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Sustainable development goals, accounting practices and public financial management: A pre and post COVID-19 assessment

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ABSTRACT

Previous studies have highlighted the importance of policy interventions in achieving the Sustainable Development Goals (SDGs). However, there is limited understanding within accounting literature about strategies to enhance sustainable development initiatives and address the challenges faced in varieties of capitalism. This study investigates the influence of accounting practices and public financial management on SDG attainment, focusing on their interactions. Drawing on a global dataset from 96 countries, we find that both accounting practices and public financial management positively impact human development and environmental sustainability, specifically in relation to SDGs 3, 7, and 13. Additionally, our study uncovers significant differences in these impacts before and during the COVID-19 pandemic. Our findings, which are robust to endogeneity and heterogeneity tests, suggest that policymakers should prioritise the enhancement of accounting practices and public financial management to achieve the SDGs.

1. Introduction

The COVID-19 pandemic has had devastating effects on global economic and social landscapes, precipitating a decline in the Human Development Index (HDI) and exacerbating inequalities (United Nations, 2021). The pandemic's disruption of economic activities at national and supranational levels (Nemteanu et al., 2022) has underscored the pressing need to integrate Sustainable Development Goals (SDGs) into national economic strategies. As more vulnerable populations increasingly lean on social and public organisations, the demand for support has surged, laying bare the vulnerability of organisations and governments in achieving the SDGs.

Despite the abruptness of the pandemic, some institutions were better equipped due to pre-existing structures and processes (Cordery & Hay, 2022) that facilitated prompt and effective responses. Bebbington and Unerman (2020) and Lauwo et al. (2022) assert that robust accounting structures and effective public financial management (PFM) are pivotal for achieving SDG targets as well as

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managing unforeseen adverse events. However, there is a lack of understanding of how these practices operate during adverse events like COVID-19. This paper fills this gap by examining whether accounting practices and PFM have assisted in the attainment of SDGs amidst the recent global pandemic. Our findings have significant implications for policymakers, highlighting the need to strengthen accounting practices and PFM to enhance resilience and achieve SDGs, particularly in the face of unforeseen challenges like the COVID-19 pandemic.

The significance of structures and processes such as accounting practices and PFM has been a central theme in international policy debates and the SDG literature (Adhikari & Jayasinghe, 2017; Hopper et al., 2017). The pursuit of effective structures for sustainable development has been highlighted in recent discussions by international professional institutions, organisations, and the Intergovernmental Committee of Experts on Public Administration (ICAEW, 2023; United Nations, 2023). However, there is limited research on how accounting procedures impact the achievement of SDGs, especially before and after the COVID-19 crisis. The pandemic has drastically slowed progress towards the SDGs, disrupting policy targets and making the 2030 global target unlikely. Parisi and Bekier (2022) and Carr and Beck (2022) state that this setback affects climate, health, performance measurement, and global initiatives. Therefore, understanding how specific policy interventions, including accounting practices and PFM, can sustain SDG efforts in an uncertain future is crucial (Adhikari & Jayasinghe, 2017; Hopper et al., 2017).

Accounting practices are integral to nations and organisations. They involve processes that monitor and analyse financial performance and appropriately document information for stakeholders (Boame, Solaccuae & Issaka, 2014). PFM encompasses the activities employed by governments to manage expenditures, including transparent budgeting processes from formulation to execution, and serves as a tool for fiscal policymaking (Cuadrado-Ballesteros & Bisogno, 2023; Raza et al., 2021). These interventions are key elements of public sector reforms, recognised by scholars as critical for enhancing socio-economic status and fostering a resilient economy (Bruns et al., 2019).

The achievement of SDGs by various countries and organisations relies on effective financial management and proper accounting practices (Bebbington & Unerman, 2020). Traditionally, accounting focused on documenting financial and economic performance, but the increasing demand for diverse information from stakeholders has expanded its scope (Gulluscio et al., 2020). However, the impact of accounting practices and PFM on attaining SDGs remains underexplored in the literature (Lauwo et al., 2022). Previous research primarily examined the relationship between accounting practices and corruption, as well as the factors influencing their adoption (Changwony & Paterson, 2019; Samuels, 2021). This study extends the literature by analysing the effects of accounting practices and PFM on SDG attainment and the integrative impact of the COVID-19 pandemic.

Our main results indicate that accounting practices and PFM are positively and significantly associated with our SDG proxies when analysed separately. The introduction of the interaction term did not markedly alter these results, except for the relationship between PFM and the HDI as a proxy for SDGs. The net effect remains positive, showing that PFM has a significantly positive impact on HDI. Additionally, regional analysis reveals that accounting practices significantly and positively influence HDI in Africa, Europe, and the Americas, while their impact on environmental sustainability is mixed in Europe and South America. Increased PFM in Africa and Asia correlates with higher HDI, with similar positive effects observed in the Americas. The interaction of accounting practices and PFM positively influences environmental sustainability in Europe. Notably, countries with higher levels of accounting practices exhibit higher SDG attainment. Our findings also highlight differences in SDG attainment pre- and during COVID-19, with strong PFM in the post-COVID era considerably enhancing HDI. These results are robust to heterogeneous distributions, confirmed through moment-of-moment panel quantile regression (MM-PQR).

Given the foregoing results, our paper contributes to the accounting and sustainability scholarship. Firstly, our results underscore the focal role of accounting practices and PFM in achieving SDGs, thereby advancing more socially and environmentally resilient global economies. Despite the launch of SDGs to enhance sustainability across social, economic, and environmental sectors, progress has been slow (Cordery et al., 2022). The COVID-19 pandemic has exacerbated this by reversing progress in areas such as poverty, hunger, climate action, transportation, and housing, particularly in low-income countries (Shulla & Filho, 2023). This situation has heightened calls for effective accounting practices and improved PFM, including inclusive budgeting, transparent reporting, and accountability, as critical for realising SDGs (United Nations, 2023). Thus, this study examines how government entities' efficient resource management, using accounting principles and systems, can promote SDG attainment.

Secondly, this paper investigates the relationship between accounting practices and SDGs, responding to calls for research in this area (Changwony & Paterson, 2019; Bebbington & Unerman, 2020; Erin, Adegboye & Uwuigbe, 2023). Traditionally, accounting literature has focused on factors influencing the adoption of high-quality accounting practices, such as International Financial Reporting Standards (Chen et al., 2015; André & Kalogirou, 2020) and accrual accounting systems, including IPSAS adoption by countries and firms (Tawiah & Soobaroyen, 2024). These practices enhance accountability and transparency, particularly in the public sector (Changwony & Paterson, 2019). However, the impact of high-quality accounting practices on SDGs has been underexplored, with existing cross-country studies providing inconclusive findings (Polzer, Grossi, & Reichard, 2022; Tawiah, 2023). This study, extending prior research findings, examines how government-adopted accounting practices influence SDG attainment.

Third, we contribute to the emerging literature on the impact of COVID-19 on the nexus between accounting practices, PFM, and SDGs. The pandemic has severely affected the global economy, including PFM. Our study highlights this impact and provides insights into regional differences among the sampled countries.

Lastly, we contribute to the literature by highlighting the nonlinear effect of explanatory variables on SDG attainment. Recent cross-country studies emphasise the importance of acknowledging nonlinearity in accounting literature (Opoku et al., 2022; Payne et al., 2023). Nonlinearity between SDGs, accounting practices, and PFM is likely due to heterogeneous distributions of SDG attainment across countries. To address this, we employ MM-PQR to assess the impact of explanatory variables at different quantile levels of SDGs.

The remainder of the paper is organised as follows: The next section presents the underlying theories of the study and develops the main hypotheses. Section three details the data sources, sample construction, and key variable measurements and provides summary statistics. Section four outlines the model specification, describes the empirical strategy, and presents the main results along with robustness checks. We reflect on the implications of the research in section five and conclude in section six.

2. Theoretical framework, review of past studies, and hypotheses development

2.1. Theoretical framework – stakeholder and institutional theories

This study employs an eclectic theoretical framework, integrating stakeholder and institutional theories to achieve a comprehensive and nuanced understanding of the research objectives. This dual-theoretical approach is essential due to the complementary insights each theory provides on organisational behaviour and societal impact. By synthesising these theoretical perspectives, the study offers a multifaceted analysis of how accounting practices and PFM can be aligned with SDGs. This comprehensive approach facilitates a thorough examination of the mechanisms driving sustainable financial practices, consistent with the recent scholarly emphasis on multi-theoretical frameworks for analysing complex social phenomena (Al-Shaer et al., 2024).

Stakeholders encompass individuals, groups, or entities that are directly or indirectly affected by or have an impact on an organisation's activities (Freeman et al., 2020). Scholars have relied on stakeholder theory to explore stakeholder concerns. The theory concedes that firms have a broader set of responsibilities beyond shareholder wealth maximisation, thus presenting a valuable lens for understanding the relationships and interdependencies between firms and their stakeholders to build trust and create value for multiple stakeholders. While stakeholder theory's flexibility motivates its engagement in this study, opportunities abound to extend its adaptability. Lange et al. (2022) observe that a stakeholder's utility is partially fulfilled by their perception of how firms treat stakeholders. Still, they note that the stakeholder literature has yet to sufficiently account for stakeholders' perceptions of how firms deal with stakeholders.

In relation to SDGs, stakeholder theory offers valuable insights into how accounting practices and PFM can drive sustainable development. It emphasises the importance of including diverse stakeholders in decision-making processes related to financial resource allocation, reporting, and accountability (Freeman et al., 2020). By considering the interests and expectations of various stakeholders, countries can better align their accounting and PFM practices with broader SDG objectives, promoting transparency and trust (Lange et al., 2022). This alignment is crucial for ensuring that financial practices not only meet economic goals but also support social and environmental sustainability, thus contributing to the holistic achievement of SDGs (Goddard et al., 2016).

Institutional theory, on its part, provides a powerful tool for understanding the effects of institutions on economic outcomes (Meyer & Höllerer, 2014). The theory argues that institutions, including legal frameworks, organisational structures, and cultural norms, shape individual and collective behaviours. The theory examines the deeper and more resilient characteristics of social structures, investigating how specific systems become entrenched as guidelines for social behaviour. It also helps to understand why and how nations relate to their institutional environments (Suddaby, 2010).

Institutional theory offers an established theoretical reasoning for understanding how accounting practices and PFM respond to institutional forces and how they influence the SDGs. The theory aids an understanding of how formal and informal rules, norms, and practices shape societal behaviour, including accounting practices and PFM. This characteristic presents insights into the institutional mechanisms that induce decision-making related to resource allocation, reporting, and accountability in the pursuit of sustainability, as well as sheds light on the institutional pressures that drive or impede the integration of SDGs into accounting frameworks and PFM practices (Goddard et al., 2016).

2.2. Review of past studies

2.2.1. SDGs and PFM

The UN SDGs provide a framework of interconnected actions offering measurable and practical solutions to various socio-economic and environmental problems (United Nation, 2018; Bebbington & Unerman, 2020). Comprising 17 main objectives with 169 targets, the SDGs aim to promote economic, social, and environmental sustainability, charting a path toward comprehensive green growth. While not legally binding, the importance of the SDG agreement has driven its global adoption.

Finance is a critical resource for achieving the SDGs, with the UN estimating an annual investment requirement of over $5 trillion by 2030. However, substantial funding deficits persist, particularly in low and emerging economies (Barua, 2020; Omisore, 2018). The responsibility for achieving the SDGs remains primarily state-centric (Bexell & Jönsson, 2017), yet the factors contributing to the financing deficit are still debated. Gaspar et al. (2019) found that advanced economies exhibit less variation in income structure (22%) compared to emerging and low-income countries (34–47%). Poor SDG performance in less-developed countries is often attributed to deficient fiscal administration, accountability, and governance structures (Iyoha & Oyerinde, 2010).

Studies (Bastida & Benito, 2007; Holmberg et al., 2009) have linked a country's development level and income status to its governance system. Higher transparency in the public sector is directly related to improved governance practices, leading to enhanced human development and socio-economic performance. While the public service sector relies heavily on fiscal mechanisms (tax and budget) for state operations, to ensure accountability to citizens and stakeholders, the New Public Management (NPM) reform aims to bolster transparency and competitiveness within public organisations (Lapuente & Van de Walle, 2020). This transparency and accountability framework enables governments and stakeholders to build an environment conducive to achieving national goals, including the SDGs.

Table 1
Summary Statistics
This table presents descriptive statistics of all the variables used in the analysis. Our base sample consists of 96 countries with complete data. FDI is scaled by GDP.

Variables	Mean	Standard Deviation	Min	Max
Dependent variables: SDGs				
Socio-economic sustainability: HDI	0.43	0.23	0.19	0.82
Environmental sustainability index (ESI)	0.54	0.59	0.33	0.97
Explanatory variables				
Accounting practice index (API)	0.38	0.13	0.00	1.00
Public financial management index (PFMI)	0.30	0.42	0.14	0.84
Control variables				
Pop	2.18	0.67	−1.74	6.05
Log_GDPPC	2.22	1.56	1.88	4.10
Log_Trade	2.68	0.19	1.92	4.46
Log_Press_freedom	1.43	0.68	1.04	3.60
Log_Budget_bal	0.86	0.22	−0.47	2.14
FDI	4.86	0.24	1.47	4.08

The literature documents countries' SDG performance related to public accounting management practices, transparency, and efficient fiscal actions. For instance, Baum (2020) explains that Vietnam's shift from a centralised to a decentralised budgetary system significantly contributed to its success in selected SDG sectors. Efficient government spending, a crucial fiscal policy tool, accelerates SDG attainment. In Ghana, Alawattage and Azure (2021) demonstrated that PFM reforms promoted fiscal planning, accountability, efficient auditing, and debt management, thereby reducing inefficiencies, wastage, and illegal activities in public services.

2.2.2. Accounting practice and PFM

The concept of accounting has been described variously in the literature. Detailed narratives characterise accounting as presenting and demanding justification for conduct, serving as a language of trade and a primary tool for monitoring and communicating information (Changwony & Paterson, 2019). Dillard and Vinnari (2019) further argue that accounting embodies an ethical order, mutual rights, and commitments, conveying agreed-upon values that delineate permissible and prohibited actions.

Countries have reformed the accounting practices of their public institutions, focusing on management styles and management accounting techniques and transitioning from cash-based to accrual accounting (Lapsley & Miller, 2019; Schmidthuber et al., 2022). The adoption of accrual-based accounting enhances harmonisation and transparency and reduces corruption in public sector financial reporting. However, some developed countries, such as Germany and Finland, have opposed this approach. Oulasvirta (2014) found that Finland's accounting practices are deeply rooted in tradition and culture, resisting international government accounting initiatives.

A country's transition from a cash-based to an accrual accounting system in public administration does not necessarily enhance transparency and public management success. Implementing accrual practices significantly changes the size, scope, and techniques of PFM (Guthrie, 1998). The reform's success depends on cultural, economic, and institutional attributes. In some instances, accrual accounting systems were adopted superficially without embodying their core characteristics (Adhikari & Jayasinghe, 2017). In addition, the high costs and training requirements for IPSAS adoption pose sizable barriers (Brusca & Martínez, 2016). External influences also affect accrual accounting's impact on financial reporting reliability and transparency (Adhikari & Jayasinghe, 2017). In developing countries, IPSAS adoption is often driven by conditions set by international financial lenders (Brusca & Martínez, 2016; Tawiah, 2023).

2.2.3. COVID-19, accounting practices and PFM

The COVID-19 pandemic has considerably impacted macro and micro settings globally, affecting human existence, health, economic activities, policies, SDGs, global initiatives, performance measurement, and organisational dynamics (Carr & Beck, 2022; Parisi & Bekier, 2022). In response, global accounting bodies introduced policies impacting accounting practices, including PFM. For example, the International Accounting Standards Board (IASB) swiftly adjusted International Financial Reporting Standard (IFRS) 16[1] (Leases) to accommodate pandemic-related rent concession contracts where the lessor could provide some amendment to the agreement (Moscariello & Pizzo, 2022). Scholars have examined how accounting practices adapted to COVID-19 (Kober & Thambar, 2021; Parisi & Bekier, 2022) and highlighted instances where the pandemic prompted the misuse of accounting practices (Safari et al., 2022; Ahmad et al., 2022).

Regarding government accounting practices, studies show that countries implemented various public financial frameworks during the pandemic, stressing the critical role of finance in reinforcing government relevance during crises. Zhao et al. (2022) identified four

[1] IFRS 16 "report information that (a) faithfully represents lease transactions and (b) provides a basis for users of financial statements to assess the amount, timing and uncertainty of cash flows arising from leases.". "*IFRS 16 is effective for annual reporting periods beginning on or after 1 January 2019, with earlier application permitted (as long as IFRS 15 is also applied)*" https://www.ifrs.org/issued-standards/list-of-standards/ifrs-16-leases/.

Table 2
Correlation matrix.

Variables	HDI	ESI	API	PFMI	Pop	GDPPC	Trade	PRF	Budget	FDI
HDI	1.00									
ESI	0.60[a]	1.00								
API	0.35	0.42	1.00							
PFMI	0.15[a]	0.36[a]	0.14	1.00						
Pop	0.23[a]	0.20[a]	0.13	0.10[a]	1.00					
GDPPC	0.21[a]	0.06	0.24	0.14[a]	0.03	1.00				
Trade	0.32[a]	0.17[a]	−0.21[a]	−0.36	0.19[a]	−0.26	1.00			
Press_freedom	0.25[a]	0.33[a]	0.40	−0.28[a]	0.24[a]	0.18	0.38[a]	1.00		
Budget_bal	0.60[a]	0.46[a]	0.32[a]	0.12[a]	−0.20[a]	−0.40[a]	−0.12[a]	−0.20[a]	1.00	
FDI	0.62[a]	0.31[a]	0.40	0.24[a]	−0.35	−0.10[a]	−0.24[a]	−0.16[a]	0.34[a]	1.00

***p < 0.01.
**p < 0.05.
[a] p < 0.1.

key financial themes: budget preparation, budget approval, budget execution, and budget reporting and audit. In the context of public expenditure and budgeting, a combination of approaches was used to link PFM practices with COVID-19, facilitating and accelerating expenditure processes. Zhao et al. (2022) demonstrated that strict adherence to accounting practices enhances allocative efficiency, transparency, and accountability of funds during the pandemic. Dzigbede et al. (2022) noted that during the COVID-19 crisis, compliance with budgeting practices helped close systemic gaps, strengthening the connection between PFM and sustainable development during disruptive events.

2.3. Hypothesis development

2.3.1. SDGs and accounting practices

The interaction between SDGs and accounting practices has gained traction as nations align their economic frameworks with SDGs (Bebbington & Unerman, 2018; Abhayawansa et al., 2021). Wang et al.'s (2022) examination of a water pollution case in China demonstrates that integrating SDGs into accounting methodologies promotes sustainability-oriented practices and allies with stakeholder interests. Stakeholder theory emphasises the importance of considering diverse stakeholder concerns in decision-making. Entities adopting sustainability-driven accounting not only enhance financial performance but also meet stakeholder expectations, including efficient resource utilisation, reduced environmental impacts, and increased social responsibility. This integration embodies a holistic approach, recognising the interdependence between business success and stakeholders' well-being.

PFM provides a critical context for understanding the interaction between SDGs and accounting. PFM encompasses budgeting, resource allocation, financial reporting, and accountability in the public sector, which are essential for sustainability. Incorporating sustainability principles within PFM creates a robust framework that enhances financial management and promotes transparency and accountability in public funds (Gu et al., 2021). Integrating SDGs into accounting facilitates the identification and measurement of sustainability-related risks, costs, and benefits, enabling governments to make informed financial decisions (Abhayawansa et al., 2021).

However, Ngwakwe (2012) suggested that the lack of standards, regulations, and uniform accounting schemes frustrate sustainability initiatives, as contemporary sustainability accounting often inadequately represents the triple bottom line. Ngwakwe (2012) argues that accounting requires a pragmatic response to sustainable development to accelerate government and institutional policies towards sustainability. Bebbington and Unerman (2020) highlight another concern, noting that accounting scholars have been slow to engage in SDG-driven research. This gap translates to limited knowledge within the accounting domain about supporting sustainable development plans and an inability to keep pace with evolving SDG challenges. Overwhelming scholarly evidence suggests that integrating accounting practices into SDGs is crucial for advancing sustainable development.

Given the potential relationships between SDGs and accounting practices, such as clarity in sustainability reporting, resource

Table 3
Variance inflation factor test.

	VIF	1/VIF	R^2
API	1.35	0.74	0.59
PFMI	1.40	0.71	0.63
Pop	1.64	0.61	0.58
GDPPC	1.39	0.72	0.55
Trade	1.26	0.79	0.62
Press freedom	2.18	0.46	0.57
Budget Bal	1.35	0.74	0.69
FDI	2.17	0.46	0.52
Mean VIF	1.59		

Table 4

SDGs, accounting practice and public financial management

This table presents the regression results for the nexus between SDGs, accounting practice and public financial management. Estimation is performed using GLM, 2-step GMM and IV-Lewbel 2SLS. Coefficients are computed using standard errors robust to heteroskedasticity. Standard errors are shown in parentheses. The estimations include year and country effects. The outcome variable is SDG proxied with HDI and ESI. The key explanatory variables are accounting practice index (API) and public financial management index (PFMI), and the control variables included in the model are Pop, GDPPC, Trade, Press freedom, Budget balance and FDI. Definitions of variables and data sources are provided in Appendix. *, **, *** stand for levels of significance at 10%, 5% and 1% respectively. To calculate the net effect, the coefficients of both the primary and interaction variable must be significant. The net effect of 0.2126 is calculated as ([0.202 * 0.30] + 0.152), where 0.202 is the conditional coefficient of the interaction between the primary variable (API) and modulating policy variable (PFMI). 0.30 is the mean value of the modulating policy variable -PFMI- and is constant in equation. 0.152 is the unconditional coefficient value of the primary variable (API).

	GLM				2-STEP GMM				IV-LEWBEL 2SLS			
VARIABLES	Without interaction term		With interaction term		Without interaction term		With interaction term		Without interaction term		With interaction term	
	HDI	ESI	HDI	ESI	HDI	ESI	HDI	ESI	HDI	ESI	HDI	ESI
HDI_{t-1}					0.330*		0.176**					
					(0.017)		(0.002)					
ESI_{t-1}						0.174***		0.128*				
						(0.011)		(0.030)				
API	0.117**	0.304*	0.152*	0.460*	0.189**	0.349*	0.305*	0.260	0.311***	−0.249*	−0.450	0.703*
	(0.016)	(0.010)	(0.326)	(0.338)	(0.104)	(0.076)	(0.040)	(0.179)	(0.061)	(0.083)	(0.116)	(0.021)
PFMI	0.052*	0.109*	0.414	0.203*	0.104	0.109**	0.247	0.155*	0.022***	0.109*	0.247	0.025***
	(0.002)	(0.004)	(0.100)	(0.149)	(0.114)	(0.008)	(0.026)	(0.082)	(0.024)	(0.004)	(0.026)	(0.008)
API*PFMI			0.202*	−0.303			−0.104*	0.389*			−0.304*	0.491*
			(0.039)	(0.115)			(0.019)	(0.053)			(0.100)	(0.015)
Pop	−0.154*	0.335**	−0.485	−0.456*	0.120*	−0.351*	0.258	0.309	−1.535**	0.375***	0.488*	0.253*
	(0.101)	(0.145)	(0.017)	(0.135)	(0.016)	(0.245)	(0.019)	(0.133)	(0.228)	(0.015)	(0.017)	(0.152)
GDPPC	0.235**	0.225	0.294**	0.120*	0.131*	0.519	0.310*	0.440	0.502**	0.450	0.334*	0.337**
	(0.012)	(0.007)	(0.005)	(0.004)	(0.030)	(0.140)	(0.200)	(0.020)	(0.024)	(0.007)	(0.002)	(0.008)
Trade	−0.006	0.107	−0.300*	0.300	0.106	0.227*	0.109*	0.181	−0.306**	0.220	0.107*	0.351
	(0.001)	(0.001)	(0.00)	(0.010)	(0.002)	(0.001)	(0.022)	(0.071)	(0.002)	(0.001)	(0.002)	(0.017)
Press_Freedom	0.121*	0.452*	0.535**	0.452**	0.201*	0.234	0.152	0.423*	0.281*	0.452**	0.235	0.449**
	(0.013)	(0.109)	(0.015)	(0.009)	(0.027)	(0.044)	(0.002)	(0.109)	(0.033)	(0.051)	(0.051)	(0.071)
Budget_Bal	−0.033	−0.156	−0.062	0.434	−0.181*	0.375**	0.016*	0.258	−0.108	−0.376*	0.106*	−0.438
	(0.014)	(0.103)	(0.101)	(0.003)	(0.035)	(0.108)	(0.009)	(0.030)	(0.014)	(0.031)	(0.013)	(0.041)
FDI	0.350*	0.154	−0.443*	0.393	0.327	0.371**	0.293	0.338*	0.029	0.740	0.291	0.338*
	(0.100)	(0.130)	(0.120)	(0.011)	(0.206)	(0.253)	(0.011)	(0.106)	(0.001)	(0.160)	(0.023)	(0.160)
Constant	0.380	−0.221*	0.341**	0.539**	−0.235*	0.170	0.324*	0.439***	−1.218*	0.170**	0.311*	0.392
	(0.142)	(0.180)	(0.015)	(0.228)	(0.026)	(0.050)	(0.129)	(0.076)	(0.280)	(0.115)	(0.025)	(0.074)
Net effect	NA	NA	0.213	NA	NA	NA	0.274	NA	NA	NA	NA	0.850
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.291	0.407	0.163	0.201					0.273	0.311	0.291	0.450
Hansen stats					34.206	31.069	32.200	34.090				
AR (1)					0.000	0.035	0.054	0.125				
AR (2)					0.897	0.754	0.729	0.654				

Table 5
Accounting for heterogeneity using MM-Quantile regression (Dependent variable: HDI)
This table presents the regression results for the nexus between SDGs, accounting practice and public financial management. Estimation is performed using MM-Quantile regression. Coefficients are computed using standard errors robust to heteroskedasticity. Standard errors are shown in parentheses. The estimations include year and country effects. The outcome variable is SDG proxied with HDI. The key explanatory variables are accounting practice index (API) and public financial management index (PFMI), and the control variables included in the model are Pop, GDPPC, Trade, Press freedom, Budget balance and FDI. Definitions of variables and data sources are provided in Appendix. *, **, *** stand for levels of significance at 10%, 5% and 1% respectively. To calculate the net effect, the coefficients of both the primary and interaction variable must be significant.

Variables	Location	Scale	Q (10)	Q (25)	Q (50)	Q (75)	Q (90)
API	0.110*	0.542	−0.391***	0.410*	−0.318***	0.303	0.332
	(0.007)	(0.131)	(0.025)	(0.026)	(0.036)	(0.065)	(0.013)
PFMI	0.039**	0.405	0.224	0.360***	0.246*	0.028**	0.405**
	(0.018)	(0.019)	(0.057)	(0.015)	(0.002)	(0.004)	(0.006)
API*PFMI	0.248*	0.360	−0.103*	−0.180*	−0.402***	−0.207	−0.501
	(0.011)	(0.008)	(0.040)	(0.002)	(0.016)	(0.011)	(0.018)
Pop	−0.253	0.436**	0.326***	0.389**	0.470	0.429***	0.579**
	(0.055)	(0.017)	(0.096)	(0.215)	(0.050)	(0.027)	(0.038)
GDPPC	0.431*	0.591	0.423*	0.321	0.336*	0.509*	0.441*
	(0.129)	(0.016)	(0.121)	(0.212)	(0.023)	(0.012)	(0.031)
Trade	0.025	0.332	0.399*	−0.408*	−0.237	0.335	0.190
	(0.001)	(0.110)	(0.008)	(0.019)	(0.011)	(0.004)	(0.016)
Press_Freedom	0.152***	0.078	0.435**	0.532	0.331***	0.408*	0.535*
	(0.002)	(0.003)	(0.066)	(0.041)	(0.148)	(0.098)	(0.013)
Budget_Bal	−0.168*	−0.092	0.305*	−0.511*	−0.206*	−0.577**	−0.155*
	(0.017)	(0.011)	(0.008)	(0.021)	(0.010)	(0.012)	(0.002)
FDI	0.492*	0.327**	0.346	0.369***	0.548*	0.539	−0.412
	(0.016)	(0.120)	(0.015)	(0.117)	(0.015)	(0.021)	(0.091)
Constant	0.344	−0.545*	0.486***	−0.699**	−0.476	−0.557***	0.493***
	(0.023)	(0.029)	(0.047)	(0.015)	(0.332)	(0.040)	(0.063)
Pseudo R^2	0.421	0.198	0.225	0.412	0.160	0.387	0.204
Net effect	0.113	NA	NA	0.306	0.125	NA	NA

efficiency, and social impact assessment, it is essential to understand the impact of the unprecedented global COVID-19 pandemic on these variables. The pandemic affected households, organisations, and governments differently, influencing global and local economies, financial market volatility, credit erosion, increased government expenditure, business restructuring, layoffs, supply chain disruptions, and economic losses (Brammer, Branicki, & Linnenluecke, 2020; Wan Ismail, Kamarudin, Mohamad Ariff, & Wan-Hussin, 2023; Leoni et al., 2022). Due to remote work setups, the pandemic also led businesses to rely on digital tools for collaboration, communication, and financial reporting, thereby reducing the carbon footprint associated with traditional office environments. Furthermore, economic uncertainty and supply chain disruptions necessitated modifications to accounting standards, including fair value adjustments, depreciation, and entity-going concern evaluations, to enhance trust, transparency, and collaboration. These developments highlight the challenges and linkages between COVID-19 and accounting practices and the opportunities for aligning these practices with the SDGs. Therefore, we hypothesise as follows.

H1a. Higher accounting practices have a positive and significant influence on the SDGs.

H1b. The adverse effect of COVID-19 is mitigated by the relationship between accounting practices and SDG outcomes.

2.3.2. SDGs and PFM: the impact of COVID-19

Empirical evidence indicates that the COVID-19 pandemic had mixed effects on SDGs and PFM, with considerable implications for various stakeholders. Agostino, Arnaboldi, and Lema (2021) demonstrate how the pandemic accelerated digital technology adoption in public service delivery, showcasing stakeholder adaptability in overcoming challenges. Nakpodia et al. (2023) emphasise the resilience of social entrepreneurs deploying digital tools during crises. Wang and Huang (2021) added that the pandemic created new opportunities for SDG advancement, fostering progress in areas such as education, gender equality, and sustainable energy. This integration of stakeholder perspectives highlights the interconnectedness of SDGs and PFM, stressing stakeholders' roles in driving resilience and innovation amid challenges.

Furthermore, the pandemic strained public finances, triggering budget deficits, decreased revenues, and challenges in resource allocation for sustainable development initiatives. Ndung'u et al. (2023) explained that the pandemic exposed underlying weaknesses in public finance across many African countries, leading to losses in government revenue, introducing tax reliefs, and providing subsidies for necessities. Colombage et al. (2023) examined pre- and post-pandemic financial data from Bangladesh and Sri Lanka, noting that COVID-19 has jeopardised global commitments to achieving the SDGs. Governments shifted priorities from SDG attainment

Table 6
Accounting for heterogeneity using MM-Quantile regression (Dependent variable: ESI)
This table presents the regression results for the nexus between SDGs, accounting practice and public financial management. Estimation is performed using MM-Quantile regression. Coefficients are computed using standard errors robust to heteroskedasticity. Standard errors are shown in parentheses. The estimations include year and country effects. The outcome variable is SDG proxied with ESI. The key explanatory variables are accounting practice index (API) and public financial management index (PFMI), and the control variables included in the model are Pop, GDPPC, Trade, Press freedom, Budget balance and FDI. Definitions of variables and data sources are provided in Appendix. *, **, *** stand for levels of significance at 10%, 5% and 1% respectively. To calculate the net effect, the coefficients of both the primary and interaction variable must be significant.

	Location	Scale	Q (10)	Q (25)	Q (50)	Q (75)	Q (90)
API	0.160*	−0.332	−0.144***	0.147**	−0.693***	−0.589	0.437
	(0.009)	(0.063)	(0.051)	(0.043)	(0.153)	(0.011)	(0.076)
PFMI	0.351***	0.499*	0.020	0.105**	0.339***	0.158**	0.508**
	(0.014)	(0.005)	(0.013)	(0.004)	(0.003)	(0.007)	(0.013)
API*PFMI	0.403*	−0.225	0.428*	−0.103***	−0.013	−0.604*	0.400
	(0.015)	(0.014)	(0.063)	(0.078)	(0.016)	(0.015)	(0.05)
Pop	0.358**	−0.347***	−0.454**	−0.247**	0.647***	0.592**	0.038***
	(0.040)	(0.015)	(0.027)	(0.022)	(0.033)	(0.037)	(0.514)
GDPPC	0.421*	0.219	0.346*	0.593	0.539*	−0.442**	0.029*
	(0.009)	(0.026)	(0.020)	(0.051)	(0.068)	(0.010)	(0.004)
Trade	0.260	0.300	−0.473	−0.340	0.320	0.400	0.503
	(0.010)	(0.009)	(0.004)	(0.202)	(0.024)	(0.001)	(0.007)
Press_Freedom	0.452	0.411	0.535***	0.543***	0.543**	0.555***	0.478*
	(0.091)	(0.089)	(0.075)	(0.064)	(0.034)	(0.012)	(0.240)
Budget_Bal	−0.438	0.413	−0.230***	0.437	−0.269*	−0.435*	−0.553***
	(0.010)	(0.003)	(0.026)	(0.025)	(0.001)	(0.040)	(0.010)
FDI	0.336	0.428	−0.396*	−0.458*	−0.494*	0.492	0.685
	(0.040)	(0.022)	(0.024)	(0.030)	(0.143)	(0.082)	(0.074)
Constant	−0.019**	0.485***	−0.314**	−0.296***	−0.265***	−0.435***	−0.559**
	(0.003)	(0.066)	(0.238)	(0.032)	(0.051)	(0.012)	(0.065)
Pseudo R^2	0.163	0.231	0.182	0.220	0.209	0.132	0.178
Net effect	0.472	NA	NA	0.074	NA	−0.023	NA

to saving lives and preventing recessions, undermining SDG progress. Regmi (2022) conveyed similar findings, accentuating the need to understand the dynamics between SDGs, PFM, and the pandemic's effects. This understanding is crucial for designing effective strategies to address these challenges while leveraging opportunities presented by the crisis. Consequently, we establish the second hypothesis for this research as follows.

H2a. The impact of PFM on SDG is positive and significant.

H2b. The interplay between PFM and SDG outcomes is resilient (significantly positive) during the COVID-19 pandemic era.

2.3.3. Integrating accounting practices into PFM: a COVID-19 response to SDG outcomes

The literature suggests that effective PFM can contribute to achieving SDG targets. Regmi (2022) illustrates how deficiencies in government accountability in Nepal hindered progress towards sustainable development, exposing the institutional context's impact on outcomes. Advocacy for enhanced transparency and accountability in PFM, especially in developing nations and emerging economies, connects with institutional theory's emphasis on how institutional structures shape behaviour and outcomes. Ngwakwe (2012) and Cordery et al. (2023) link accounting practices—such as standards adoption, accounting basis, and auditing—to SDG performance, showing how accounting frameworks influence development outcomes. This underscores the importance of institutional alignment and governance mechanisms in driving sustainable development efforts.

The accounting literature has validated the individual effects of accounting practices and PFM on sustainability outcomes, but their combined impact on SDGs and the resilience of their interaction, especially during crises like COVID-19, remains unexplored. For example, the influence of PFM practices—such as transparency, accountability, and anti-corruption initiatives—on SDG performance has been separately examined. Cordery et al. (2023) investigated PFM practices' impact on sustainability outcomes like healthy lifestyles and well-being (SDG 3). Their findings indicate an increase in PFM practices in recent years, but the effectiveness and integration with accounting practices remain unclear and largely unexplored.

From a resilience perspective, Jayasinghe et al. (2022) stated that in response to COVID-19, the Sri Lankan government adopted a collaborative "networked hierarchy" incident command system (ICS) that ushered new collaborative working patterns, values, and beliefs within the public service. In addition, Mustapha (2019) found that having multiple political parties controlling the legislature enhances PFM systems. Such PFM systems can develop the resilience needed to address challenges during crises like COVID-19. We posit that integrating accounting practices with effective PFM systems can help achieve SDG outcomes and mitigate the adverse effects of COVID-19. Consequently, we present our third hypothesis below.

H3a. Effective PFM-Accounting practices integration has a positive and significant influence on SDG outcomes (HDI and ESI).

H3b. The negative effect of COVID-19 on SDG outcomes is mitigated by the effective integration of PFM and accounting practices.

Table 7
IV-LEWBEL 2SLS results using income classification of countries.
This table presents the IV-Lewbel 2SLS regression results for the nexus between SDGs, accounting practice and public financial management based on income classification of countries. Coefficients are computed using standard errors robust to heteroskedasticity. Standard errors are shown in parentheses. The estimations include year and country effects. The outcome variable is SDG proxied with HDI and ESI. The key explanatory variables are accounting practice index (API) and public financial management index (PFMI), and the control variables included in the model are Pop, GDPPC, Trade, Press freedom, Budget balance and FDI. Definitions of variables and data sources are provided in Appendix. *, **, *** stand for levels of significance at 10%, 5% and 1% respectively. To calculate the net effect, the coefficients of both the primary and interaction variable must be significant.

	HDI			ESI		
Variables	Low-income countries	Middle-income countries	Upper-income countries	Low-income countries	Middle-income countries	Upper-income countries
API	0.442** (0.001)	−0.101* (0.004)	−0.315** (0.043)	0.430* (0.021)	0.427 (0.006)	0.328** (0.059)
PFMI	0.312* (0.003)	0.403 (0.000)	0.307*** (0.011)	0.400*** (0.020)	−0.301 (0.012)	−0.421 (0.020)
API*PFMI	0.529* (0.020)	−0.052*** (0.011)	−0.216 (0.009)	0.307 (0.016)	0.311** (0.020)	0.337** (0.011)
Pop	−0.477 (0.011)	−0.631* (0.004)	0.362** (0.017)	0.345** (0.021)	0.251* (0.013)	0.292 (0.006)
GDPPC	0.525 (0.008)	0.341 (0.010)	0.433 (0.120)	0.352 (0.013)	0.249 (0.016)	0.260* (0.013)
Trade	0.416** (0.019)	0.423 (0.014)	0.307** (0.013)	0.451*** (0.011)	0.301** (0.014)	0.207*** (0.020)
Press_freedom	0.133 (0.025)	0.376** (0.022)	0.319 (0.042)	0.446* (0.004)	0.438** (0.019)	0.409 (0.031)
Budget_Bal	0.325 (0.020)	0.249 (0.027)	−0.237* (0.012)	0.343** (0.004)	0.217* (0.010)	0.311** (0.018)
FDI	0.501* (0.010)	0.559* (0.014)	0.440 (0.019)	0.452 (0.013)	0.439 (0.021)	0.460 (0.113)
Constant	0.331*** (0.004)	0.651** (0.030)	0.548*** (0.015)	0.322** (0.111)	0.425 (0.025)	0.327** (0.016)
R^2	0.302	0.251	0.152	0.353	0.551	0.208
F-stat	102.46**	110.13*	99.07**	100.44***	106.02*	108.21**
Net effect	0.471	NA	NA	NA	NA	NA

3. Data and methodology

3.1. Description and sources of data

To explore the impact of accounting practices and PFM on SDGs' attainment, we utilise global country-level data from 96 countries,[2] covering the period from 2000 to 2021. Consistent with existing research (Lessmann & Markwardt, 2010; Changwony & Paterson, 2019), our sampling approach includes as many nations as available data permits. Due to various data sources and the lack of observations in certain countries, our dataset comprises representative samples from 96 countries with diverse socio-economic characteristics. Our sample includes developed and developing countries, similar to previous studies. The data sources and variable measurements are detailed in Table A of the appendix.

3.2. Dependent variables

The dependent variables in our model are drawn from the United Nations' SDGs. To capture the dependent variables, we use two (2) indices: the socio-economic sustainability index and the environmental sustainability index. In arriving at the socio-economic sustainability index, we employ each sampled country's human development index (HDI). The HDI is a tool designed by the United Nations to enhance economic growth and development. It assesses a country's population's well-being and quality of life, focusing on people's capacities and functioning rather than the country (Yumashev et al., 2020). As a result, it has both social and economic implications.

The dependent variables in our model are based on the United Nations' SDGs, captured using two indices: the socio-economic sustainability index and the environmental sustainability index. For the socio-economic sustainability index, we use each country's HDI, a tool designed by the United Nations to measure economic growth and development. The HDI assesses the well-being and quality of life of a country's population, focusing on people's capacities and functioning, thereby encompassing social and economic dimensions (Yumashev et al., 2020).

The HDI's social dimension examines health, life expectancy at birth, and access to information and knowledge, whereas its economic dimension focuses on living standards and average income (Hickel, 2020). The HDI score ranges between 0 and 1, with a minimum score of 0.80 indicating excellence in both social and economic dimensions. Using this proxy in the context of PFM is

[2] Countries included in the main sample are Albania, Argentina, Australia, Austria, Azerbaijan, Bahrain, Bangladesh, Belgium, Benin, Bosnia and Herzegovina, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Cameroon, Canada, Chile, China, Colombia, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Dominican Republic, Ecuador, El Salvador, Estonia, Finland, France, Germany, Guatemala, Greece, Honduras, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Korea, Rep., Kyrgyz Republic, Latvia, Lesotho, Lithuania, Luxembourg, Macedonia FYR, Madagascar, Malawi, Malaysia, Mauritius, Mexico, Mongolia, Morocco, Netherlands, New Zealand, Nicaragua, Norway, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russian Federation, Senegal, Serbia, Slovak Republic, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Tanzania, Tajikistan, Thailand, The Gambia, Trinidad and Tobago, Tunisia, Turkey, Uganda, the United Arab Emirates, the United Kingdom, the United States, Uruguay, and Zimbabwe.

Table 8
IV-LEWBEL 2SLS results using regional classification of countries.
This table presents the IV-Lewbel 2SLS regression results for the nexus between SDGs, accounting practice and public financial management based on regional classification of countries. Coefficients are computed using standard errors robust to heteroskedasticity. Standard errors are shown in parentheses. The estimations include year and country effects. The outcome variable is SDG proxied with HDI and ESI. The key explanatory variables are accounting practice index (API) and public financial management index (PFMI), and the control variables included in the model are Pop, GDPPC, Trade, Press freedom, Budget balance and FDI. Definitions of variables and data sources are provided in Appendix. *, **, *** stand for levels of significance at 10%, 5% and 1% respectively. To calculate the net effect, the coefficients of both the primary and interaction variable must be significant.

Variable	HDI						ESI					
	Africa	Asia	Europe	North America	Oceania	South America	Africa	Asia	Europe	North America	Oceania	South America
API	0.301**	−0.146	0.338**	0.193*	0.229 (0.032)	0.204*	−0.318	0.305 (0.116)	−0.320**	0.319	0.128 (0.041)	0.225*
	(0.014)	(0.017)	(0.112)	(0.203)		(0.031)	(0.012)		(0.021)	(0.064)		(0.012)
PFMI	0.412*	0.449**	0.340	0.248	−0.300**	0.405	0.407**	−0.312*	0.308 (0.021)	0.403**	−0.301*	0.319*
	(0.020)	(0.015)	(0.010)	(0.001)	(0.053)	(0.010)	(0.031)	(0.017)		(0.017)	(0.003)	(0.010)
API*PFMI	0.221***	0.257*	0.402	0.335	0.201 (0.012)	0.348***	0.203**	0.284*	0.301**	0.317	0.428 (0.010)	−0.203
	(0.011)	(0.204)	(0.011)	(0.003)		(0.020)	(0.104)	(0.126)	(0.001)	(0.019)		(0.011)
Pop	−0.306	−0.331**	0.556	0.229	0.541**	0.182	0.129**	0.146 (0.072)	0.231 (0.016)	0.285**	0.396*	0.250*
	(0.019)	(0.022)	(0.004)	(0.018)	(0.079)	(0.018)	(0.011)			(0.031)	(0.012)	(0.017)
GDPPC	0.443**	0.451 (0.093)	0.433**	0.324	0.429 (0.015)	0.441*	0.420*	0.354**	0.316**	0.339	0.475 (0.009)	0.342
	(0.069)		(0.022)	(0.010)		(0.122)	(0.050)	(0.019)	(0.004)	(0.014)		(0.120)
Trade	0.412	0.385**	0.440	0.409**	0.503 (0.010)	0.507**	0.441***	0.308 (0.004)	0.402 (0.011)	0.338	0.403 (0.001)	0.309*
	(0.003)	(0.001)	(0.110)	(0.014)		(0.023)	(0.015)			(0.027)		(0.000)
Press_freedom	0.306**	0.452 (0.102)	0.219	0.471***	0.361**	0.338	0.317 (0.007)	0.310**	0.335***	0.250*	0.307**	0.346
	(0.011)		(0.006)	(0.017)	(0.222)	(0.003)		(0.018)	(0.014)	(0.013)	(0.012)	(0.016)
Budget_Bal	0.381***	0.130*	0.352**	−0.146*	0.414 (0.012)	0.407*	−0.356**	0.177 (0.036)	0.128 (0.015)	0.331	−0.350**	0.226
	(0.014)	(0.022)	(0.009)	(0.004)		(0.002)	(0.019)			(0.012)	(0.045)	(0.011)
FDI	−0.220*	−0.563	0.447*	0.381	0.302*	0.424	0.319*	−0.321**	0.413 (0.019)	0.328	0.302*	0.263**
	(0.039)	(0.019)	(0.122)	(0.015)	(0.011)	(0.019)	(0.016)	(0.003)		(0.010)	(0.056)	(0.012)
Constant	0.448*	0.429*	0.365**	0.293*	0.213**	−0.348	0.293 (0.007)	0.359 (0.037)	−0.346**	0.375	0.157 (0.125)	0.237**
	(0.022)	(0.011)	(0.029)	(0.017)	(0.014)	(0.032)			(0.026)	(0.120)		(0.031)
R^2	0.417	0.260	0.457	0.169	0.076	0.364	0.281	0.279	0.168	0.373	0.271	0.464
F-stat	135.44**	74.10*	120.12**	110.35**	90.43***	102.35*	43.18*	139.02***	75.60**	123.10*	94.22**	103.18*
Net effect	0.478	0.526	NA	NA	NA	NA	0.122	−0.227	NA	NA	NA	NA

Table 9
SDGs, Accounting Practice and Public Financial Management: Does COVID-19 significantly matter?
This table presents the IV-Lewbel 2SLS regression results for the nexus between SDGs, accounting practice and public financial management. Estimations are conditioned on COVID-19 outbreak. Coefficients are computed using standard errors robust to heteroskedasticity. Standard errors are shown in parentheses. The estimations include year and country effects. The outcome variable is SDG proxied with HDI and ESI. The key explanatory variables are accounting practice index (API) and public financial management index (PFMI), and the control variables included in the model are Pop, GDPPC, Trade, Press freedom, Budget balance and FDI. Definitions of variables and data sources are provided in Appendix. *, **, *** stand for levels of significance at 10%, 5% and 1% respectively. To calculate the net effect, the coefficients of both the primary and interaction variable must be significant.

	HDI		ESI	
	Pre COVID	COVID	Pre COVID	COVID
API	0.207**	−0.045	0.320*	−0.228***
	(0.514)	(0.013)	(0.006)	(0.019)
PFMI	0.320**	0.029*	0.226	−0.246*
	(0.001)	(0.016)	(0.015)	(0.026)
API*PFMI	0.196*	−0.093*	0.300*	−0.327*
	(0.015)	(0.001)	(0.002)	(0.021)
Pop	−0.010	−0.204	0.258	0.384
	(0.031)	(0.021)	(0.003)	(0.025)
GDPPC	0.227	0.234	−0.091	0.329
	(0.019)	(0.002)	(0.212)	(0.003)
Trade	0.279**	0.030	0.374*	−0.301
	(0.010)	(0.017)	(0.009)	(0.011)
Press_freedom	0.051	0.338**	−0.326	0.067***
	(0.008)	(0.024)	(0.019)	(0.100)
Budget_Bal	0.054***	−0.391	−0.302*	−0.022
	(0.022)	(0.023)	(0.003)	(0.010)
FDI	0.329*	0.099**	0.293	0.340*
	(0.008)	(0.013)	(0.017)	(0.012)
Year Effect	Yes	Yes	Yes	Yes
Country Effect	Yes	Yes	Yes	Yes
R^2	0.431	0.328	0.395	0.297

significant, as it highlights initiatives that enhance the economy and improve human welfare. For the environmental sustainability index, we create an index from SDGs 7 and 13. SDG 7 measures a country's performance in universal energy efficiency, reliability, affordability, and sufficiency, whereas SDG 13 evaluates performance on climate action issues. Countries are ranked on a scale from 0 to 1 for each indicator, with higher scores indicating superior environmental sustainability performance and lower scores reflecting poorer performance.

3.3. Explanatory variables

The primary explanatory variables in our study are the quality of (1) accounting practices and (2) PFM within a given country. To assess accounting practices, we construct an index using three proxies. Firstly, we adopt the IPSAS as an indicator variable. This variable takes a value of 1 if a country has embraced IPSAS for its public sector financial reporting and 0 if not. Previous research studies (e.g., Changwony & Paterson, 2019; Kaya & Koch, 2015) have utilised IPSAS implementation in accounting. Secondly, we use the *accounting basis* to proxy the quality of accounting practices. This indicator variable assumes a value of 0 if a country employs a cash basis or modified accrual accounting system, and 1 if it adopts an accrual basis of accounting. The accounting basis has been used in prior studies (e.g., Anessi-Pessina & Steccolini, 2007; Changwony & Paterson, 2019).

Next, we incorporate the strength of accounting and reporting standards (SARS), a score generated by the World Economic Forum (WEF) through surveys of senior managers from companies in 144 countries. This score collects experts' opinions on the SARS in the countries where they operate. Prior studies that have used SARS include Amara et al. (2020) and Wan Ismail, Kamarudin, Mohamad Ariff, and Wan-Hussin (2023). The SARS score ranges from "1," denoting minimal legal enforcement, to "7," signifying robust standards enforcement. The SARS score for a particular nation is derived by computing a weighted average of the scale values provided by respondents within that country, following the methodology of Amara et al. (2020) and Wan Ismail et al. (2023). Although many countries have local accounting and reporting standards, the adoption and implementation of international best practices in accounting demonstrate a commitment to promoting public transparency and accountability. We believe that this action has the potential to influence a nation's achievement of the SDGs by attracting the interest of global actors, notably international development organisations.

Our second explanatory variable is the quality of PFM. To capture this, we create an index using two variables. First, we employ the World Bank Corruption Index, a governance indicator that measures corruption control on a scale from −2.5 to +2.5. Following prior research (Lessmann & Markwardt, 2010; Changwony & Paterson, 2019), we standardised this data to a scale ranging from 0 (weak PFM) to 1 (strong PFM). Second, we utilise the Public Transparency Index developed by Varieties of Democracy (V-Dem). This indicator evaluates whether a country's regulations are clear, well-disseminated, logically interconnected, stable, and predictably

implemented over time. Previous studies in accounting, such as those by Amoako-Tuffour and Bokpin (2016) and Erin et al. (2023), have explored public transparency, finding a significant correlation between transparency and fiscal success. Their results indicate that a lack of public transparency hinders timely economic development.

3.4. Control variables

Following extant studies, we include control variables to account for country-specific characteristics and avoid omitted variable bias. First, we include gross domestic product per capita (GDPPC) to control for a country's economic size relative to its population. Studies (Ades & Di Tella, 1997; Changwony & Paterson, 2019) indicate that countries with high GDPPC are likely to have robust accounting practices and prudent financial management, which may facilitate achieving SDG targets. Conversely, low-GDP countries may have a higher propensity for corrupt practices. Furthermore, we control for trade openness and foreign direct investment (FDI). As prior studies (Mauro, 1995; Paterson et al., 2023) suggest, countries with high GDP are more likely to have favourable trade policies and attract substantial FDIs, aiding their achievement of SDG targets.

In addition, we include press freedom as a control variable, positing that limited access to information could hinder the oversight of government officials and affect financial management. Restricted press freedom may influence adherence to established accounting protocols and impede progress towards achieving the SDGs. We also account for population size, as previous research (Hassan et al., 2020) demonstrates that population density can strain social infrastructure, exacerbate income inequalities, reduce GDPPC, and increase unemployment due to an excessive labour force. Population growth can impact individuals' access to high-quality education and healthcare services, further affecting a nation's progress.

Lastly, we incorporate countries' budgetary status into our control variables, specifically whether they have a surplus or deficit budget. The integrity of our sample may be influenced by government spending levels across different countries. Highly developed countries with a surplus budget, where expenditure is less than revenue, are more likely to have the financial resources to actively pursue SDG targets. In contrast, less developed nations, often operating with a budget deficit, face substantial challenges in allocating funds towards achieving these targets.

3.5. Empirical strategy

We now present the empirical models used in this paper. We employ linear, instrumental-variable, and nonlinear regression models to elucidate the influence of explanatory factors on SDGs. For linear models, considering the nature of our data, we begin by estimating the models using generalised linear model (GLM) regression. This approach aims to circumvent endogeneity issues and potential non-normal distribution concerns, as highlighted by Nelder and Wedderburn (1972). The GLM specification is presented below:

$$SDG_{it} = \alpha_0 + \beta_{1AP} I_{it} + \beta_2 PFMI_{it} + \beta_3 X_{it} + \varepsilon_{it} \tag{1}$$

Where SDG_{it} represents the SDGs as captured by the two proxies, *API* is the accounting practice index, and *PFMI* represents the PFM index. X_{it} is the vector of control variables, as stated above. α_0 is the intercept, β is the slope of the equation, and ε_{it} is the error term.

For the instrumental-variable model, we use the Blundell and Bond (1998) two-step dynamic system-generalised method of moments (GMM). Using the lagged differences of the dependent variables as instruments helps address potential endogeneity issues arising from measurement errors, omission bias, and reverse causality. The reliability of the GMM estimates is verified using the Hansen test and autocorrelation tests, specifically AR (1) and AR (2). The GMM method is suitable for our study, given the requirement of a short time period (T) and a large sample size (N); our dataset meets this criterion with $N=96$ and $T=22$. The model specification is provided below:

$$SDG_{it} = \alpha + SDG_{it\text{-}1} + \beta' X_{it} + \delta_i + \mu_t + u_{it} \tag{2}$$

where SDG_{it} refers to the two proxies for SDGs of country *i*. $SDG_{it\text{-}1}$ is the lagged value of SDG, X_{it} denotes the vector of regressors including control variables, and δ_i, μ_t, and u_{it} refer to country dummies, time effect, and the error term, respectively. In addition to the GMM, we incorporate the IV-Lewbel (2012) two-stage least squares (2SLS) approach to address concerns related to endogeneity and potential identification issues. This approach is particularly advantageous for handling weak or mismeasured regressors, as it can internally construct its own instruments.

The above methods assume that the mean of the dependent variable (SDGs) is constant; however, it is possible that given different conditional distributions and heterogeneity of the sample, the value of the mean may vary. To address this concern, we use the MM-Quantile regression approach of Machado and Santos Silva (2019) to estimate the nonlinear impact of the explanatory variables on different conditional distributions of SDGs. Using location and scale, this method is also useful for endogeneity and robust to potential outliers (see Firpo et al., 2022; Garza-Rodriguez et al., 2021). Equation (3) below shows the equation for the MM-quantile regression:

$$Q_{SDG_{it}}(\tau_j \mid X_{it}) = \left(\sigma_i + \gamma_{iq}(\tau)\right) + X'\beta(\tau_i) + \varnothing_i(\tau_j) + U_t(\tau_j), \tau_j \epsilon (0,1) \tag{3}$$

$Q_{SDG_{it}}(\tau_j \mid X_{it})$ is the quantile of the SDG conditioned on X_{it}. This suggests that the SDG variable is conditioned on the location of independent variables, X_{it}. The corresponding fixed effect of quantile τ for individual cross-sectional units is defined by the scalar coefficient $\sigma_i + \gamma_{iq}(\tau)$. $\varnothing_i$ and U_t are unobserved country identity and time identity for fixed effect.

Lastly, to mitigate potential challenges that could compromise our estimations' accuracy, particularly when employing interactive

regressions, it is essential to interpret these regressions based on net effects (Brambor et al., 2006) and conditional marginal impact (Tchamyou & Asongu, 2017). To calculate the net effect, both the conditional and unconditional coefficients must be statistically significant (Brambor et al., 2006). The net effect is calculated as follows:

([coefficient of conditional effect * mean value of interaction variable] + coefficient of unconditional effect) (4)

4. Findings

4.1. Summary statistics, correlation matrix and variance inflation factor (VIF)

Table 1 presents descriptive statistics for each variable, while Tables 2 and 3 show the pairwise correlations and Variance Inflation Factors (VIF) among variables. Table 1 reveals that the average socio-economic sustainability index (HDI) is 0.43, ranging from 0.23 to 0.82. The environmental sustainability index (ESI) has a higher average of 0.54, with a minimum value of 0.33 and a maximum of 0.97. Consistent with previous studies, higher ESI and HDI values are predominantly found in industrialised or developed nations. The accounting practice index averages 0.38, with its standard deviation falling between its minimum and maximum values, similar to the PFM index. Additionally, we assess pairwise correlations and VIF, finding that the variables are moderately correlated. These results suggest no severe multicollinearity issues, supporting the robustness of our regression analyses.

4.2. Empirical findings

Given the nature of our data and the need to address endogeneity problems and potential issues with non-normal distribution, we explore the individual and interaction effects of accounting practices and PFM in Table 4 using GLM. This approach models not only the conditional distribution between variables but also their functional relationships (Coxe et al., 2013; Nelder & Wedderburn, 1972). Functionally, we find that both accounting practices and PFM positively and significantly influence HDI and ESI, proxies for SDGs, at the 5% and 10% significance levels, respectively, supporting our hypothesis 2. Similar patterns are observed for the control variables, except for population, trade, and budget balance, which have negative and significant effects.

Connor et al. (2022) support our position, arguing that GLM can robustly demonstrate interaction and non-interaction effects and help detect conditions under which the effect varies in magnitude within a single sample. Our results indicate a positive and significant effect of the interaction term (accounting practices and PFM) on HDI at the 10% level. From a conditional perspective, we estimated the marginal effect of the interaction term, which is positive at 0.213 for HDI. This finding aligns with Huang et al. (2022), who noted that ESG transparency significantly correlates with a country's level of SDG attainment. Overall, our analysis provides strong evidence that integrating accounting practices with effective PFM positively impacts sustainable development indicators, especially in enhancing human development outcomes.

We further employ a 2-step GMM to control for reverse causality and omitted variable bias, as suggested by previous studies (Blundell & Bond, 1998; Ullah et al., 2018), especially given the smaller periods relative to the individual units considered (Binder, Hsiao, & Pesaran, 2005). In this approach, we treat the explanatory variables (HDI and ESI) as endogenous, using their lagged values as instruments orthogonally. We also test for serial correlation and the reliability of the GMM estimates using Hansen's test. The Hansen test results indicate that the instruments are valid and applicable. As expected, at AR (1), both lagged values (HDIt-1 and ESIt-1) are statistically significant with or without the interaction term, while at AR (2), they are statistically insignificant.

Similarly, our analysis finds significant support for the individual influence of accounting practices on both HDI and ESI under the two interaction terms, except for the interaction term with ESI. The results also indicate that PFM policy initiatives significantly and positively influence ESI, regardless of interaction terms. However, the interaction effect of accounting practices and PFM is mixed: it positively affects ESI while negatively and significantly affecting HDI. Overall, the marginal effect (0.274) of including the interaction variable is positive, suggesting that PFM policies aimed at improving accounting practices can enhance SDG 3 (HDI). The marginal effect on HDI increased to 0.274 from 0.213 in the baseline model, indicating that accounting practices, PFM, and their interaction significantly influence HDI. This finding is consistent with Cuadrado-Ballesteros and Bisogno (2023), who found that human development can be enhanced through robust accounting practices, such as sound budgeting systems. They also emphasised the importance of quality and integrity of information, achievable through strengthened reporting and audit systems. Empirically, our results highlight that robust PFM systems, such as those aimed at curbing corruption, can enhance environmental sustainability (Morse, 2006) and reduce environmental degradation (Haseeb & Azam, 2021). These findings underscore the critical role of integrated accounting and PFM practices in driving sustainable development outcomes.

4.3. Further analysis using IV-LEWBEL 2SLS

We also employ Lewbel's 2-stage least squares estimation technique, which employs heterogeneity in the error term of the baseline model (Lewbel, 2012). This technique is advantageous when external instruments are weak or unavailable, as it does not require an external instrument. The results are largely consistent with the baseline estimates, showing a higher marginal effect (0.85) of API, PFMI, and their interaction on ESI. These findings are in tandem with prior studies (Haseeb & Azam, 2021; Morse, 2006).

In terms of other explanatory variables in Table 4, the coefficients of population and GDPPC are mostly positive. For instance,

GDPPC coefficients are mostly positive and statistically significant across the three models at the 5% and 10% levels, suggesting that increases in GDPPC improve human well-being as proxied by HDI. This implies fewer health-related challenges due to efficient and productive resource use in government accounting practices. However, this finding contradicts Acheampong and Opoku (2023), who argue that rising GDPPC hinders environmental sustainability. Additionally, as GDPPC increases, household incomes rise, enabling the affordability of basic needs and improving well-being. Press freedom also fosters better environmental sustainability across the three estimated models with interaction effects. A one-unit increase in press freedom leads to about a 0.45 unit increase in ESI at the 5% significance level and up to a 0.28 unit increase in HDI.

Similarly, we find that FDI has a positive relationship with environmental sustainability in all interaction models. Thus, as countries experience greater press freedom and FDI, more attention can be directed towards environmental issues such as deforestation, and foreign inflows can be utilised for human development. This is particularly evident for low- and middle-income countries, as shown in Table 7. Recent studies (e.g., Dao & Khuc, 2023; Demena & Afesorgbor, 2020; Xie & Madni, 2023) also confirm that FDI and press freedom promotes the attainment of sustainability goals. These findings reinforce the significant role of press freedom and FDI in enhancing both human development and environmental sustainability.

4.4. Additional analysis using MM-quantile regression

Although the IV-Lewbel estimation techniques yield more realistic and richer results than GLM and 2-stage GMM regression, heterogeneity issues in HDI and ESI may still bias the coefficient estimates. To address this bias and account for nonlinearity, we control for distributional heterogeneity (Abadie et al., 2023) in environmental sustainability and human development. Consequently, we apply MM-quantile regression (MM-PQR), extending prior studies to accommodate multiple endogenous variables, whether discrete or continuous (Chernozhukov & Hansen, 2005; Powell, 2020).

Table 5 presents the estimation results of MM-PQR for HDI, considering the individual and combined effects of API and PFMI. The results indicate that the MM-PQR of API at higher quantiles (75th and 90th) of HDI are insignificant. However, at lower and median quantiles (10th to 50th), varying outcomes are observed. At the 25th quantile, the effect of accounting practice is positive, suggesting that improved accounting practices positively correlate with human development (HDI). In contrast, the lowest and median quantile estimates show that higher accounting practices are associated with a 0.391 and 0.318 decrease in HDI, respectively. This indicates that aggressive accounting regulation may negatively impact sustainable outcomes. Despite these variations, the net effect of accounting practice and PFM at the 25th and median quantiles is positive (0.306 and 0.125), suggesting that to enhance HDI, gradual improvements in accounting practices and PFM are recommended.

Furthermore, Table 5 indicates that the PFM index positively and significantly influences HDI across all quantiles except the 10th, with the largest coefficient differences observed between the third and fourth quantiles (0.028–0.405, respectively). This suggests that improved PFM promotes human development (HDI). Furthermore, regardless of the conditional distribution of HDI, an increase in PFMI leads to higher SDG attainment, supporting our second hypothesis. Unlike the baseline estimates in Table 4, which reflect covariate effects at the conditional mean distribution of the dependent variable, the MM-PQR results show that increasing PFM correlates with rising human development, all other things being equal. Thus, across varying conditional distributions (quantiles) of the dependent variable, the effect of PFM remains largely positive.

In Table 6, the results of the individual and interactive effects of accounting practices and PFM on environmental sustainability (ESI) are consistent with earlier findings on human development (HDI). We find that PFM positively influences environmental sustainability not only at the second and median quantiles but also at higher quantiles. The coefficients for PFM increase significantly, from 0.158 at the 75th quantile to 0.508 at the 90th quantile, compared to lower quantiles and all conditional levels of ESI, suggesting that PFM is crucial for enhancing environmental sustainability. Comparing these results with those in Tables 5 and it is evident that PFM has a more substantial positive impact on both human development and environmental sustainability. This finding is consistent with prior studies (Cuadrado-Ballesteros & Bisogno, 2023; Haseeb & Azam, 2021).

Regarding the control variables in Tables 5 and 6, population is mostly positive and significant at both low and upper conditional levels of human development and at median and upper quantile levels for environmental sustainability. This suggests that an increased population does not necessarily hinder environmental sustainability and human development. These findings are largely consistent with our initial IV-Lewbel 2SLS estimates. Likewise, the coefficients for press freedom are positive and significant at various quantiles for both environmental sustainability and human development, indicating its beneficial impact. The coefficient for GDPPC is mostly positive and significant across different quantiles under HDI, suggesting that increases in GDPPC significantly enhance HDI at median and upper quantile levels. Therefore, countries with higher GDPPC tend to achieve higher SDG scores. This is substantiated by Table 7, which shows that GDPPC for upper-income countries correlates with a higher environmental sustainability index. These results are consistent with our IV-Lewbel 2SLS estimates and align with prior studies (Dao & Khuc, 2023; Demena & Afesorgbor, 2020; Xie & Madni, 2023), reinforcing the positive relationship between economic growth, press freedom, and sustainable development outcomes.

4.5. Robustness checks

4.5.1. Does country income classification matter in the relationship between SDGs, API and PFMI?

Our study considered a global dataset, necessitating further disaggregation to address income disparities among countries and demonstrate the robustness of our findings. Table 7 displays Lewbel's 2-stage least square estimation technique based on the income classification of countries. We controlled for a country's income size and growth concerning SDG proxies, i.e., HDI and ESI, and other variables of interest. Using the World Bank's income classification criteria—low, middle, and upper-income—we categorised the

countries and analysed them based on the proxy variables, as shown in Table 7. Using HDI as the proxy for SDGs, the results show that the accounting practice index (API), although statistically significant at 5%, has varying impacts depending on the income level. Specifically, improvements in API positively influence SDGs in low-income countries by 44.2%, while negatively affecting middle- and high-income economies by −10.1% and −31.5%, respectively. A similar pattern was observed for the combined PFMI and API, where improvements negatively impact SDGs in middle- and high-income economies by −5.2% and −21.6%, respectively, but positively influence SDGs in low-income nations by 52.9%. These findings build on Bebbington and Unerman's (2018) work, which successfully linked accounting research to SDGs by highlighting the differential impacts of accounting practices and PFM across income levels. This underscores the need for tailored policy interventions that consider the unique economic contexts of different income groups.

Similarly, in tandem with the argument of Asadikia et al. (2022), a country's income level and geographical position significantly influence global SDG achievement. Our study further finds that population growth pressures low- and middle-income countries, thereby limiting their SDG achievement rates. Conversely, population growth positively contributes to SDG achievement in upper-income economies, with both situations statistically significant at the 5% level. This result is intuitive, as high-income economies possess higher human capacity and greater resource efficiency in production and consumption, which are essential for economic growth and environmental conservation. In contrast, low-income economies struggle with resource scarcity exacerbated by population growth. The impact of population growth on SDGs is mixed, representing both an opportunity and a threat (United Nations, 2021; Bonnedahl et al., 2022). Using the Environmental Sustainability Index (ESI) as a proxy for SDGs reveals that API enhances SDGs equally across different economic income levels. However, an increase in PFMI limits the ESI for middle- and high-income countries by −30.1% and −42.11%, respectively, while enhancing ESI in low-income countries by 40%. Other variables, such as GDPPC, trade, press freedom, and FDI, all show a positive impact and are statistically significant, with no differences in impact levels across income classifications. These findings highlight the nuanced effects of population growth and economic variables on SDG achievement, emphasising the need for tailored strategies that consider the unique challenges and opportunities of different income groups.

4.5.2. Robustness checks using regional classification of countries

The regional classification of results for in-scope countries, using the HDI to proxy SDGs, reveals some interesting findings, as displayed in Table 8. The Accounting Practice Index (API) restricts the SDG achievement rate in Asia by 14.6%, while PFMI limits SDG growth in Oceania by 30%. Conversely, API shows a statistically significant positive impact on SDG progress in Africa, Oceania, and South America. Similarly, PFMI positively influences SDG progress in Africa, Asia, Europe, and North and South America. Using ESI as the SDG proxy, API negatively impacts SDGs in Africa and Europe, whereas PFMI limits SDG achievement in Asia and Oceania. The study finds that population growth in Africa and Asia has yet to be effectively leveraged to positively impact SDG development and, in fact, limits SDG growth figures. Additionally, financial inflow negatively contributes to the SDG rate in Asia using both HDI and ESI. This finding on the limiting effect of FDI in Asia contradicts Abbas et al. (2021), who stress the crucial role of FDI inflow in contributing to sustainable environmental growth in the region. These results highlight the varying regional impacts of accounting practices, PFM, population growth, and financial inflows on SDG attainment, underscoring the need for region-specific strategies to address these challenges effectively.

4.5.3. Does COVID matter in the relationship between SDGs, API and PFMI?

To better understand how our explanatory variables affect SDGs, we conduct additional analysis to validate our baseline results. We acknowledge that the recent COVID-19 pandemic may have influenced the sampled period. During the pandemic, many countries faced significant financial constraints due to a decline in international trade. Besides, some sectors downsized to cope with reduced demand for goods and services (Nakpodia et al., 2023). These factors imposed severe burdens on countries' financial management, consequently slowing SDG attainment. Therefore, we divide our sample into pre-COVID and during-COVID periods and apply IV-Lewbel analysis to test this effect, as shown in Table 9. An additional test using difference-in-differences (diff-in-diff) was conducted, but for brevity, the results are not discussed here but are presented in the appendix.

Examining the pre-COVID era for the first dependent variable, the socio-economic sustainability index, we find that the coefficients of the explanatory variables, except for population, are positively signed. However, GDPPC, population, and press freedom are not statistically significant. The signs and significance levels change during the COVID era, with API, population, and budget balance showing negative signs and lacking significance. These results align with our baseline estimations, indicating that the quality of accounting practices adopted by a country was crucial for improving the socio-economic sustainability index prior to COVID-19. However, during the pandemic, an inverse relationship is observed. For the second dependent variable, the environmental sustainability index (ESI), we observe similar patterns for most explanatory variables. In the pre-COVID era, the quality of accounting practices, the interaction term, trade, and budget balance were significant variables that improved ESI. However, during the pandemic, most variables became insignificant. Notably, PFM, which was insignificant before the pandemic, became significant during it. This suggests that as the pandemic strained countries' financial resources, they became more prudent in their expenditure. The shift to remote work resulted in lower financial expenditures for firms, individuals, and governments, leading to fewer cars on the road, reduced energy consumption in offices, decreased greenhouse gas emissions, and environmental improvements. This analysis underscores the varying impacts of accounting practices and PFM on socio-economic and environmental sustainability indices, highlighting the importance of adaptability in financial management during crises.

5. Literature and theoretical implications of study

This research significantly advances the understanding of how accounting practices and PFM influence SDGs, addressing a gap in

the literature where the focus has predominantly been on the adoption of high-quality accounting standards and their roles in enhancing organisational accountability (Chen et al., 2015; André & Kalogirou, 2020). Prior studies have largely paid minimal attention to the direct impact of these practices on SDGs, often producing inconclusive findings (Polzer et al., 2022; Tawiah, 2023). This study fills this void by empirically demonstrating significant associations between accounting practices, PFM, and enhanced SDG outcomes, particularly the HDI. This finding underscores the central role of financial management in fostering sustainable development, aligning with the insights of Cordery et al. (2022). Additionally, it explores regional variations, showing that while the positive impacts of accounting practices on HDI are evident across Africa, Europe, and the Americas, the effects on environmental sustainability in Europe and South America are mixed, thus offering a nuanced view of geographic and contextual influences on SDG achievement (Changwony & Paterson, 2019).

Moreover, the research extends into the domain of the COVID-19 pandemic's impact on SDG attainment, highlighting how the pandemic has not only reversed progress in critical areas but also emphasised the need for robust PFM systems in navigating post-crisis recovery and sustainability efforts (Shulla & Filho, 2023). This contribution is particularly timely, adding to the nascent literature exploring the interplay between global crises and financial management practices. The study also innovates by introducing nonlinearity in the relationships between accounting practices, PFM, and SDGs through the use of moment-of-moment panel quantile regression (MM-PQR), which reveals the heterogeneous effects of financial practices across different levels of SDG attainment. This methodological advancement not only broadens the analytical frameworks in accounting research but also offers actionable insights for policymakers and practitioners, emphasising the need for tailored financial strategies to achieve specific developmental outcomes.

The findings of this research emphasise the connection between stakeholder theory and the implementation of robust accounting practices and PFM in the pursuit of SDGs. According to stakeholder theory, organisations are accountable to a broad spectrum of stakeholders and must consider the far-reaching implications of their actions (Freeman, 1984). The study's emphasis on integrating effective accounting practices within public sector governance aligns with these theoretical principles, highlighting the importance of transparency and accountability. This alignment is particularly crucial given the documented slow progress on SDGs and the exacerbation of setbacks due to the COVID-19 pandemic, highlighting the acute need for improved accountability mechanisms. These mechanisms ensure that governmental resource allocation is thoroughly scrutinised and oriented towards long-term sustainability and societal welfare (Cordery et al., 2022). Thus, the advocacy for enhanced accounting practices and PFM reflects and reinforces the core tenets of stakeholder theory—effective management of stakeholder relationships is essential for achieving broad societal objectives like the SDGs, advocating for governance structures that responsibly manage societal resources while addressing comprehensive stakeholder concerns (United Nations, 2023).

This study further enriches the discourse within institutional theory by examining how the adoption of advanced accounting standards like IFRS and IPSAS, influenced by institutional frameworks, contributes to SDG attainment. The institutional theory posits that organisational behaviours are shaped by the structures, norms, and processes of their institutional environments, which organisations conform to in order to gain legitimacy (Scott, 2014; Meyer & Höllerer, 2014). Our research suggests that adopting these accounting standards is not merely for operational efficiency but also a strategic response to coercive, normative, and mimetic pressures within the global institutional landscape (DiMaggio & Powell, 1983). By demonstrating the critical role of institutionalised accounting practices in achieving sustainability objectives, the study extends institutional theory, illustrating how adherence to recognised norms and standards drives significant organisational change towards global sustainability goals. This paper highlights the pivotal role of institutionalised practices in fostering responsible governance and management within public entities, which is essential for realising the SDGs.

Concurrently, this study enriches the discourse within institutional theory by examining how the adoption of advanced accounting standards like IFRS and IPSAS is influenced by institutional frameworks and contributes to SDG attainment. The institutional theory posits that organisational behaviours are shaped by the structures, norms, and processes of their institutional environments, which organisations conform to in order to gain legitimacy (Scott, 2014; Meyer & Höllerer, 2014). This research posits that the adoption of these accounting standards is not merely a pursuit of operational efficiency but also a strategic response to coercive, normative, and mimetic pressures within the global institutional landscape (DiMaggio & Powell, 1983). By demonstrating the pivotal role of institutionalised accounting practices in achieving sustainability objectives, the study extends institutional theory, illustrating how adherence to recognised norms and standards drives substantial organisational change towards global sustainability goals. Hence, the paper highlights the instrumental role of institutionalised practices in fostering responsible governance and management within public entities, which is crucial for realising the SDGs.

6. Conclusion

A prevailing and recurrent discussion in the literature surrounding the SDGs pertains to the role of specific policy interventions. However, accounting practices and PFM reforms have become increasingly essential, particularly in maintaining a steadfast focus on the overarching SDGs. By employing an expansive global country-level dataset, we examined the impact of accounting practices and PFM on the SDGs while also considering the role of COVID-19's effects on outcomes. Through the lens of both institutional and stakeholder theories, our findings show that accounting practices and PFM positively influence human development and environmental sustainability, as proxied by SDGs 3, 7, and 13. This suggests that PFM policies aimed at improving accounting practices have the capacity to enhance SDG outcomes.

Our study contributes significantly to the existing literature on accounting practices, PFM, and SDGs, providing key insights for countries striving to achieve sustainability. Low-income countries seeking to attain and enhance their sustainable development targets should concurrently improve their accounting practices and PFM by promoting policies and incentives that ensure mandatory

compliance. Additionally, the adoption of accounting practices should be gradual rather than aggressive, given the potential adverse effects on firms' reporting styles. Policymakers should focus on incrementally enhancing accounting practices while simultaneously improving PFM to constructively influence all economic agents. It is also noteworthy that the significance of high-quality accounting practices in advancing SDGs was evident in the pre-COVID period. However, this positive and substantial impact diminished during the COVID era. Therefore, as global activities return to pre-COVID levels, policymakers should prioritise the enhancement of accounting practices. Furthermore, robust PFM measures adopted during the COVID era should be maintained and amplified to sustain and improve SDG attainment.

Despite the contributions of our study, there are certain limitations to our findings. The frequent emergence of new standards, methodologies, and best practices in accounting may limit the validity of our findings in the future. Differences in regulatory frameworks and cultural perspectives on SDGs across various nations and regions could impact how accounting practices affect SDG achievement, complicating comparative research and the creation of universally applicable guidelines. We strongly recommend that future studies explore other avenues to understand better how accounting practices and PFM contribute to SDG attainment. Specifically, future research could examine sustainable accounting processes across various industries to identify patterns, obstacles, and potential advantages. This approach would help identify the distinct variables impacting SDGs in different settings and offer suggestions for enhancing procedures on an industry-wide scale.

Data availability

Data will be made available on request.

APPENDICES.

Table A
Sources of data and measurement of variables

Variables and Acronym	Measurement	Sources
Dependent variables		
Socio-economic sustainability: HDI	Index is computed from SDG 3 components which include good health and well-being	World Development Indicators; Refinitiv
Environmental sustainability index (ESI)	Index is computed from SDGs 7 and 13 components which include affordable and clean energy as well as climate action	World Development Indicators; Refinitiv
Explanatory variables		
Accounting Practice Index (API)	Index is computed from three components: IPSAS adoption, accounting basis and SARS	World Economic Forum and IFAC
Public Financial Management Index (PFMI)	Index is computed from two components: Corruption (proxied by World Bank Corruption Index) and Public Transparency Index	World Development Indicators; V-Dem
Control variables		
Pop	Log of the population	World Development Indicators; Refinitiv
Log_GDPPC	Log of the Gross Domestic Product Per Capita	World Development Indicators; Refinitiv
Log_Trade	Net of Exports and Imports	World Development Indicators; Refinitiv
Log_Press_freedom	An index denoting a country's freedom of the press	Freedom House
Log_Budget_bal	Net of national government income and expenditure, that is, surplus/deficit budget	World Development Indicators; Refinitiv
FDI	Foreign Direct Investments	World Development Indicators; Refinitiv

Table B
Difference-in-difference analysis
This table reports difference-in-differences estimations for the sampled countries. Panel A reports difference in mean differences of HDI and significance is denoted with t-tests. Panel B reports OLS regressions. The dependent variable is SDG proxied with HDI and ESI. The key explanatory variables are accounting practice index (API) and public financial management index (PFMI), and the control variables included in the model are Pop, GDPPC, Trade, Press freedom, Budget balance and FDI. Definitions of variables and data sources are provided in Appendix. *, **, *** stand for levels of significance at 10%, 5% and 1% respectively.

Panel A: Difference in mean differences			Panel B: Difference-in-difference regression		
	Treatment group	Control group		HDI	ESI
	High HDI	Low HDI			
Country with high API	0.93	0.27	API	0.151*** (0.029)	0.334** (0.011)
Country with low API	0.74	0.38	PFMI	0.316** (0.08)	0.289* (0.05)
Difference	0.19***	0.11***	API*PFMI	0.247*** (0.025)	0.140* (0.030)

(*continued on next page*)

Table B (*continued*)

Panel A: Difference in mean differences			Panel B: Difference-in-difference regression		
	Treatment group	Control group		HDI	ESI
	High HDI	Low HDI			
Diff-in-diff	0.08***		Control variables	Yes	Yes
	High HDI	Low HDI	Year effect	Yes	Yes
Country with high PFMI	0.86	0.40	Country effect	Yes	Yes
Country with low PFMI	0.97	0.31	R^2	0.22	0.16
Difference	0.11***	0.09***			
Diff-in-diff	0.02***				

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