

Audit Committee Characteristics as Moderators in the Environmental CSR-Accounting Fraud Relationship: International Evidence

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Résumé

Cette étude analyse l'impact des caractéristiques du comité d'audit — à savoir l'indépendance, l'expertise et la présence des femmes — sur la relation entre la dimension environnementale de la responsabilité sociale des entreprises (RSE) et la fraude comptable. L'analyse repose sur un échantillon de 793 entreprises françaises, canadiennes, britanniques et allemandes, issues de la base ASSET4, observées sur une période de treize ans allant de 2010 à 2022. Les hypothèses sont testées à l'aide d'un modèle de régression logistique, tandis que la fraude comptable est mesurée par le modèle de Beneish (1999) ajusté. Les résultats montrent que la RSE environnementale est négativement associée à la fraude comptable, suggérant son rôle dissuasif face aux pratiques financières opportunistes. Cette relation est renforcée par les caractéristiques du comité d'audit, l'expertise apparaissant comme le facteur le plus déterminant dans la réduction du risque de fraude. En particulier, l'interaction entre la RSE environnementale et l'expertise du comité d'audit présente l'effet négatif le plus marqué, soulignant le rôle central des compétences spécialisées dans l'alignement des engagements environnementaux avec l'intégrité financière. Ces résultats mettent en évidence l'importance de comités d'audit dotés de solides mécanismes de gouvernance afin de renforcer l'efficacité des politiques environnementales et de limiter les comportements frauduleux, apportant ainsi une contribution originale à la littérature sur la RSE, la gouvernance et la fraude comptable.

Mots clés :

Dimension environnementale, indépendance du comité d'audit, expertise du comité d'audit, diversité de genre au sein des comités d'audit, fraude comptable, modèle de Beneish.

Abstract

This study examines the impact of audit committee characteristics—namely independence, expertise, and the presence of women—on the relationship between the environmental dimension of corporate social responsibility (CSR) and accounting fraud. The analysis is based on a sample of 793 French, Canadian, British, and German firms drawn from the ASSET4 database over a thirteen-year period from 2010 to 2022. Hypotheses are tested using a logistic regression model, while accounting fraud is measured through the adjusted Beneish (1999) model. The findings indicate that environmental CSR is negatively associated with accounting fraud, suggesting its deterrent effect on opportunistic financial behavior. This relationship is further strengthened by audit committee characteristics, with expertise emerging as the most influential factor in mitigating fraud risk. Notably, the interaction between environmental CSR and audit committee expertise exhibits the strongest negative effect, highlighting the critical role of specialized knowledge in aligning environmental commitments with financial integrity. Overall, the results underscore the importance of well-structured audit committees in enhancing the effectiveness of environmental CSR initiatives and reducing the likelihood of fraudulent reporting, thereby offering an original contribution to the literature on CSR, corporate governance, and accounting fraud.

Keywords:

Environmental dimension, audit committee independence, audit committee expertise, gender diversity on audit committees, accounting fraud, Beneish model

Introduction

Following the financial scandals that have hit certain companies around the world, issues related to the management of accounting data and the transparency of accounting information continue to interest accounting researchers and practitioners (Ghorbel, N., & Ben Amar, A., 2025). . It should be noted that the concept of accounting fraud IS certainly a major concern for accounting practitioners and researchers, encompassing all sectors and all sizes of companies (N'Guilla Sow, 2018).

In today's globalized and highly regulated economy, financial transparency and risk management have become central priorities for corporations. Two governance mechanisms stand out in this regard: the audit committee (AC), entrusted with safeguarding the integrity of financial reporting, and Corporate Social Responsibility (CSR), particularly its environmental dimension (ECSR). While both have been extensively studied in isolation, little research has examined their interaction in mitigating accounting fraud. This gap is particularly relevant as environmental sustainability and ethical financial conduct are increasingly intertwined in the eyes of stakeholders.

The environmental dimension of CSR is often portrayed as more than an ecological commitment; it is also a lever for ethical governance. Firms that actively reduce their ecological footprint, invest in resource efficiency, and adopt transparent sustainability practices tend to implement stronger internal controls, improve compliance, and foster a culture of integrity (Moufid & Benbba, 2024; Cyprien, 2023). By raising reputational costs and enhancing external scrutiny, meaningful ECSR initiatives can deter fraudulent reporting. Furthermore, environmental investments typically require long-term financial planning and transparent disclosures, limiting short-term manipulation of accounting figures (Hamdi & El Oudri, 2024).

However, the relationship between ECSR and fraud prevention is not unequivocal. Prior research presents mixed results—some studies confirm its positive role in enhancing transparency, while others find no significant effect or even unintended negative outcomes (Agyemang et al., 2020; Peng et al., 2021). This ambiguity stems partly from the opportunistic use of environmental commitments as a façade, a practice commonly referred to as greenwashing, where companies overstate their environmental engagement to mask unethical or fraudulent behavior. In such cases, ECSR risks becoming a symbolic gesture rather than a substantive governance tool.

This is where the audit committee's moderating role becomes critical. An effective AC—characterized by independence, accounting expertise, and diversity—can enhance the credibility of environmental disclosures, detect inconsistencies, and prevent the misuse of ECSR as a reputational shield (Carcello et al., 2006; Bravo & Reguera-Alvarado, 2019; Khenissi et al., 2024). Yet, even here, empirical findings are mixed. While some studies support the view that strong ACs improve both financial and non-financial reporting quality (Harrast & Mason-Olsen, 2007; Zhang et al., 2007), others suggest their impact may be limited or context-dependent (Khan & Kamal, 2023).

Against this backdrop, this study investigates how audit committee characteristics moderate the relationship between environmental CSR and accounting fraud across an international sample ?

By doing so, it contributes to ongoing debates on whether environmental commitments, when paired with robust governance oversight, serve as genuine deterrents to fraud or merely as sophisticated instruments of symbolic compliance.

In light of the above, the research objective focuses on exploring the complex relationship between the audit committee, environmental CSR and accounting fraud. It seeks to provide theoretical and practical insights to help strengthen corporate transparency and accountability, while highlighting the importance of an integrated approach that combines corporate governance and sustainable practices.

The empirical findings of this study demonstrate that environmental CSR significantly mitigates the occurrence of accounting fraud, suggesting that firms with a strong environmental commitment are more inclined to uphold transparent and ethical financial practices. This effect is not uniform, however, and is reinforced by the governance structure, particularly the attributes of the audit committee. Specifically, audit committee expertise exerts the most pronounced negative influence on fraudulent behavior, surpassing the effects of independence and gender diversity. The interaction between environmental CSR and audit committee expertise yields the most substantial reduction in fraud, underscoring the strategic importance of having members with deep knowledge of financial reporting, regulatory compliance, and sustainability practices. This synergy enhances the credibility of both financial and non-financial disclosures, reduces opportunities for opportunistic behavior, and strengthens the alignment between environmental responsibility and corporate accountability. These findings extend prior research by demonstrating that the effectiveness of environmental CSR in preventing fraud depends not only on the commitment to sustainability but also on the governance capacity to ensure that such commitments are substantive rather than symbolic.

To our knowledge, this study is the first to comprehensively document the effect of the interaction between the audit committee and the environmental dimension of CSR on accounting fraud. By exploring the relationships between audit committee expertise, independence and gender diversity, as well as their interaction with companies' environmental commitments, we reveal innovative results. These findings highlight the crucial importance of a well-structured and diverse audit committee in enhancing financial transparency and preventing fraudulent behaviour, while supporting companies' sustainable initiatives. Our findings provide valuable guidance for practitioners and policymakers seeking to improve corporate governance and promote ethical and sustainable practices.

This study contributes significantly to the corporate governance and CSR literature by investigating the relationship between the environmental dimension of CSR and the likelihood of accounting fraud across four countries: France, Canada, the United Kingdom, and Germany. Using an adjusted version of Beneish's (1999) model, accounting fraud is measured as a binary variable (fraud or no fraud), offering a robust qualitative approach to assessing risk. The findings reveal that firms demonstrating strong environmental responsibility and supported by effective audit committees marked by independence, expertise, and gender diversity are less likely to engage in accounting fraud. This research enhances the theoretical understanding of how environmental CSR can deter fraudulent behavior by fostering a culture of ethics and transparency. It also provides practical guidance for policymakers and business leaders, emphasizing the importance of integrating environmental concerns into governance structures and strengthening internal controls. Ultimately, this study fills a notable gap in the literature by highlighting the role of environmental CSR in fraud prevention and advancing sustainable corporate practices.

The remainder of this document is structured as follows: Section 2 presents the institutional context. Section 3 reviews the literature and sets out the research hypotheses. Section 4 describes the data and the empirical study. Section 5 presents a discussion of the results. Section 6 covers the robustness checks and Section 7 concludes the paper.

2. INSTITUTIONAL SETTING/BACKGROUND

This study explores the effect of the interaction between audit committees and the environmental dimension of corporate social responsibility (CSR) on accounting fraud, taking into account the regulatory and cultural specificities of four different national contexts: France, Canada, Germany and the United Kingdom. The results reveal that each country has distinct dynamics influencing both the composition and operation of audit committees and the integration of environmental CSR practices. In

France, the strong tradition of corporate governance and strict environmental reporting requirements make audit committees more vigilant about the risk of fraud. In Canada, cultural diversity and ethical standards accentuate the need for transparency, amplified by strong environmental commitments. In Germany, the dual management model and the active participation of employees facilitate better integration of environmental concerns within audit committees, thereby reducing opportunities for fraud. Finally, in the UK, pressure from institutional investors for sustainable practices encourages audit committees to take proactive measures against fraudulent behaviour while supporting green initiatives. These contextual differences underline the importance of considering national particularities when assessing this interaction, highlighting the need for an approach tailored to the specificities of each national environment to maximise effectiveness in the fight against accounting fraud.

3. Theoretical bases and literature review

3.1. Explanatory theories

Agency theory: The notion of agency says that managerial ownership can align the incentives of management with those of shareholders. If managers own shares and view their employment with the company as a long-term position, they have the ability to make decisions that are in the best interests of all owners, including themselves. Consistent with the results of Deli and Gillan (2000), to the extent that managerial ownership aligns the incentives of management with those of shareholders, we expect the probability of a firm having a fully independent audit committee to decrease as managerial ownership increases. Furthermore, given the alignment of the incentives of managers who own shares with the incentives of shareholders, we expect the probability of fraudulent financial reporting to be negatively related to managerial ownership (Owens-Jackson et al., 2009).

The concept of agency, whereby the AC is designed as a mode of internal control in the financial and non-financial reporting process that attempts to mitigate the conflict problem (Jensen & Meckling, 1976; Madi et al., 2014); this may lead to performance enrichment and higher quality of CSR disclosure. The literature suggests that the presence of an effective AC will improve the quality of disclosure and the internal control system while helping to mitigate agency costs (Appuhami & Tashakor, 2017; Madi et al., 2014; Setiany et al., 2017; Qaderi et al., 2020).

Signalling theory: Based on signalling theory (Spence, 1973), audit committee independence and expertise serve as strong indicators of effective corporate control and a firm's commitment to ethical and transparent management. An independent and skilled audit committee signals to investors and stakeholders that the company ensures rigorous financial oversight and reliable reporting. According to Khan et al. (2021), firms with audit committees that are independent, diverse, and expert are perceived

more positively by financial markets, resulting in lower financing costs and reduced fraud incentives. This enhanced market confidence increases the credibility of financial disclosures and lowers the risk of sanctions for misconduct. Moreover, as highlighted by Si and Maalemi (2023), audit committee independence acts as a disciplinary mechanism for executives, promoting ethical behavior and minimizing conflicts of interest. Thus, audit committee independence not only reflects good governance but also contributes to a virtuous cycle of stronger performance and reduced fraud risk.

Legitimacy theory : Legitimacy theory is seen as a perspective guidance system, where companies can influence and be influenced by communities in the places where they operate. Consequently, legitimacy theory is used as a basis for companies to disclose corporate social responsibility (CSR) activities. Deegan (2002) explains that legitimacy can be achieved when there is conformity between the existence of a business that does not interfere or is appropriate (congruent) with value systems in society and the environment. Furthermore, the disclosure of a CSR report is expected to bring benefits to the company, including gaining legitimacy with the community and increasing the company's profits in the future (Mahrani and Soewarno, 2018).

Ecological theory: An examination of some of the notorious accounting frauds, white collar crimes and audit failures may suggest that certain types of criminals are attracted to business in general and accounting in particular [Earle, 1972]. Therefore, criminal cases are not indicative of a general phenomenon in the field, but the result of criminal actions by the minority of criminal types who have been attracted to the discipline of accounting. This approach is known as the 'Lombrosian' view of criminology [Carey, 1978]. But as the Lombrosian theory of a physical 'criminal type' lost its appeal, ecological theory emerged as a more viable and better alternative to an explanation of the phenomenon of fraud in accounting. He adopts the concept of social disorganisation as a basis for explaining the phenomena of accounting fraud. By social disorganisation, we mean the reduction in the influence of existing rules of behaviour on individual members of the group. Criminal behaviour in accounting is the result of fundamental social disorganisation. Firstly, the weak social organisation of the accounting discipline leads to criminal behaviour. Secondly, with the decline in social control of the discipline due to the indifference of the general public, more accountants are freed from moral sensitivities and are predisposed to corporate fraud, white collar crime and audit failure. It is the failure of the general public to function effectively as an agency of social control that is the proximate cause of corporate fraud, white collar crime, fraudulent financial reporting and audit failure (Riahi-Belkhoui and Picur., 2000).

3.2. Literature review and development hypothesis

3.2.1. *The Environmental Dimension and Accounting Fraud*

The integration of environmental issues into organizational management and decision-making processes has gained momentum globally, driving the adoption of voluntary environmental management standards. These initiatives reflect a recognition of environmental considerations as critical to corporate survival and prosperity (Boiral, 2006). However, the relationship between environmental performance and earnings management remains contentious. For instance, firms facing environmental crises may adopt downward earnings management strategies to minimize political costs and avoid public scrutiny (Labelle & Thibault, 1998). Such firms, under pressure from stakeholders and environmental advocacy groups, risk prioritizing tax optimization over pollution prevention and control (Ben Amar & Chakroun, 2018).

A key focus in this study is the role of U.S. state religiosity as a factor enhancing corporate social responsibility (CSR) strategies (Li et al., 2021). Environmental responsibility encompasses measures to reduce ecological footprints, conserve resources, minimize emissions, and advance sustainability. Companies committed to environmental stewardship foster ethical governance, robust internal controls, transparency, and compliance, thereby reducing incentives for fraudulent practices. By adopting eco-friendly initiatives, firms enhance their reputation, strengthen stakeholder trust, and mitigate regulatory risks, all of which discourage fraudulent behaviors.

Empirical evidence supports this rationale. Russo and Fouts (1997) found that high environmental performance correlates positively with financial performance (measured via Return on Assets, ROA), thereby reducing pressures to engage in fraudulent activities. Subsequent studies, such as Rasoulzadeh et al. (2013), corroborated this link, emphasizing that profitability driven by environmental initiatives diminishes incentives for fraud. Recent research further highlights that integrating environmental practices enhances corporate reputation, reduces risks, and promotes ethical governance (Moufid & Benbba, 2024; Hamdi & El Oudri, 2024). Cyprien (2023) adds that accounting practices are positively influenced by ecological footprint management, which curbs fraud risks by aligning with CSR principles.

Environmental initiatives thus foster a culture of ethics and transparency, directly countering fraudulent incentives. These theoretical and empirical foundations lead to the following hypothesis:

H1: the environment dimension has a negative impact on accounting fraud

3.2.2. The moderating effect of audit committee independence on the relationship between the environmental dimension and accounting fraud

Audit committee independence plays a key role in negatively moderating the relationship between the environmental dimension of Corporate Social Responsibility (CSR) and accounting fraud. An independent audit committee, composed mainly of external directors, ensures objective assessments of environmental practices and reports, reducing the risks of data manipulation and fraud (Klein, 2002; Dhaliwal et al., 2011). This independence helps to detect inconsistencies in environmental statements, such as those relating to GHG emissions or resource management, and to require tangible evidence to attest to ecological commitments (Peters and Romi, 2014). Studies show that independent committees significantly reduce accounting fraud by strengthening internal controls (Abbott et al., 2000), improving the quality of financial and non-financial information (Bedard et al., 2004), and promoting transparent disclosure of environmental performance (Jamoussi and Jarboui, 2017). This influence can be explained by several mechanisms. First, independence allows for strict monitoring of environmental initiatives, including regular audits and detailed reviews of expenditures, which makes it more difficult to manipulate data (Madi et al., 2014; Vera-Munoz et al., 2005). Second, it strengthens the credibility of environmental reports, meeting stakeholders' expectations for ecological transparency (KPMG, 2016), and encourages a culture of ethics within the company, deterring fraudulent behavior (Cuadrado-Ballesteros et al., 2015). However, some research highlights mixed results, such as the absence of a link or an inverse link between independence and the quality of information disclosed (Agyemang et al., 2020; Peng et al., 2021). In a post-SOX context, regulatory rules strengthen the requirement for audit committee independence, improving the reliability of financial and environmental information (Harrast and Mason-Olsen, 2007). Impartial monitoring of green practices by an independent committee ensures compliance with regulatory standards and limits attempts at falsification to preserve the company's image (Zhang et al., 2007). The AC-related variables, such as AC independence, expertise in AC, and AC chair independence, are significantly different from the preperiod to the postperiod, whereas their relationship is not according to the hypotheses (Khan & Kamal, 2023). Despite contrasting results, the majority of studies highlight that audit committee independence strengthens stakeholder trust and reduces opportunities for fraud by strengthening the rigor of controls (Carcello et al., 2011). Consequently, we formulate the hypothesis:

H2: Audit committee independence negatively moderates the relationship between environmental dimension and accounting fraud.

3.2.3. The moderating effect of audit committee expertise on the relationship between environmental responsibility and accounting fraud

Audit committee expertise plays a negative moderating role in the relationship between environmental responsibility and accounting fraud. An audit committee with deep expertise in accounting, finance, and environmental regulation is better able to understand the complex issues related to green practices and integrate these aspects into governance processes (Buclet, 2011). This expertise allows for a rigorous assessment of environmental risks and accurate detection of fraud indicators, by requiring detailed justifications and verifying compliance of environmental reports with regulatory standards (Krishnan, 2005; De Villiers et al., 2011). Expert members can identify inconsistencies between green commitments and financial results, thus ensuring increased transparency and reducing accounting manipulations related to environmental initiatives (Li and Li, 2020; Dhaliwal et al., 2011). Environmental performance, while strategic to reduce costs and improve reputation (Berrone and Gomez-Mejia, 2009), can nevertheless encourage some companies to resort to “greenwashing” to improve their image. A competent audit committee limits this risk by establishing robust internal controls, such as regular audits and certified management systems, which strengthen compliance and reduce opportunities for fraud (Krishnan, 2005; PriceWaterhouseCoopers, 2008). Sector expertise becomes essential in environmentally intensive sectors, where reporting practices are complex and require increased vigilance to avoid misleading practices (Cohen et al., 2014). In addition, solid expertise improves the quality of the information disclosed, particularly on GHG emissions, by ensuring its authenticity and transparency (Peters and Romi, 2014). This builds stakeholder confidence (investors, regulators) and deters fraudulent behavior, as managers are under strict surveillance (Mackenzie & Rees, 2009). Audit committees with environmental expertise provide more comprehensive reports, reducing the risks of fraud and greenwashing (Li et al., 2018). Finally, accounting and regulatory expertise helps anticipate legal risks and counter attempts at manipulation by management to preserve the company’s image (Cohen et al., 2004). Research shows that accounting expertise significantly reduces financial irregularities (Carcello et al., 2006; Houndjo, 2021), while stakeholder theory highlights the importance of reconciling financial and ecological objectives (Khenissi et al., 2024). Therefore, our research hypothesis:

H3: Audit Committee Expertise Negatively Moderates the Relationship between Environmental Responsibility and Accounting Fraud.

3.2.4. The moderating effect of the presence of women in the audit committee on the relationship between environmental responsibility and accounting fraud

The presence of women on the audit committee plays a negative moderating role in the relationship between environmental responsibility and accounting fraud. Companies engaged in transparent and ethical environmental practices tend to reduce accounting fraud through a culture of increased integrity (Roche, 2018), and gender diversity on audit committees reinforces this dynamic by improving governance and fraud prevention (Zakaria and BENAZZI, 2020). This influence can be explained by several mechanisms: first, women bring increased sensitivity to ethical and compliance issues, strengthening the rigor of monitoring and the culture of integrity (Abbasi, 2010), which helps detect and prevent accounting fraud related to environmental initiatives. Second, gender diversity enriches decision-making processes by introducing varied perspectives, thus improving the assessment of financial and environmental risks (Maraghni and Nekhili, 2018). Third, female presence promotes more transparent governance, strengthening stakeholder trust and reducing incentives for fraud (Maraghni and Nekhili, 2018). Finally, women are more sensitive to social and environmental issues, promoting sustainable and ethical practices that align the company's actions with its CSR commitments (Toe, 2012).

Gender diversity on audit committees also improves the quality of decisions through innovative perspectives (Nekhili and Gatfaoui, 2013; Bennouri et al., 2018) and strengthens internal controls, reducing the risks of financial manipulation (Krishnan and Visvanathan, 2008; Ittonen et al., 2010). Women directors, perceived as more risk-averse and more ethical, contribute to more rigorous governance (Gul et al., 2011; Maraghni and Nekhili, 2018). In environmental matters, their presence limits “greenwashing” practices by guaranteeing the authenticity of ecological reports and their compliance with regulatory standards (Adams & Ferreira, 2009). Their cautious and inclusive approach to risk management (Byrnes et al., 1999) and their ability to question management decisions (Konrad et al., 2008) reduce the manipulation of environmental data. Furthermore, the feminization of audit committees is associated with better disclosure of CSR information (Ben-Amar et al., 2017; Dardour et al., 2018), strengthening transparency and limiting opportunities for fraud. Despite some studies suggesting a lack of significant impact (Buallay et al., 2022), the majority of research highlights that gender diversity improves the quality of environmental information and the credibility of reports (Bravo & Reguera-Alvarado, 2019; Khenissi et al., 2024). Therefore, we hypothesize:

H4 : The presence of women on the audit committee negatively influences the relationship between the environmental dimension and accounting fraud.

Research Methodology

Statistical Population, Sample, and Research Period

This study aims to elucidate the moderating impact of the audit committee on the relationship between the environmental dimension of CSR and accounting fraud. The study is conducted on a final sample of 793 companies from France, Canada, the United Kingdom and Germany, from the ASSET4 database for the years 2010 to 2022. The initial sample included 1,553 companies, of which 670 were excluded due to missing data, as well as 32 banks, 104 financial companies, 37 insurance companies and 83 investment and real estate services companies. The final sample of the study included 793 ASSET4 companies, including 117 French companies, 225 Canadian companies, 306 British companies and 145 German companies. Subsequently, we obtained the necessary information for these companies from the Thomson Reuters database.

4. Research Model and Variables

Recall that our main objective is to analyze the moderating impact of audit committee characteristics on the relationship between the environmental dimension of CSR and accounting fraud in French, Canadian, British and German companies. This study used logistic regression analysis because the dependent variable is financial statement fraud, which uses nominal variables. Logistic regression is an analytical technique used to estimate outcomes based on changes in the values of independent variables (Maria Ulfah et al., 2017), or to estimate the probability based on the value of each independent variable (Triyanto, D. N. 2020).

To test the research hypotheses, four logit-probit models are used, as presented below:

Model (1)

$$FRAUD_{it} = \beta_0 + \beta_1 ENV_{it} + \beta_2 SIZE_{it} + \beta_3 ROA_{it} + \beta_4 MTB_{it} + \beta_5 LEV_{it} + \lambda_i + \mu_t + \varepsilon_{it}$$

Modèle 2 :

$$FRAUD_{it} = \beta_0 + \beta_1 ENV_{it} + \beta_2 ENV_{it} * INAUD_{it} + \beta_3 SIZE_{it} + \beta_4 ROA_{it} + \beta_5 MTB_{it} \\ + \beta_6 LEV_{it} + \lambda_i + \mu_t + \varepsilon_{it}$$

Modèle 3 :

$$FRAUD_{it} = \beta_0 + \beta_1 ENV_{it} + \beta_2 EXPAUD_{it} + \beta_3 ENV_{it} * EXPAUD_{it} + \beta_4 SIZE_{it} \\ + \beta_5 ROA_{it} + \beta_6 MTB_{it} + \beta_7 LEV_{it} + \lambda_i + \mu_t + \varepsilon_{it}$$

Modèle 4:

$$FRAUD_{it} = \beta_0 + \beta_1 ENV_{it} + \beta_2 GDAUD_{it} + \beta_3 ENV_{it} * GDAUD_{it} + \beta_4 SIZE_{it} \\ + \beta_5 ROA_{it} + \beta_6 MTB_{it} + \beta_7 LEV_{it} + \lambda_i + \mu_t + \varepsilon_{it}$$

The first model is used to test the first research hypothesis, the second model is used to test the second hypothesis, the third model is used to test the third hypothesis, and the fourth model is used to test the fourth hypothesis.

FRAUD: The misleading presentation of financial statements according to models (1), (2), (3), and (4) is a dependent research variable, measured by Razali and Arshad (2014) using the modified Beneish (1999) model. The M-score model developed by Beneish (1999) is optimized to estimate the probability of manipulation rather than bankruptcy.

Research Independent Variables

The environmental dimension evaluates a company's efforts to minimize its ecological footprint through sustainable practices such as resource management, reducing emissions, water conservation, biodiversity protection, waste management, and renewable energy adoption, measured by an Environmental score . Audit committee independence (INAUD) is assessed by the percentage of independent directors on the board, as per ASX guidelines, with higher independence enhancing managerial oversight and transparency (Saleh & Mansour, 2024). Audit committee expertise (EXPAUD) is determined by the presence of members with accounting/finance qualifications; firms are coded "1" if their committee exceeds the average in financial expertise, reflecting better oversight of reporting practices, and "0" otherwise (Qader et al., 2023). Audit committee diversity , measured by the percentage of women on the committee, promotes balanced governance, improved decision-making quality, and strengthened

transparency through gender-inclusive representation. Together, these variables highlight how environmental responsibility and robust audit committee characteristics (independence, expertise, diversity) collectively shape corporate governance and accountability.

Control Variables Measurement

To control for firm-specific characteristics, we include Size (SIZE) , measured as the natural logarithm of total assets, as larger companies with complex operations may have greater opportunities for fraud (Becker et al., 1998; Vander Bauwhede et al., 2003; Bédard et al., 2004). Financial leverage (LEV) is controlled using the debt-to-assets ratio, following Yang and Krishnan (2005) and Bradbury et al. (2006), as highly leveraged firms face heightened financial risk. Return on Assets (ROA) is included to account for profitability, with higher ROA reflecting stronger earnings capacity and reducing incentives for fraudulent behavior. Lastly, the Market-to-Book (M/B) ratio measures shareholder value by comparing market value to book value, capturing firm innovation and equity performance, as innovative firms often command higher market valuations.

5. Research Findings

5.1 Descriptive statistics

Table I summarizes the descriptive statistics of the study's sample. The binary variable FRAUD has a mean close to 0.5, indicating that nearly half of the firms experienced accounting fraud, with a nearly symmetrical distribution. Audit committee independence averages 82.48%, showing a left-skewed distribution with some extreme values, while audit committee expertise (mean 0.82) also exhibits left skewness. The presence of women on audit committees averages 13.56%, with a right-skewed and leptokurtic distribution. The environmental score averages 44.66 and is approximately normally distributed. Interaction terms between environmental score and audit committee characteristics show mostly near-normal distributions, except the interaction with women presence, which is right-skewed and leptokurtic. Firm size (mean 14.51) is normally distributed. Financial performance variables such as ROA, market-to-book ratio, and leverage show highly skewed distributions with extreme values, reflecting significant variability and outliers within the sample.

Table 1: Descriptive statistics of the variables:

Descriptive Statistics

Variables	Mean	Std. Dev.	Minimum	Maximum	Skewness	Kurtosis
FRAUD	0.4958285	0.5000069	0	1	0.0166866	1.000278
INAUD	82.47775	25.33197	0	100	-1.531516	4.611258
EXPAUD	0.8212242	0.3831831	0	1	-1.676691	3.811292
GDAUD	13.56137	12.63154	0	100	1.166462	5.196439
ENV	44.66274	26.45068	0	99.09	0.0883029	1.924343
ENV_IN~D	3583.367	2430.531	0	9846	0.4259685	2.296814
ENV_EX~D	36.25001	29.33174	0	99.09	0.2823817	1.831917
ENV_GD~D	621.4001	784.356	0	7165	2.031678	8.752139
SIZE	14.51384	1.929788	4.094345	20.95731	-0.0096352	3.471266
ROA	4.249658	18.70163	-918.18	134.92	-24.82851	1168.078
MTB	3.220896	30.01869	-1082.44	1668.05	27.23239	1638.406
LEVERAGE	26.95912	23.67876	0	778.05	8.511374	217.1361

Note : Ce tableau présente des statistiques descriptives des variables de la présente étude.

FRAUD : accounting fraud; INAUD : independence of the audit committee; EXPAUD : audit committee expertise ; GDAUD : presence of women on the audit committee ; ENV: environmental dimension score; ENV_IN~D : interaction between the environmental dimension and the independence of the audit committee; ENV_EX~D : interaction between the environmental dimension and the expertise of the committee; ENV_GD~D : interaction between the environmental dimension and the presence of women on the audit committee; ROA : stock market performance; SIZE : size of company assets; LEVERAGE : financial debt level; MTB : market value/book value ratio.

5.2 Correlation analysis

We explored the relationships between audit committee characteristics, the environmental dimension of CSR, and accounting fraud (FRAUD) using Spearman correlation matrices. According to Farrar and Glauber (1967), there should be no harmful levels of multicollinearity as long as the correlation coefficient does not reach 0.8 or 0.9. To confirm this observation, we assessed potential multicollinearity between variables using a variance inflation factor (VIF) analysis.

To complement this analysis, we calculated VIFs for each variable. The results show that VIFs range between 1.00 and 1.42 in all models. Myers (1990) indicates that the effect of multicollinearity is insignificant if all VIFs are less than 10. Therefore, given that all VIF values are well below this threshold, we conclude that multicollinearity does not represent a significant problem for the interpretation of our results.

Therefore, although some correlations between variables are strong, they do not exceed the critical thresholds generally associated with problematic multicollinearity. Moreover, the low VIF values

confirm the absence of major multicollinearity problems, thus allowing a reliable interpretation of the relationships studied in our models.

Table 2 - Correlation matrix of variables

- **Correlation matrix of model 1:**

Pairwise correlations

	FRAUD	ENV	Size	ROA	MTB	LEV
FRAUD	1,000					
ENV	-0,055	1,000				
	0,000					
Size	-0,140	0,525	1,000			
	0,000	0,000				
ROA	0,005	-0,012	-0,073	1,000		
	0,623	0,255	0,000			
MTB	0,069	-0,031	-0,117	0,367	1,000	
	0,000	0,003	0,000	0,000		
LEV	-0,069	0,090	0,257	-0,117	-0,043	1,000
	0,000	0,000	0,000	0,000	0,000	

- **Correlation matrix of model 2:**

	FRAUD	ENV	INAUD	ENV_INAUD	Size	ROA	MTB	LEV
FRAUD	1.0000							
ENV	-0.0553	1.0000						
	0.0000							
INAUD	-0.0217	-0.1336	1.0000					
	0.0274	0.0000						
ENV_INAUD	-0.0447	0.8237	0.3127	1.0000				
	0.0000	0.0000	0.0000					
Size	-0.1389	0.5325	-0.0434	0.4215	1.0000			
	0.0000	0.0000	0.0000	0.0000				
ROA	0.0036	-0.0111	-0.0174	0.0048	-0.0682	1.0000		
	0.7127	0.2616	0.0766	0.6250	0.0000			
MTB	0.0691	-0.0276	-0.0077	-0.0052	-0.1129	0.3625	1.0000	
	0.0000	0.0050	0.4355	0.5984	0.0000	0.0000		
LEV	-0.0722	0.0953	0.0281	0.0944	0.2601	-0.1215	-0.0419	1.0000
	0.0000	0.0000	0.0044	0.0000	0.0000	0.0000	0.0000	

• **Correlation matrix of model 3 :**

	FRAUD	ENV	EXPAUD	ENV_EXPAUD	Size	ROA	MTB	LEV
FRAUD	1.0000							
ENV	-0.0553	1.0000						
	0.0000							
EXPAUD	-0.0132	-0.0429	1.0000					
	0.1797	0.0000						
ENV_EXPAUD	-0.0485	0.6519	0.6602	1.0000				
	0.0000	0.0000	0.0000					
Size	-0.1389	0.5325	-0.0072	0.3558	1.0000			
	0.0000	0.0000	0.4679	0.0000				
ROA	0.0036	-0.0111	-0.0145	-0.0080	-0.0682	1.0000		
	0.7127	0.2616	0.1419	0.4184	0.0000			
MTB	0.0691	-0.0276	-0.0013	-0.0192	-0.1129	0.3625	1.0000	
	0.0000	0.0050	0.8962	0.0508	0.0000	0.0000		
LEV	-0.0722	0.0953	0.0230	0.0812	0.2601	-0.1215	-0.0419	1.0000
	0.0000	0.0000	0.0194	0.0000	0.0000	0.0000	0.0000	

• **Correlation matrix of model 4 :**

	FRAUD	ENV	GDAUD	ENV_GDAUD	Size	ROA	MTB	LEV
FRAUD	1.0000							
ENV	-0.0553	1.0000						
	0.0000							
GDAUD	-0.0164	0.0338	1.0000					
	0.0964	0.0006						
ENV_GDAUD	-0.0417	0.4258	0.8397	1.0000				
	0.0000	0.0000	0.0000					
Size	-0.1389	0.5325	-0.0100	0.1968	1.0000			
	0.0000	0.0000	0.3113	0.0000				
ROA	0.0036	-0.0111	0.0148	0.0101	-0.0682	1.0000		
	0.7127	0.2616	0.1326	0.3062	0.0000			
MTB	0.0691	-0.0276	0.0258	0.0072	-0.1129	0.3625	1.0000	
	0.0000	0.0050	0.0089	0.4669	0.0000	0.0000		
LEV	-0.0722	0.0953	0.0570	0.0752	0.2601	-0.1215	-0.0419	1.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Table 3- Variance Inflation Factor (VIF)

Model 1:

Variable	VIF	1/VIF
ENV	1.38	0.725566
SIZE	1.40	0.713319
ROA	1.05	0.953896
LEVERAGE	1.05	0.954764
COVID	1.02	0.981780
MTB	1.00	0.997987
MEAN VIF	1.15	

Model 2:

Variable	VIF	1/VIF
Size	1.42	0.706318
ENV	1.40	0.713467
ROA	1.05	0.953982
LEV	1.05	0.954054
INAUD	1.02	0.976272
MTB	1.00	0.998039
Mean VIF	1.16	

Model 3:

Variable	VIF	1/VIF
Size	1.42	0.706162
ENV	1.39	0.721530
ROA	1.05	0.953347
LEV	1.05	0.954622
EXPAUD	1.00	0.996521
MTB	1.00	0.998000
Mean VIF	1.15	

Model 4:

Variable	VIF	1/VIF
Size	1.42	0.705661
ENV	1.39	0.720765
ROA	1.05	0.950298
LEV	1.05	0.954041
GDAUD	1.01	0.992197
MTB	1.00	0.997993
Mean VIF	1.15	

5.3 Fixed or random effect

The decision to choose between fixed effect and random effect is based on the result of Hausman test, when performed for the data of the present study, this test gave significant results, which proves the use

of fixed effect regression analysis for our model before regression analysis. Hausman test was performed and fixed effect was applied according to the results of Hausman test.

Table 4. Hausman test for models M2 to M4:

Modèles	DL : K*	χ^2 calculée	p-value	EF/EA**
Modèle (M2)	7	45.86	0.0000	EF
Modèle (M3)	7	46.53	0.0000	EF
Modèle (M4)	7	46.41	0.0000	EF

* K : Number of explanatory variables;

** EF/EA : Fixed effects or random effects

5.4 Heteroscedasticity test (Modified Wald test)

To ensure the validity of our estimates, we checked the homoscedasticity of the residuals using the modified Wald test for pooled heteroscedasticity in the fixed-effects model. This test determines whether the variance of the errors is constant across the different groups. The null hypothesis (H0) of the test is the homoscedasticity of the residuals, while the alternative hypothesis (H1) is heteroscedasticity.

The results of the heteroscedasticity test of the residuals for all models show that the probability associated with the coefficients are less than 5% and not significant ($p = 0.0000$). Therefore, we reject the null hypothesis H0. There is therefore a problem of heteroscedasticity present, indicating that the variances of the errors differ between the groups.

Table 5: Heteroskedasticity test of residuals

Test/Régression	Chi2	Prob>chi2
Hétéroscédasticité ENV	4.2e+07	0.0000
Hétéroscédasticité ENV*INAUD	8.5e+09	0.0000
Hétéroscédasticité ENV* EXPAUD	1.7e+10	0.0000
Hétéroscédasticité ENV* GDAUD	7.3e+09	0.0000

5.5 Error autocorrelation test (Breusch-Pagan test)

We also assessed the presence of serial autocorrelation in our models using the Breusch-Pagan LM test. This test allows us to check the independence of the residuals and to detect whether the errors are

correlated over time. The null hypothesis (H_0) of the test is the absence of autocorrelation, while the alternative hypothesis (H_1) is the presence of autocorrelation. The test results (Table 6) show a probability associated with the coefficients lower than 5% for all models ($p = 0.0000$). Therefore, we reject the null hypothesis of absence of autocorrelation in favor of the alternative hypothesis of presence of autocorrelation. This observation suggests that the errors are not independent and are correlated over time, which could also affect the validity of our results.

Table 6: Autocorrelation test:

Test/Régression	Chi2	Prob>chi2
autocorrélation ENV	2.23e+06	0.0000
autocorrélation ENV*INAUD	1.19e+06	0.0000
autocorrélation ENV* EXPAUD	1.26e+06	0.0000
autocorrélation ENV* GDAUD	1.38e+06	0.0000

Our test results revealed the presence of heteroscedasticity and autocorrelation in our models. To account for these issues and ensure the reliability of our estimates, we corrected the variance-covariance matrix of our models using robust estimation. This approach provides corrected standard errors that are more robust to heteroscedasticity and autocorrelation, improving the validity of our statistical inferences.

5.5 Regression results

INAUD: Audit committee independence, when integrated as an interaction variable with the environmental dimension of CSR, appears fundamental in the objective and effective control of accounting practices. An independent audit committee is essential to reduce conflicts of interest, ensure increased transparency, and reduce the risks of accounting fraud. This finding is also consistent with the conclusions of Bouaziz and MAALEMI (2023) who show that audit committee autonomy has a positive effect on internal audit quality, thus creating an organizational environment that favors transparency and fraud prevention. Zahra et al. (2023) emphasized that independent audit committees promote transparency and disclosure, which deters fraudulent behavior.

EXPAUD: The coefficient of audit committee expertise (EXPAUD) is negative and highly significant. This indicates that higher levels of expertise in the board are associated with a significant reduction in accounting fraud. CA expertise increases the ability to detect and prevent financial errors and fraud,

thereby contributing to better financial governance. This finding is also consistent with the conclusions of (CONTRÔLE and DRISSA., 2023) The financial expertise of the audit committee aims to limit manipulations, financial frauds and embezzlement. Piot and Kermiche (2009) also confirm that this expertise helps prevent and detect irregularities and manipulations in financial statements.

GDAUD: Gender diversity within the audit committee also has a negative and significant effect on accounting fraud. An increase in the presence of women on the committee is associated with a decrease in the probability of accounting fraud. This result is consistent with the results of (Carter et al., 2003), which argues that diverse groups are more effective in solving complex problems due to the diversity of perspectives and experiences they bring. This finding is also consistent with the conclusions of (Chang and al., 2024, Hämäläinen, J. 2024), women directors are more conservative, more risk-averse, more moral, and more trustworthy than men, and are less likely to manipulate financial and other corporate information. (Wang et al., 2022), Women are more effective in male-dominated industries at reducing both the frequency and severity of fraud.

Model 1:

An increase in the environmental dimension reduces the probability of accounting fraud, this effect is significant at the 10% level ($p = 0.075 < 0.1$). Therefore H1 accepted, Companies that invest in the environmental dimension of CSR, by focusing on sustainability, reducing the carbon footprint and environmentally friendly practices, can also promote an ethical corporate culture. Environmental commitment indirectly contributes to reducing fraudulent behavior by improving the company's reputation and transparency. Therefore, The results obtained regarding the influence of the environmental dimension on accounting fraud extend those obtained by Harjoto, M. A. (2017). In particular, (Kallhoff, 2022) The environmental dimension, focused on sustainability and ethical management of resources, encourages a culture of integrity within companies, which helps prevent accounting fraud. By integrating this dimension, companies improve their reputation, stakeholder relationships, and reduce risks, while promoting innovation and competitiveness (Moufid and Benbba, 2024). Respect for the environment and minimizing fraud are essential for organizations (Hamdi and El Oudri, 2024), and integrating the ecological footprint into CSR can have a positive impact on accounting practices (Cyprien, IK 2023).

An increase in return on assets (ROA) significantly reduces the probability of fraud (-0.013122 , $p = 0.001$). Companies with a high ROA are often under less pressure to manipulate their financial results.

High profitability reduces the need to present an artificially enhanced financial image to satisfy the expectations of investors and analysts. Companies with a high ROA often benefit from a better reputation and investor confidence. Maintaining this reputation is crucial, and the managers of these companies are less likely to risk accounting fraud practices that could harm their image and stakeholder confidence.

The variables SIZE, LEVERAGE, have a positive and significant effect on accounting fraud (0.0673885***, 0.0021838***).

Model 2:

The coefficient of the environmental dimension (ENV) is negative and significant (-0.0284732***), indicating that firms that adopt rigorous environmental practices tend to have lower levels of accounting fraud. This suggests that commitment to environmental initiatives opts for a culture of integrity and transparency within the firm, thus reducing incentives to manipulate financial information. The interaction between the environmental dimension (ENV) and the independence of the audit committee (INAUD) is also negative and significant (-0.0005412***). This result reinforces the idea that the combination of strong environmental practices and independent monitoring is particularly effective in limiting accounting fraud. The independent board ensures more rigorous monitoring, which, when combined with rigorous environmental practices, leads to a marked reduction in accounting fraud. The results obtained concerning the influence of the independence of the AC on the relationship between the environmental dimension and accounting fraud extend those obtained by (Zhang et al., 2007) The independence of the audit committee plays a key role in promoting transparency and accountability within the company. Klein (2002), The results of his study show that "there is a negative relationship between the independence of the audit committee and the limitation of accounting irregularities or the correction of the result" CONTROL and DRISSA (2023), "It is rather necessary that this audit committee be independent to better play its control and monitoring roles and have an effect on the limitation of earnings management". Thus, the acceptance of H2 consists in that the non-dependence of the CA negatively manages the relationship between the environmental dimension and accounting fraud.

Model 3:

The coefficient of the environmental dimension (ENV) is far from positive and significant (-0.0253226***), indicating that firms that adopt rigorous environmental practices have a lower

probability of accounting fraud. This may reflect a more general commitment to ethical and transparent practices.

The interaction between the environmental dimension (ENV) and the expertise of the audit committee (EXPAUD) is negative and significant (-0.0142665^{***}). This suggests that firms with strong environmental practices and a competent audit committee benefit from an increased reduction in accounting fraud. The work of the audit committee, in combination with rigorous environmental practices, contributes to strengthening internal control mechanisms and improving financial transparency, thus limiting opportunities for fraud. The interaction between environmental practices and the expertise of the audit committee highlights the synergy between strong environmental commitments and rigorous monitoring. The results obtained concerning the influence of the AC expertise on the relationship between the environmental dimension and accounting fraud extend those obtained by Yerima and Kounetron (2022) showed that the accounting or tax expertise of the members of the audit committee has a significant impact on the reduction of fraud. Similarly, Houndjo, A. (2021) considers that the work of the CA could also play a crucial role in the prevention of fraud. Thus, the acceptance of H3 is based on the reasonable hypothesis that the expertise of the audit committee negatively moderates the relationship between the environmental dimension and accounting fraud.

Model 4:

The environmental dimension factor (ENV) is non-positive and significant (-0.0125362^{**}). This shows that firms with strong environmental practices tend to have lower accounting fraud. Environmental commitment may reflect a more ethical and transparent organizational culture. Firms that adopt strong environmental practices report an overall commitment to ethical and transparent behaviors. Commitment to environmental practices may strengthen internal ethical standards and improve transparency, thereby reducing opportunities for accounting fraud.

The coefficient of the interaction between ENV and GDAUD is negative and significant (-0.0003252^{*}). This indicates that the effects of environmental practices on reducing accounting fraud are reinforced by greater gender diversity in the audit committee. Firms that combine strong environmental practices with gender diversity in the audit committee show a more significant reduction in accounting fraud, which could be due to better quality of monitoring and a stronger commitment to transparency. The results obtained regarding the influence of gender diversity within the AC on the relationship between the environmental dimension and accounting fraud extend those obtained by (Ferina and Pratama. 2023)

and gender diversity had an impact on fraud detection. (Kamarudin et al., 2018), Gender diversity has a significant influence on fraudulent financial reporting. Thus, the acceptance of H4 is based on the reasonable hypothesis that the presence of women in the audit committee negatively moderates the relationship between the environmental dimension and accounting fraud.

Table 7: Results of model estimations:

VARIABLES	(1) FRAUDE	(2) FRAUDE	(3) FRAUDE	(4) FRAUDE
ENV	-.0071162* (.0039926)	-.0284732*** (0.0108277)	-0.0253226*** (0.0057629)	-0.0125362** (0.0048354)
INAUD		-0.0260404*** (.0078192)		
EXPAUD			-1.192422*** (0.3076288)	
GDAUD				-0.001649** (0.0007599)
ENV-INAUD		-0.0005412*** (0.0001247)		
ENV- EXPAUD			-0.0142665*** (0.0049914)	
ENV- GDAUD				-0.0003252* (0.000181)
ROA	-0.013122*** (.0046853)	-0.0144153*** (.0046853)	-0.0137675*** (0.0052639)	-0.0143778** (0.0055543)
SIZE	0.0673885*** (0.0236451)	0.1953448** (0.0896383)	0.1905729** (0.0886186)	0.2372471** (0.0949159)
LEVERAGE	0.0021838*** (0.0008367)	0.0006631** (0.0003001)	0.0011269** (0.0004795)	0.0006541** (0.0003138)
MTB	0.000211 (0.000576)	0.0008603 (0.0007778)	0.0006913 (0.0007243)	0.0007557 (0.0007771)
Constant	-4.278709*** (1.190557)	1.404606 (1.411502)	-1.524367 (1.211598)	-0.8956302 (1.279445)
Observations	9,515	10,307	10,307	10,307
Number of ID	793	793	793	793
Pseudo R ²	0.03212749	0.01867062	0.01575649	0.01218471

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

6. Robustness analysis

To confirm the robustness of our results, we first analyzed each moderating variable audit committee independence (INAUD), audit committee expertise (EXPAUD), and audit committee gender diversity (GDAUD) in isolation in our main models. Then, we conducted a more comprehensive robustness test

by examining the combined interactions of these three moderating variables with the environmental dimension of CSR.

$$\begin{aligned} FRAUD_{it} = & \beta_0 + \beta_1 ENV_{it} + \beta_2 INAUD_{it} + \beta_3 ENV_{it} \\ & * INAUD_{it} + \beta_4 EXPAUD_{it} + \beta_5 ENV_{it} \\ & * EXPAUD_{it} + \beta_6 GDAUD_{it} + \beta_7 ENV_{it} * GDAUD_{it} + \beta_8 SIZE_{it} \\ & + \beta_9 ROA_{it} + \beta_{10} MTB_{it} + \beta_{11} LEV_{it} + \lambda_i + \mu_t + \varepsilon_{it} \end{aligned}$$

The robustness test reveals a remarkable consistency with our initial conclusions. Indeed, the coefficients of the moderating variables and the environmental dimension of CSR remained stable and significant. This stability reinforces the idea that the protective effect of environmental CSR practices on accounting fraud is indeed moderated by the quality of the audit committee, thus confirming our hypotheses.

This test shows that the interactions between independence, expertise and gender diversity in the board with the environmental dimension of CSR maintain a significant negative effect on accounting fraud. Thus, our results highlight the importance of these moderating variables in exploring the relationship between environmental responsibility and accounting fraud, and show that our conclusions are robust and generalizable. Therefore, rigorous environmental responsibility, accompanied by a competent and diverse audit committee, is essential to limit fraudulent practices within companies.

Table 8: Results of model estimations:

VARIABLES	(4) FRAUDE
INAUD	-0.0323028*** (0.0082499)
EXPAUD	-1.492485*** (0.3128383)
GDAUD	-0.0011604** (0.0005474)
ENV-INAUD	-0.0006518*** (0.0001336)
ENV- EXPAUD	-0.02266*** (0.0049765)
ENV- GDAUD	-0.0002947*** (0.0001116)
ROA	-0.0141188*** (0.0053941)
SIZE	0.2120659** (0.09112)
LEVERAGE	0.0006758** (0.0003058)
MTB	0.0007969 (0.0007779)
ENV	-0.0203722* (0.0115998)
Constant	0.3345779 (1.437826)
Observations	10,307
Number of ID	793
Pseudo R ²	0.01960348

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

7. Summary and conclusion

This study explored the impact of the environmental dimension of CSR on accounting fraud, as well as the moderating role of audit committee characteristics, including independence, expertise, and gender diversity. By analyzing a sample of 793 companies from France, Canada, Germany, and the United Kingdom, our results reveal significant relationships between these variables.

First, our results showed that the environmental dimension of CSR plays a determining role in reducing fraudulent behavior. Companies that actively engage in responsible environmental practices, such as transparency of environmental information, reduction of carbon footprint, and compliance with ecological standards, are less likely to be involved in accounting fraud. This suggests that environmental commitment is not only a question of image, but also constitutes a strategic lever promoting ethics and financial transparency.

Second, our study highlights the moderating influence of audit committee characteristics on this relationship. We found that the independence of the Audit Committee reinforces the negative impact of the environmental dimension of CSR on accounting fraud. This means that committees composed of independent members are more likely to rigorously monitor companies' environmental commitments and ensure that these commitments do not only serve as communication tools, but that they reflect real sustainable practices.

The expertise of the members of the Audit Committee also plays a key role. Members with in-depth knowledge of accounting standards and environmental issues are better able to detect potential irregularities and ensure that the environmental performance declared by the company is aligned with its real practices. This expertise thus helps to limit attempts at greenwashing that could mask fraudulent behavior.

Similarly, gender diversity within the Audit Committee helps to strengthen the prevention of accounting fraud in companies with a strong environmental involvement. The presence of women promotes a more ethical approach and better risk monitoring, which improves the credibility of the company's environmental commitments.

On a practical level, our results highlight the importance for companies to fully integrate environmental CSR into their governance in order to enhance transparency and mitigate the risks of accounting fraud. In addition, audit committees should be composed of qualified, independent and diverse members to maximize their monitoring role and ensure that environmental commitments translate into concrete and responsible actions.

However, this study presents some limitations that open up avenues for future research. It would be relevant to examine in more detail the differences between countries with continental and Anglo-Saxon legal traditions in order to better understand how regulatory frameworks influence these relationships. Furthermore, integrating other dimensions of CSR, such as the social dimension, could provide a more comprehensive view of the overall impact of CSR on accounting fraud.

Therefore, while this study makes important contributions, future research could refine the results by making in-depth comparisons between different countries and legal systems, as well as by exploring other dimensions of CSR.

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