence and extend it to the Saudi context. ESG adoption in Saudi Arabia remains at a developing stage, and governance frameworks have been recently reformed under Vision 2030. In contrast to studies suggesting that ESG is viewed as a symbolic legitimacy device used to conceal opportunistic behavior (Prior et al., 2008; Tohang et al., 2024), the results provide no support for the greenwashing interpretation in the Saudi setting during the study period.

The component-level results further indicate that environmental and social dimensions primarily drive this relationship, whereas governance scores show no significant independent effect (Tables 5 and 6). This pattern suggests that operational and relational aspects of sustainability, such as environmental responsibility and social engagement, can reflect stronger ethical cultures within firms than formal governance structures alone. In emerging markets, governance disclosures often reflect compliance with regulatory templates rather than substantive monitoring effectiveness. This distinction can explain the relatively limited effectiveness of governance mechanisms to reduce earnings management. Similar observations have been documented in earlier studies conducted in developing institutional environments (Habbash & Haddad, 2020; Garfatta, 2021).

Second, the association between VAT reforms and earnings management indicates that fiscal policy changes may coincide with incentives for firms to adjust accounting numbers (Table 6). The introduction of VAT in 2018 and its rate increase in 2020 may have intensified compliance costs, liquidity pressure, and incentives to preserve reported performance or manage tax-related cash flows. This result is consistent with political cost and agency-based explanations, which predict that regulatory and tax burdens can motivate managers to engage in income smoothing and accrual manipulation. Comparable evidence has been documented in other tax-reform contexts, such as China and several Asian economies. In these studies, firms responded to VAT implementation or tax tightening through discretionary accruals (Li et al., 2017).

Most importantly, the interaction analysis demonstrates that ESG performance moderates the association between VAT reforms and earnings management. The negative and significant ESG×VAT coefficient shows that firms with stronger ESG engagement show a weaker positive association between VAT pressure and accrual manipulation (Table 7). Following the VAT reform, heightened regulatory and stakeholder monitoring raises the reputational stakes for corporate transparency. High ESG firms reinforce internal accounting discipline to safeguard the long-term credibility of their sustainability commitments and prioritize ethical reporting over short-term profit smoothing. In other words, ESG-oriented firms appear more resilient to opportunistic reporting incentives during fiscal transition. This finding extends prior ESG–earnings management research because sustainability influences reporting quality, not only in normal periods but also during regulatory and fiscal policy changes.

The component-level interaction results reinforce this interpretation. Environmental and social practices reduce the positive effect of VAT reforms on earnings management. This suggests that firms that insert sustainability values into operational and social domains develop stronger internal norms and stakeholder accountability, which limit opportunistic responses when external pressures intensify. The governance pillar remains insignificant both directly and through its interaction with VAT reforms. A possible explanation is that Saudi listed firms operate under a relatively standardized governance framework, which limits variation in governance practices across firms. Consequently, environmental and social dimensions appear to play a more prominent role in constraining earnings management, particularly during periods of fiscal pressure.

The endogeneity and supplementary difference-in-differences style analyses in Tables 8 and 9 provide robustness checks. The 2SLS results address potential reverse causality between ESG and earnings management and confirm that the negative association is not driven by endogeneity. The positive and significant ATET, as reported in Table 9, suggests that firms classified in the treatment group experienced a larger increase in earnings management following the VAT reform than firms in the control group. This finding is consistent with the argument that fiscal reforms may create additional reporting and financial pressures that influence managerial reporting behavior.

The discussion indicates that ESG engagement can function as a form of ethical capital that protects firms from opportunistic reporting behavior during periods of stronger external pressures. This role reinforces the strategic value of ESG.

CONCLUSION

This study examined whether Environmental, Social, and Governance (ESG) performance is associated with lower accrual-based earnings management and whether Saudi Arabia's Value Added Tax reform period changes this relationship in listed non-financial firms.

The results indicate three main findings. First, ESG performance is negatively associated with earnings management, which indicates that firms with stronger sustainability engagement maintain higher reporting discipline. Second, VAT reforms increase earnings manipulation, which suggests that fiscal pressure creates incentives for opportunistic financial reporting. Third, ESG performance mitigates the positive impact of VAT reforms on earnings management, demonstrating that sustainability-oriented firms show resistance to regulatory pressure.

These findings imply that ESG operates as an effective governance mechanism, particularly in environments characterized by institutional and fiscal changes. Although tax reforms increase incentives for opportunistic reporting, firms with strong ESG engagement appear better able to maintain financial reporting quality. The results also have practical implications. ESG adoption should not be viewed just as a reputational instrument because it can also improve financial reporting discipline. Policymakers may consider complementing tax reforms with stronger enforcement mechanisms and clearer guidance to reduce incentives for manipulation. Regulators could also encourage higher-quality ESG disclosure frameworks as part of broader financial reporting control. For investors, ESG performance appears to provide informative signals about earnings quality during periods of regulatory change.

AUTHOR CONTRIBUTIONS

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Data curation: Ahlem Selma Messai.
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Investigation: Ahlem Selma Messai.
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Project administration: Fathi Jouini.
Supervision: Fathi Jouini, Ahlem Selma Messai.
Validation: Fathi Jouini.
Visualization: Fathi Jouini.
Writing – original draft: Fathi Jouini, Ahlem Selma Messai.
Writing – review & editing: Fathi Jouini, Ahlem Selma Messai.

DATA AVAILABILITY STATEMENT

The data supporting the findings of this study are not publicly available due to ethical, legal, and commercial confidentiality restrictions.

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