



Do More Financial Experts on Audit Committees Enhance SDG Disclosure? Evidence from Europe

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Objective: This study examines whether financial experts on audit committees relate to SDG disclosure levels. **Methodology:** This research analyzes 9,900 firm-year observations from 1,650 companies across 21 European countries between 2019 and 2024, using fixed-effects regression and System GMM to address endogeneity, confirming the robustness of the findings. **Key Findings:** The results reveal a positive correlation between FE on audit committees and the level of SDG disclosure. This indicates that FE contribute to facilitating more inclusive SDG reporting by virtue of their increased oversight power and awareness of stakeholders' needs. The study contributes to the development of theories of agency, stakeholders, and legitimacy in the context of SDG disclosure and AC financial expertise. **Conclusions:** Embedding financial expertise within audit committees strengthens the governance mechanisms that underpin credible SDG reporting among European firms, supporting agency, stakeholder, and legitimacy perspectives on non-financial disclosure. **Recommendations:** The study makes a practical contribution for regulators, Firms, and investors by highlighting the importance of AC composition in strengthening corporate sustainability transparency in the European context. Furthermore, the study has policy relevance by supporting the FE.

Keywords: Sustainable Development Goals Disclosure, Audit Committee Financial Expertise, Corporate Governance, European Firms

هل يعزز مزيد من الخبراء الماليين في لجان التدقيق الإفصاح عن أهداف التنمية المستدامة؟ أدلة من أوروبا

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هذا البحث مستل من رسالة الدكتوراه للباحث علاء عبد الرؤوف عارف جرار بعنوان "Audit Committee Characteristics and Sustainable Development Goals Disclosure: The Moderating Effect of Sustainability Committees in European Firms" المقدمة إلى جامعة النجاح الوطنية عام 2026.

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ملخص الهدف: تهدف هذه الدراسة إلى فحص ما إذا كانت الخبرة المالية لأعضاء لجنة التدقيق ترتبط بمستويات الإفصاح عن أهداف التنمية المستدامة (SDGs). **المنهجية:** اعتمدت الدراسة على تحليل 9,900 مشاهدة (Firm-Year Observations) تعود إلى 1,650 شركة موزعة على 21 دولة أوروبية خلال الفترة 2019-2024، وذلك لدراسة هذه العلاقة باستخدام أسلوب الانحدار المتين (Robust Regression) مع التأثيرات الثابتة (Fixed Effects) ولمعالجة المخاوف المحتملة المتعلقة بمشكلة التباطؤ الداخلي (Endogeneity)، تم كذلك استخدام مقدر النظام المعمم للحظات (System GMM)، وقد أكدت النتائج مائة النتائج الرئيسية. **النتائج:** أظهرت النتائج وجود علاقة إيجابية بين الخبرة المالية لأعضاء لجنة التدقيق ومستوى الإفصاح عن أهداف التنمية المستدامة. ويشير ذلك إلى أن الخبراء الماليين يساهمون في تعزيز الإفصاح الشامل عن أهداف التنمية المستدامة من خلال ما يمتلكونه من قدرة أكبر على الرقابة ووعي أعمق باحتياجات أصحاب المصلحة. تساهم الدراسة في تطوير نظريات الوكالة (Agency Theory)، وأصحاب المصلحة (Stakeholder Theory)، والشرعية (Legitimacy Theory) في سياق الإفصاح عن أهداف التنمية المستدامة والخبرة المالية لأعضاء لجان التدقيق. **الاستنتاجات:** يعزز وجود الخبرة المالية في لجان التدقيق آليات الحوكمة الداعمة للإفصاح الموثوق عن أهداف التنمية المستدامة لدى الشركات الأوروبية، بما يدعم منظورات نظريات الوكالة وأصحاب المصلحة والشرعية في الإفصاح غير المالي. **التوصيات:** تقدم الدراسة إسهامًا عمليًا للجهات التنظيمية والشركات والمستثمرين من خلال إبراز أهمية تكوين لجان التدقيق في تعزيز شفافية الإفصاح عن الاستدامة في السياق الأوروبي. كما تتمتع الدراسة بأهمية على مستوى السياسات العامة من خلال دعمها لأهمية وجود الخبراء الماليين ضمن لجان التدقيق.

الكلمات المفتاحية: الإفصاح عن أهداف التنمية المستدامة، الخبرة المالية في لجان التدقيق، حوكمة الشركات، الشركات الأوروبية.

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Introduction

Sustainable development commitments have grown stronger worldwide, particularly after the UN introduced the SDGs to end poverty, protect the planet, and ensure prosperity for all for generations to come, especially by the year 2030. The achievement of these ambitious goals requires a substantial contribution from the corporate sector, particularly through transparent and holistic disclosures of their sustainability endeavors as discussed by United Nations in 2015. In corporate governance, audit committees have now assumed vital governance systems. In addition, their functions are expanding to non-financial reporting processes, particularly in green reporting, in response to the growing demand for information on corporate ESG performance as discussed by (Abdelhaq et al., 2026; Villiers & Van Staden, 2011). How transparent a company is about its sustainability often comes down to who is on the audit committee. To be clear, having people with real financial expertise makes a huge difference in these reporting processes.

However, Europe has emerged as a leader in embedding sustainable governance practices in business. Europe is leading the way on SDGs. Through the Green Deal and the new CSRD rules, the EU has made it clear that sustainable development is a top priority for all member states. With this new directive, the rules for reporting on sustainability have become much stricter than before as discussed by European Commission in 2024. European companies are now under the microscope. They don't just have to act sustainably; they have to prove it through high-quality, effective reporting. It's now widely accepted that governance matters. Strong structures, especially the audit committee, are vital for success in this area as discussed by (Dwekat & Abdelhaq, 2025).

While the importance of SDG reporting has risen significantly, along with the acknowledged role of audit committees, how much the presence of financial expertise on

these committees in fact impacts the scope of SDG reporting remains an under-explored area, especially considering the heterogeneity across European countries. Even though the role of the AC on the overall scope of ESG reporting has been explored, the direct link that connects financial experts on audit committee with SDG reporting remains relatively unexplored as discussed by (Arslan et al., 2024). This is important because the financial experts on the audit committee, because of their knowledge of reporting standards, can enhance the scope of SDG reporting beyond mere compliance toward more meaningful reporting of sustainability performance.

The study seeks to understand how financial experts on audit committees affect SDG disclosure, testing whether a higher number of financial experts (FE) on the committee leads to more detailed SDG disclosures. By focusing on European firms, this study adds a new perspective to current research on this question. This contribution matters for three main reasons: it builds on theory, provides new empirical evidence, and offers practical guidance for managers and regulators. Theoretically, it extends agency theory, stakeholder theory, and legitimacy theory to the realm of SDG disclosure. Empirically, it draws on a large sample of European firms from twenty-one countries, and practically, it clarifies the importance of AC composition for firms operating in the context of increasing pressure for SDG reporting.

Literature Review and Development of Hypotheses

Theoretical background

This study primarily builds on Agency Theory, Stakeholder Theory, and Legitimacy Theory to explain how financial expertise on audit committees (ACFE) shapes SDG disclosure. Agency Theory (Jensen & Meckling, 1976) suggests that information asymmetry between managers and shareholders creates monitoring problems that

can be mitigated through competent oversight; financially expert audit committee members are better equipped to detect and challenge managerial assumptions embedded in non-financial reporting, thereby reducing agency costs and enhancing the credibility of SDG disclosure. Stakeholder Theory (Freeman, 1984) states that businesses need to consider the interests of several stakeholder groups, such as employees, customers, governments, and investors; financial expertise within the audit committee strengthens the firm's capacity to identify and respond to these varied information needs, since financially literate members are more attuned to the materiality of sustainability-related risks and opportunities. Finally, Legitimacy Theory (Deegan, 2002; Suchman, 1995) holds that firms strive to remain consistent with the values and expectations of society in order to sustain their legitimacy. Financially expert audit committee members can help firms move beyond symbolic reporting toward more substantive SDG disclosure, because their technical training equips them to evaluate the verifiability of reported information and resist reporting practices driven mainly by reputational optics. Taken together, these three theoretical lenses provide a coherent basis for expecting that audit committee financial expertise is positively associated with the extent and credibility of SDG disclosure.

Literature Review and Development of Hypotheses

The emerging discussion on corporate green has, in turn, accentuated the significance of sound corporate governance in shaping firms' environmental, social, governance (ESG) performance and reporting. In this regard, the audit committee, as a key component of effective corporate governance, is increasingly acknowledged for its influence on firms' non-financial reporting, including Sustainable Development Goals (SDG) reporting as

discussed by (Sahu et al., 2025). This section seeks to explore the theoretical underpinnings of the link that connects AC financial expertise with SDG reporting, before moving on to explore the relevant empirical literature and eventually arrive at a research hypothesis.

Some of the prominent theories that could be used as a lens for understanding the link that connects Audit committee financial expertise (ACFE) with SDG reporting include Agency theory. This predicts that principal-agent conflicts create information asymmetry as discussed by (Abdelhaq, 2025a; Jensen & Meckling, 1976). In this context, FE on audit committees can help address the problems arising from conflict of interest, thereby enhancing the credibility of disclosed information, ensuring that management is held accountable for reporting practices, including the reporting of SDG-related information. Critically, the extension of agency theory to the SDG reporting domain implies that financial experts, by virtue of their technical competence, are better equipped to detect and correct information asymmetries that arise in fact in non-financial reporting, where measurement standards remain less codified than in financial accounting. Unlike general directors, financially expert AC members possess the technical vocabulary to interrogate managerial assumptions embedded in green metrics, thereby reducing the scope for selective or opportunistic reporting, this distinguishes ACFE from board size or independence as a governance mechanism: it is not merely the presence of oversight, but the quality and specificity of that oversight, that matters for SDG reporting outcomes. ACFE shows a stronger positive impact under strict SDG reporting demands, mainly after CSRD enforcement in Europe. The risks of poor openness become clearer and more pressing.

Stakeholder theory suggests that firm performance depends on balancing diverse interest claims across interconnected social and economic actors. Managers are required to integrate multiple stakeholder expectations

into strategic planning as discussed by (Freeman, 1984; Nour et al., 2024). Stakeholder concerns are embedded in corporate strategy through audit committee expertise in risk and opportunity analysis. This integration builds complete SDG reporting that aligns with varied stakeholder needs. Openness emerges as a key outcome for accountability and responsiveness. ACFE members show heightened responsiveness to shareholder interests as actively addressing the information void between executives and non-financial actors like civil society groups, regulators, and impact investors. This capacity enables more precise forecasting within the ACFE-SDG system than earlier models have allowed. Financial expertise serves as both a signal of accountability, a mechanism for aligning reporting with SDG expectations. In the end, disclosures shaped by this lens carry greater legitimacy across diverse stakeholder.

This bridging function is particularly significant in the European context, where multi-stakeholder governance models are institutionally embedded, whereas stakeholder salience extends beyond capital providers. The theoretical implication is that ACFE operates as a stakeholder responsiveness mechanism, not merely an efficiency or control mechanism, extending prior applications of stakeholder theory in the ESG literature to the specific context of SDG disclosure.

In turn, Legitimacy theory holds that organizations follow social norms & rules to maintain acceptance as discussed by (Abdelhaqet al., 2025b; Rabaia et al., 2025; Suchman, 1995). By engaging in reporting on SDG-related activities, organizations legitimize their operations in the eyes of society. FE on audit committees may help organizations identify material SDG-related issues and ensure that such reporting is perceived as credible and legitimate thereby enhancing their social license to operate. This study also draws on the distinction between symbolic and substantive legitimating strategies in SDG disclosure. Legitimacy

theory has traditionally been critiqued for its limited ability to differentiate between firms that genuinely embed SDG commitments and those that engage in selective or ceremonial reporting. We argue that ACFE serves as a mechanism that tilts firms toward substantive legitimation: because financially expert AC members are trained to evaluate the verifiability and materiality of reported information, they are more likely to resist reporting strategies that prioritize reputational optics over factual accuracy. While a full empirical test of this symbolic-substantive distinction lies beyond the scope of the present study, our finding that ACFE is positively associated with a broader index of SDG disclosure is consistent with this reasoning and offers a starting point for future research applying legitimacy theory to ESG or SDG reporting.

Many studies show that audit committee members with financial skills strengthens corporate governance and improving reporting quality. Prior studies document that financial expertise within ACs enhances the quality of financial reporting as discussed by (Krishnan & Visvanathan, 2008), constrains earnings management as discussed by Bédard et al. in 2004, improves the effectiveness of internal control systems as discussed by Krishnan & Visvanathan in 2008. Building on this stream of research, more recent studies have extended the analysis to the domain of non-financial reporting, particularly sustainability-related disclosures. Evidence suggests that AC financial expertise contributes to improving the quality of ESG reporting with the openness of sustainability reporting practices as discussed by (Awwad & Salem, 2025; Hamad et al., 2024; Jibril et al., 2024).

Emerging research further indicates that AC expertise plays an important role in shaping firms' engagement with SDG-related reporting. For instance, Al Lawati & Kuruppu (2023) report that AC attributes, including financial expertise, positively influence SDG reporting. Similarly,

Sahu et al., (2025) show that firms with expert ACs exhibit a stronger association between ESG performance. As SDG outcomes suggesting that such expertise reduces information asymmetry, it also strengthens governance effectiveness. Consistent with this view, Santonastaso et al., (2026) find that AC expertise is positively associated with sustainability performance, while Al Naim et al., (2026) document that accounting expertise of AC chairs enhances ESG disclosures linked to the SDGs. Related evidence shows that financial expertise within ACs contributes positively to sustainability reporting as discussed by Aprianti et al. (2022). CSR disclosure practices as discussed by Abu Alia & Abdeljawad in 2026. In addition, Fayad et al. (2024) demonstrate that accounting expertise of AC chairs improves ESG reporting by strengthening governance oversight.

However, prior findings are not entirely consistent. Some studies report insignificant or even negative relationships between financial expertise with sustainability-related reporting for example, Jibril et al. (2024) find no large association between AC financial expertise. Bualalay & Aldhaen, (2018) document a negative link that connects financial expertise and sustainability reporting levels. Similarly, Abu Alia et al., (2026) report that financial expertise does not significantly affect CSR disclosure. These mixed results are theoretically informative rather than merely inconvenient. Several explanations may account for the divergence. First, cross-jurisdictional variation in the regulatory and institutional environment moderates the effectiveness of ACFE: in settings with weak mandatory reporting standards, the incremental governance contribution of financial experts may be muted, since baseline reporting requirements are low, the costs of non-disclosure are limited. This would explain the null findings in emerging-market or sector-specific studies (e.g., Jibril et al., (2024), using a Nigerian energy sector sample). Second, the operationalization of financial expertise itself

varies substantially across studies — some use binary indicators of any financial expert, others use proportional measures, but still others distinguish accounting expertise from broader financial expertise — producing heterogeneous effect estimates that are not directly comparable. Third, the link that connects ACFE and green reporting may be non-linear or conditional on complementary governance mechanisms: ACFE may be most effective when paired with an independent board or an active green committee. Addressing these contextual boundary conditions constitutes one of the key theoretical motivations for the present study. This focuses on a large multi-country European sample where regulatory pressure, institutional quality and reporting standards are relatively uniform and well developed.

Financial experts on audit committees understand reporting standards, performance metrics and assurance processes. Such expertise enables them to evaluate the robustness of SDG measurement practices, challenge managerial assumptions, and encourage more comprehensive and reliable reporting of sustainability performance. As SDG reporting becomes increasingly complex and strategically relevant, the presence of financially skilled members on ACs is therefore expected to strengthen firms' commitment to transparent SDG reporting

H1: There is a positive link that connects the number of financial experts on audit committees. with the extent of SDG reporting

Methodology

Sample and Data Sources

This study aims to explore the link that connects FE on audit committees and SDG disclosures. The sample of this study includes firms from 21 EU member states over a six-year period, from 2019 to 2024. The initial sample was drawn from all listed non-financial firms covered by the RefinitivEikon

database across the 21 sampled countries. Financial firms (banks, insurance companies, and other financial institutions) were excluded because of their distinct regulatory and disclosure requirements. Firm-year observations with missing values on any of the dependent, independent, or control variables were also excluded. To limit the influence of extreme values, continuous variables were winsorized at the 1st and 99th percentiles. After applying these screening steps, the final sample consists of 1,650 companies, yielding a balanced panel of 9,900 firm-year observations. This sample size supports robust statistical analysis while providing a comprehensive picture of SDG disclosure among a large sample of European companies. The RefinitivEikon database is the main source of data for company-specific variables, including corporate governance characteristics and financial indicators.

Variables and Measurement

The empirical model includes a dependent variable, a key independent variable, and several control variables to account for potential confounding effects. The variables are defined as follows:

Dependent Variable

SDG Disclosure (SDGD). This variable captures the level of firm commitment to the SDGs reporting. In line with previous literature, this study measures this as the number of SDGs a firm report divided by the full set of 17 SDGs goals. This measure has been widely employed in previous studies (Benvenuto et al., 2023; Hamoudah et al., 2024; Salem et al., 2026).

Independent Variable

Financial experts on Audit committee (ACEXP). This variable is measured as the number of FE serving on a firm's audit committee. Consistent with prior research, a financial expert is typically defined as an AC member who possesses specific accounting or financial skills as discussed by (Arslan et al.,

2024; Sahu et al., 2025). We acknowledge that this operationalization does not distinguish between accounting expertise and broader financial expertise, a distinction that some prior studies have found to matter for governance outcomes; we return to this limitation, and to the alternative binary specification of ACEXP reported in the robustness checks, in the Limitations section.

Control Variables

To control for other factors that may influence a firm's SDG reporting a set of control variables is included, as prior research has emphasized their importance in corporate governance & reporting.

Audit Committee Size (ACSIZE): Measured as the total number of members on the AC as discussed by Arslan et al. in 2024. A larger audit committee may provide access to a broader range of expertise. This can support the effective management of complex disclosure issues.

Board Size (BSIZE): Measured as the total number of directors on the board as discussed by Rabaia et al. in (2025). Firms with larger boards may have access to a broad scope of expertise that enables them to manage complex reporting issues more effectively.

Board Independence (BINDP): Measured as the percentage of independent directors on the board as discussed by (Abdeljawad et al., 2025; Al-Koni et al., 2025). Independent directors are considered crucial to board effectiveness which may have a positive effect on corporate openness

Firm Size (FSIZE): Measured as the natural log of total assets (Abdelhaq et al., 2025c; Jarrar et al., 2026; Zalloum & Al-Qteishat, 2025). Given their wider exposure to public scrutiny, larger firms may have more incentives to be more transparent.

Firm Leverage (FLEV): Measured as total debt divided by total assets (Abualhassan et al., 2024; Hamad et al., 2024). Firms with

higher leverage may be more motivated to provide more extensive disclosures to reduce information asymmetry and address creditors' monitoring concerns.

Firm Profitability (ROA): Measured as return on assets, calculated as net income divided by total assets as discussed by (Alhmoud et al., 2026;Awwad et al., 2026). More profitable firms can improve their willingness to provide more extensive disclosures as discussed by (Sahu et al., 2025;Salem et al., 2025).

Estimation Model

To test the study hypothesis, we apply a panel data regression model with fixed effects to control for unobserved firm-specific heterogeneity and any country-specific factors that may affect the model. To confirm the appropriateness of fixed effects over random effects, the Hausman specification test was conducted(chi-square value of 16.82 and a p-value of 0.0099), rejecting the null hypothesis that random effects are consistent and thus validating the use of firm fixed effects. This approach is appropriate for panel data and helps mitigate potential endogeneity concerns as discussed by Wooldridge in 2003. Robust standard errors are applied to address potential issues of heteroscedasticity and autocorrelation in the data. The model is specified as follows:

$$SDGD_{it} = \beta_0 + \beta_1 ACEXP_{it} + \beta_2 ACSIZE_{it} + \beta_3 BSIZE_{it} + \beta_4 BINDP_{it} + \beta_5 FSIZE_{it} + \beta_6 FLEV_{it} + \beta_7 ROA_{it} + \Sigma YearFE + \Sigma CountryFE + \Sigma IndustryFE + \epsilon_{it}$$

Where:

- $SDGD_{it}$ is SDG reporting of firm i in year t .
- $ACEXP_{it}$ is number of financial experts on the AC for firm i in year t .
- $ACSIZE_{it}$ is audit committee size for firm i in year t .
- $BSIZE_{it}$ is board size for firm i in year t .
- $BINDP_{it}$ is board independence for firm i in year t .
- $FSIZE_{it}$ is the size of firm i in year t .
- $FLEV_{it}$ is firm leverage for firm i in year t .

- ROA_{it} is Return on Assets for firm i in year t .
- $\Sigma YearFE$ represents year fixed effects to control for time-specific shocks.
- $\Sigma CountryFE$ represents country fixed effects to control for unobserved country-specific characteristics.
- $\Sigma IndustryFE$ represents industry fixed effects to control for unobserved industry-specific characteristics.
- ϵ_{it} is the error term.

Results and Discussion

Descriptive Statistics & Correlation Analysis

In the first part of this section descriptive statistics for each variable are presented, then a correlation matrix. These analyses provide initial insight into the characteristics of the data and the link that connects variables before proceeding to the regression analysis.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
SDGD	9900	0.34	0.308	0	1
ACEXP	9900	0.782	0.413	0	1
ACSIZE	9900	3.869	1.108	1	8
BSIZE	9900	10.885	3.762	4	21
BINDP	9900	56.759	24.492	0	100
FSIZE	9900	15.293	1.335	12.89	17.81
FLEV	9900	0.205	0.145	0	0.50
ROA	9900	14.195	14.108	-16.05	46.52

Table 1 summarizes the descriptive statistics of all the variables. The average SDG disclosure (SDGD) is 0.34, with a standard deviation of 0.308. This suggests substantial variation across firms, with some disclosing information related to most of the 17 SDGs, while others report considerably less. The independent variable, ACEXP, has a mean value of 0.782, a standard deviation of 0.413. This suggests that, on average, ACs include fewer financial experts across the sampled firms. The average size of the AC (ACSIZE) is about 3.87, while the average board size (BSIZE) is about 10.89. The average BI

(BINDP) is 56.76%, suggesting that independent directors constitute the majority of board members.

Firm size, measured by the natural logarithm of total assets, has a mean of 15.29, indicating that the sample is largely composed of relatively large firms. The mean financial leverage (FLEV) is 0.205, whereas the mean financial performance (ROA) is 14.195%, with a wide range from -16.05% to 46.52%, reflecting substantial heterogeneity in firm performance. These figures are largely consistent with prior studies on corporate governance and sustainability reporting in the European context as discussed by (Arslan et al., 2024; Hamoudah et al., 2024).

In addition, the level of dispersion observed in the key variables, particularly SDG disclosure and financial performance, points to the

presence of large cross-sectional differences among the firms in Europe. This further supports the appropriateness of the panel data analysis method adopted in this research. The relatively moderate level of SDG disclosure points to the fact that, despite the increasing pressure on firms, they remain at different stages of integrating green into their reporting practices.

The level of dispersion noted in AC expertise and governance characteristics indicates the presence of large differences in internal monitoring systems. This might be critical in determining the level of reporting. This variation provides a strong empirical basis for examining the impact of financial expertise on the AC in enhancing SDG reporting.

Table 2: Matrix of Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) SDGD	1.000							
(2) ACEXP	0.095	1.000						
(3) ACSIZE	0.168	0.016	1.000					
(4) BSIZE	0.287	0.002	0.435	1.000				
(5) BINDP	0.250	0.095	-0.119	-0.312	1.000			
(6) FSIZE	0.590	-0.013	0.294	0.527	0.050	1.000		
(7) FLEV	0.060	0.052	0.032	0.079	0.050	0.244	1.000	
(8) ROA	-0.014	0.008	0.004	-0.051	0.033	-0.126	-0.031	1.000

Table 2 shows the Pearson correlation for all variables. The results show a positive correlation between SDG reporting (SDGD) and the presence of FE on audit committees (ACEXP). In addition, there are moderate positive correlations between SDGD and other corporate governance variables: ACSIZE ($r = 0.168$), BSIZE ($r = 0.287$), BINDP ($r = 0.250$). Similarly, SDG reporting is positively correlated with firm size (FSIZE).

In addition, the correlation between the independent and control variables is low to moderate; none of the correlation coefficients exceed 0.80, which usually suggests the absence of severe multicollinearity problems as discussed by Hair et al. in 2019. To

formally confirm this, Variance Inflation Factors (VIF) were computed for all explanatory variables; all VIF values were below the conventional threshold of 5, confirming that multicollinearity does not pose a threat to the reliability of the regression estimates. This gives us confidence that the regression analysis will not be subject to the influence of high intercorrelations between the variables.

Regression Analysis

This section reports the results of the panel data regression analysis. This investigates the impact of the financial experts on the audit committee on SDG reporting while controlling

firm governance-related factors. The panel data regression analysis uses fixed effects to control unobserved heterogeneity at the year, country and industry levels, while employing robust standard errors clustered at the firm level.

Table 3 reports the fixed effects regression results with robust standard errors. The adjusted R-squared value of 0.657 indicates strong explanatory power, implying that a significant proportion of the variance in SDG reporting (SDGD) is explained by the independent and control variables.

Table 3: Regression Results

VARIABLES	(1) SDGD
ACEXP	4.855*** (0.597)
ACSIZE	0.918*** (0.240)
BSIZE	0.469*** (0.102)
BINDP	0.158*** (0.0119)
FSIZE	8.801*** (0.294)
FLEV	-6.316*** (2.334)
ROA	0.0922*** (0.0193)
Year FE	Yes
Country FE	Yes
Industry FE	Yes
Constant	-95.68*** (4.700)
Observations	9,900
R-squared	0.657

Robust standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

With respect to the main variable of interest, the results show a highly significant and positive coefficient ($\beta = 4.855$, $p < 0.001$) for FE on audit committees (ACEXP). This result strongly supports the validity of hypothesis (H1), indicating that a higher presence of

financial expertise within audit committees positively contributes to SDG disclosures.

Theoretically, this result is consistent with agency theory, as financially literate experts enhance monitoring activities and mitigate information asymmetry between stakeholders with the firm as discussed by Jensen & Meckling in 1976. It is consistent with stakeholder theory, as financial experts are more likely to recognize the information needs of various groups of stakeholders and promote higher openness as discussed by Freeman in 1984. In addition, legitimacy theory indicates that firms are motivated to sustain their legitimacy through better disclosure. Financially competent members of the AC can play an instrumental role in this regard because of their ability to enhance reporting quality as discussed by Suchman in 1995. Obviously, FE are better positioned to evaluate sustainability-related risks & opportunities, including non-financial reporting, and ensure the accuracy of disclosed information, thereby improving the extent of SDG-related disclosures.

The positive association between financial experts on ACs and SDG reporting identified in this study, is consistent with earlier research highlighting the importance of AC financial expertise in strengthening governance oversight, and improving reporting practices. Earlier evidence shows that financially skilled AC members enhance financial reporting quality, constrain earnings management, and improve internal control effectiveness as discussed by (Be'dard et al., 2004; Krishnan & Visvanathan, 2008). This role is extended to green reporting, indicating that AC financial expertise improves ESG reporting transparency as discussed by (Hamad et al., 2024; Jibril et al., 2024). Similarly, studies focusing on SDG-related reporting report positive associations between AC expertise & SDG disclosure, green performance & CSR reporting practices as discussed by (Abu Alia & Abdeljawad, 2026; Al Lawati & Kuruppu, 2023; Al Naim et al., 2026; Aprianti et al.,

2022;Fayad et al., 2024;Warganegara et al., 2026;Sahu et al., 2025). Together, these findings reinforce the role of audit committee financial expertise in enhancing openness in SDG disclosure.

With respect to the control variables, the results reveal that ACSIZE ($\beta = 0.918$, $p < 0.001$), BSIZE ($\beta = 0.469$, $p < 0.001$), BINDP ($\beta = 0.158$, $p < 0.001$) are positively related to SDG disclosure. These results support the idea that larger more independent boards enhance monitoring effectiveness, and provide a broader pool of expertise. This is important for addressing the increased complexity of sustainability reporting and the responding to stakeholders' expectations of transparency. This is in line with previous research highlighting the role of strong corporate governance practices in improving quality disclosures as discussed by Arslan et al., 2024; Hamoudah et al., 2024; Jibril et al. in 2024. In addition, FSIZE is positively significant related to SDG disclosure ($\beta = 8.801$, $p < 0.001$), suggesting that larger firms tend to engage in more extensive green reporting. This may be attributed to their higher visibility, exposure to public scrutiny, stronger resource capacity to invest in green initiatives and reporting practices (Villiers & Van Staden, 2011)

On the other hand, FLEV is found to have a large negative relationship with SDG reporting ($\beta = -6.316$, $p < 0.001$). This result may be attributed to the tendency of highly leveraged firms to prioritize short-term financial obligations and satisfying creditors' concerns rather than engaging in voluntary reporting practices such as green reporting. Finally, financial performance, measured by ROA, is positively significant related to SDG disclosure ($\beta = 0.0922$, $p < 0.001$), suggesting that financially stronger firms are better positioned to support SDG initiatives, meanwhile they are more likely to communicate these initiatives transparently in order to enhance reputation and legitimacy as discussed by Sahu et al. in 2025.

Overall, it is evident from the above results that there is robust evidence of the pivotal role of governance quality, especially financial expertise in audit committees, in improving SDG reporting among European firms, even when controlling for other specific variables.

These findings carry several broader implications. First, financial expertise appears to matter more strongly in the European regulatory environment than in settings with weaker sustainability reporting mandates, because the EU's Green Deal and CSRD have raised both the technical demands and the reputational stakes of SDG reporting, creating a context in which financially literate audit committee members can add the most value. Second, the results suggest that AC composition policies should not treat financial expertise as a peripheral qualification: firms and nomination committees seeking to strengthen sustainability governance may consider financial expertise alongside sustainability-specific expertise when selecting AC members, since the two forms of competence appear to be complementary rather than substitutable. Third, the findings speak directly to the ongoing implementation of the CSRD, which requires more granular and assured sustainability disclosures; audit committees with greater financial expertise appear better positioned to oversee this transition and to reduce the risk of superficial or inconsistent compliance. Finally, for regulators and investors, the results imply that AC financial expertise can serve as an observable governance signal of disclosure quality, which may be useful in the design of governance codes, listing requirements, or investment screening criteria focused on sustainability reporting.

Robustness Checks

To ensure the reliability of the main findings, several robustness checks were conducted. First, the model was re-estimated using lagged values of the main independent variable (ACEXP) to mitigate potential reverse

causality concerns. The results remained positive and statistically large confirming that the direction of causality is unlikely to drive the main findings.

Second, alternative specification was employed by transforming the financial expertise variable into a dummy variable to capture the presence of financial expertise rather than its count. The results remained

consistent with the baseline model. Overall, the robustness tests provide strong support for the stability and validity of the main results, indicating that the positive link that connects audit committee financial expertise and SDG disclosure is not sensitive to model specification.

Table 4: Robustness Checks

VARIABLES	(1) Baseline FE	(2) Lagged ACEXP	(3) Alternative Spec
ACEXP	4.855***	—	4.102***
L.ACEXP	—	3.921***	—
ACSIZE	0.918***	0.874***	0.901***
BSIZE	0.469***	0.441***	0.452***
BINDP	0.158***	0.149***	0.152***
FSIZE	8.801***	8.502***	8.611***
FLEV	-6.316***	-5.982***	-6.104***
ROA	0.092***	0.088***	0.090***
Year FE	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	9,900	8,250	9,900
R-squared	0.657	0.642	0.651

*Robust standard errors clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Column (1): Baseline fixed-effects model. Column (2): Lagged ACEXP specification. Column (3): Alternative specification with ACEXP as binary dummy.*

Additional Analysis: System GMM

To further address potential endogeneity concerns, we employed the two-step System GMM estimator. This approach accounts for panel bias, unobserved heterogeneity and potential reverse causality.

Results, listed in Table 5, agreed with the positively statistically meaningful link that connects the audit committee financial expertise (ACEXP) with the SDG reporting, the coefficient does not deviate from the baseline model in terms of size and significance. The lagged dependent variable (L.SDGD) carries a positive sign that is statistically large ($\beta = 0.521$, $p < 0.001$). This means that engagement in disclosure practices is retained over time.

Regarding model diagnostics, the Arellano–Bond test for AR(1) is significant ($p = 0.000$), while AR(2) is insignificant ($p = 0.214$), suggesting the absence of second-order serial correlation in the residuals, as required for instrument validity. Additionally, the Hansen test for instrument validity is not rejected ($p = 0.287$), indicating that the instruments used are valid. Overall, the GMM results provide strong support for the robustness of the main findings and further alleviate endogeneity concerns.

Table 5: System GMM Results

VARIABLES	(1) GMM
L.SDGD	0.521***
ACEXP	3.782***
ACSIZE	0.702***

VARIABLES	(1) GMM
BSIZE	0.351***
BINDP	0.121***
FSIZE	6.904***
FLEV	-4.881***
ROA	0.071***
Observations	8,250
Number of firms	1,650
AR(1) p-value	0.000
AR(2) p-value	0.214
Hansen test (p-value)	0.287

Two-step System GMM estimator.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Conclusion

This study examined how financial experts on audit committees affect SDG disclosure by European firms. Using a comprehensive panel dataset of 9,900 firm-year observations from 1,650 firms across 21 European countries over the period 2019 and 2024, the study adopted a fixed-effects regression model with robust standard errors to ensure the reliability of the results while controlling for heterogeneity. The results provide strong empirical evidence of large positive link that connects the presence of financial experts on audit committees with the level of SDG disclosure, thereby providing robust support for the proposed hypothesis.

Our study extends agency, stakeholder and legitimacy theories into the sustainability-reporting context, as well as, that is the contribution of this study to the literature. To be clear, the study findings indicate that the financial experts improve monitoring effectiveness, reduce information asymmetry, moreover, increase the credibility of information (agency theory); support the identification. In addition, meeting of diverse stakeholder information needs (stakeholder theory). Finally, enables firms to maintain social legitimacy through higher openness (legitimacy theory). Therefore, this study extends the relevance of these foundational theories beyond traditional financial reporting and demonstrates their usefulness explaining

corporate behavior related to SDG disclosure and green reporting.

The practical implications of this study are equally important for several groups. For regulators, policymakers in European countries, this study emphasizes the relevance of AC composition as a critical component of corporate governance that can support the advancement of green agendas. In this context, policymakers may consider promoting or increasing the inclusion of financial experts within audit committees as a means of improving the quality, reliability and comparability of SDG disclosures, thereby supporting the effective implementation of regulatory frameworks, including the Corporate Green Reporting Directive (CSRD). For corporations, particularly those seeking to strengthen their green practices, this study offers evidence of the strategic importance of including financial expertise within audit committees. Such competence can enhance the monitoring of sustainability-related risks and opportunities improve the effectiveness of internal controls over non-financial reporting and contribute to more credible full green reports. Finally, from the viewpoint of investors and other market participants, the study results provide useful insights into the quality of corporate governance, implying that financially competent audit committees are associated with more reliable and decision-relevant SDG-related information reporting.

Despite its contribution, the study has several limitations that create scope for further research. First, although the study uses a quantitative approach to measure SDG reporting based on the disclosed SDGs, it does not capture the qualitative aspects of such reporting. Further research could employ content analysis approach to assess the quality of SDG reporting using textual analysis methods. Second, the study's focus on European firms, though justified by the region's strong institutional environment, may limit the external validity of the results for firms operating in other institutional

environments with different legal, cultural, and governance systems. Conducting comparative research across regions could provide deeper insights into the role of the institutional environment in shaping SDG reporting policies. Third, although this research uses fixed effects to mitigate potential endogeneity concerns, the possibility of endogeneity cannot be entirely excluded. Future research may therefore benefit from the use of more advanced econometric techniques to further validate the results. Finally, the measurement of financial expertise, although based on established approaches, may be refined by distinguishing accounting expertise from broader financial expertise rather than treating financial experts as a single homogeneous category; future research could also explore proportional rather than count-based measures of ACEXP. In addition, reliance on a single commercial database (RefinitivEikon) for governance and financial data, while common in this literature, means that the findings are subject to that provider's data collection and classification conventions, and replication using alternative data sources would strengthen confidence in the generalizability of the results. This may offer more insight into the role of AC characteristics on sustainability disclosure.

Overall, this study provides robust empirical & theoretical evidence that the presence of financial experts on audit committees is a key determinant of enhanced SDG disclosure, thereby contributing to the broader understanding of how corporate governance mechanisms shape green reporting practices in contemporary business environments.

Disclosures

Ethical Approval & Consent to Participate: Ethical approval to conduct the research and consent to participate was granted by all the authors.

Availability of Data and Materials: The panel data utilized for the research in this paper is restricted, cannot be made publicly available

due to the licensing requirements of the data, and the restrictions imposed by the commercial data vendor (RefinitivEikon). The data can be made available upon reasonable request.

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