



Do ESG disclosures mediate the relationship between audit committee characteristics and audit quality? Evidence from the listed banks of Bangladesh

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ABSTRACT

Article History

Received: 14 July 2026

Revised: 22 September 2026

Accepted: 8 October 2026

Published: 27 October 2026

Keywords

Audit quality
Bangladesh banking sector
ESG disclosure
Gender diversity
Mediation analysis.

In recent years, the sustainability and effectiveness of corporate governance mechanisms have revealed a growing trend toward measuring the overall firm's operational and managerial efficiency. The study aims to explore the influence of Audit Committee (AC) characteristics as measures of corporate governance and their effects on audit quality, as well as whether Environmental, Social, and Governance Disclosures (ESGD) have any relationship with audit quality in this regard. The study was conducted in the banking industry of Bangladesh based on an analysis of publicly available reports from 2019 to 2025. A quantitative research approach using the POLS method was employed, with audit quality proxied by Audit Fees (AF). The main factors associated with AC composition were included as independent variables. The bootstrap technique was adopted to analyze whether ESGD mediates the relationship. The findings of this study show a significantly positive relationship between AC size, independence, and ACGD and audit quality. The study contributes to the literature by identifying ESGD as a significant mediating mechanism between ACGD and audit quality, as ACGD is the only AC characteristic that improves audit quality through enhanced ESGD. Policymakers should prioritize inclusive and gender-diversified governance mechanisms. Focus should be given to ESG-based operations and standardized reporting tactics. A lack of diversification in industry and economic circumstances may limit the generalizability of the findings. Audit quality may also be influenced by factors other than audit fees.

Contribution/Originality: This study contributes to the existing literature by examining the mediating role of ESG disclosures. Unlike previous studies, which assessed the direct relationship between audit quality and audit committees, this study examines the mediating role of sustainability issues in an emerging economy like Bangladesh, where sustainability is becoming increasingly essential.

1. INTRODUCTION

In the modern business environment, managers focus mostly on strategies that enhance transparency and accountability to stakeholders, as they are more concerned about the company's sustainability practices and financial accomplishments, which ensure the proper utilization and preservation of both the Earth and society (L'Abate, Vitolla, Esposito, & Raimo, 2023). Corporate governance mechanisms thus facilitate the implementation of such environmentally friendly policies, mostly regarded as environmental, social, and governance (ESG) practices, and the characteristics of the AC are a crucial part of the corporate governance mechanism for ensuring the transparent and fair representation of financial information to users. The effective formation of the AC helps maintain higher audit

quality and implement effective sustainability practices (Alodat, Al Amosh, Khatib, & Mansour, 2023; Santonastaso, Macchioni, & Zagaria, 2026). The AC's attributes, including the size of the committee, diversity, independence, and meeting frequency, significantly influence the overall firm's performance, ensuring various ethical practices, sustainable disclosures, and effective internal control processes (Karim, Roshid, Dhar, Nahiduzzaman, & Kuri, 2024). Also, the AC has gained global attention as a gauge of corporate governance following various corporate scandals, and companies are more focused on implementing and disclosing ESG policies in their reports to ensure transparency (Alodat et al., 2023).

The AC characteristics significantly enhance social and environmental fairness, affect the company's sustainability disclosures, and also improve audit quality (Alodat et al., 2023; Baatwah, Salleh, & Stewart, 2019). Firms that disclose ESG information transparently are more likely to maintain higher audit quality, thus reflecting organizational integrity and risk management. Previous studies have investigated the relationship between audit quality and AC characteristics, the effects of AC characteristics on sustainable performance, and have also examined AC effectiveness and firm performance using sustainability as a mediating variable (Gull, Hussain, Khan, Khan, & Saeed, 2023; Kalita & Tiwari, 2025; Karim et al., 2024; Khudhair, Al-Zubaidi, & Raji, 2019). With growing sustainability requirements and stakeholder pressures in recent years to ensure better societal, environmental, and governance impacts, ESG disclosures have become indispensable in financial reporting and corporate governance. However, the mediating role of ESGD in the relationship between AC characteristics and audit quality remains unexplored in the Bangladeshi context, as the independence, diversity, and size of the AC seem to enhance this relationship by reducing agency problems. Thus, there remains a need to assess how effectively AC characteristics can enhance or influence audit quality, with ESG disclosures serving as a mediating factor. Hence, the research project aims to investigate how the disclosure of ESG-related information mediates the relationship between AC characteristics and audit quality for banks listed on the Dhaka Stock Exchange (DSE) in Bangladesh from 2019 to 2025. This study will help stakeholders make decisions about sustainability disclosures in the country's financial sector and thus address the research gap by introducing both the financial and non-financial factors affected by AC characteristics in the Bangladeshi context.

The study will enhance the current literature through its novelty: to the best of the authors' knowledge, very few studies have been conducted that integrate the mediating role of ESG disclosures into the relationship between AC characteristics and audit quality. The findings of this research may enrich the conceptual understanding of researchers and academics regarding the effects of sustainability issues and governance mechanisms, and will benefit policymakers, managers, and other users of financial reports, who will be able to understand the implications of sustainability and ethical issues.

2. LITERATURE REVIEW

2.1. Theoretical Framework

2.1.1. Agency Theory

Agency theory is a prominent concept used for mitigating information asymmetry that arises from conflicts of interest between managers and shareholders of an organization, where managers act as agents and shareholders are the principals (Jensen & Meckling, 1976). Effective and efficient governance practices, particularly ACs, oversee these agency problems between managers and owners and minimize agency costs, as AC characteristics act as a shield for maintaining and ensuring the interests of all stakeholders by implementing sustainable measures and maximizing the financial performance of a firm (Mohammadi, Saeidi, & Naghshbandi, 2021; Santonastaso et al., 2026). The characteristics of an AC, especially independence, expertise, and diversity, focus on both financial and non-financial factors as their decision-making criteria; they are concerned about the environmental and social policies of the firm alongside observing financial reporting (Naciti, Cesaroni, & Pulejo, 2022; Pozzoli, Pagani, & Paolone, 2022). Further,

environmental, social, and governance disclosures positively influence the quality of audits by reducing borrowing costs, information asymmetry, and agency costs (Santonastaso et al., 2026).

2.2. Empirical Findings and Hypothesis Development

2.2.1. The relationship between AC Size and Audit Quality

AC characteristics significantly influence audit quality because they are regarded as one of the strongest elements of corporate governance. Based on previous studies, the factors of AC characteristics consist of AC size, independence, expertise, meeting frequency, and gender diversity (Algrady, Huang, & Al-Matari, 2025; Baxter & Cotter, 2009; Zehri & Zgarni, 2020).

AC size refers to the number of members of the AC from the company's board of directors, which should consist of at least three or four members who are independent of the management body and whose responsibility is to ensure transparency, fairness, neutrality, and accountability in the company's overall operational and decision-making process (Abu & Okpe, 2021; Amanullah et al., 2026).

A committee with fewer members may hinder the monitoring process and reduce efficiency, whereas a committee with more members may cause delays in the audit process; thus, the committee should have a moderate number of members (Bliss, 2011). Previous studies have yielded mixed results regarding the impact of AC size on audit quality. Recent studies by Sobhan, Khatun, and Ikra (2026) and Dare, Efuntade, Alli-Momoh, and Efuntade (2021) demonstrate a significant positive association between AC size and audit quality, which is supported by agency theory, as a committee with an appropriate number of members enhances efficiency and the control process, thus improving audit quality. Specifically, using audit fees as an indicator of audit quality, Abu and Okpe (2021); Ali, Singh, and Al-Akra (2018) and Drogalas, Nerantzidis, Mitskinis, and Tampakoudis (2021) found a significantly favorable relationship with AC size. On the contrary, studies have also reported a negative association between audit fees and the size of the AC. Farooq, Kazim, Usman, and Latif (2018) and Sultana, Singh, and Van der Zahn (2015) argue that ACs with a higher number of members face difficulties in reaching a consensus and have a negative impact on audit fees. Based on the above literature, the following hypothesis can be proposed.

H₁: AC size positively affects audit quality.

2.2.2. The Relationship between AC Independence and Audit Quality

AC independence refers to the presence of non-executive independent directors in the committee (Dzik-Walczak & Ociepa, 2025), which ensures the credibility of the financial reports provided by the company. Independent audit committee members are more concerned with mitigating the financial or non-financial scandals a company may face and hence enhance the reporting quality and lessen the agency problem and information asymmetry with their professional expertise and neutrality (Zaman, Farooq, Khalid, & Mahmood, 2021). Previous research confirmed the positive relationship between AC independence and audit quality (Asiriwa, Aronmwan, Uwuigbe, & Uwuigbe, 2018; Dzik-Walczak & Ociepa, 2025; Khudhair et al., 2019); the amount of fees charged by auditors increased based on the percentage of non-executive independent directors on the board, as they provide oversight and monitoring with greater effort, thus enhancing the quality of the audit (Rani, 2018). A study also provides opposing results regarding this relationship. Ghafran and O'Sullivan (2017) illustrate a negative relationship between audit fees and AC independence, whereas Boshnak (2021) found no significant impact of independence on audit fees. From the above literature, the following hypothesis may be proposed.

H₂: AC independence positively affects audit quality.

2.2.3. The Relationship between AC Expertise and Audit Quality

AC expertise refers to the proportion of members with financial or accounting knowledge on the AC. According to the Sarbanes-Oxley Act (2002), audit expertise means having a financial expert with the experience or training of

public accountants, principal financial officers, principal accounting officers of an issuer, and auditors, as well as profound knowledge of sound accounting rules, standards, and policies; AC functions; and experience with internal accounting (Khudhair et al., 2019). Various countries have made it compulsory to appoint at least a portion of members with financial or governance expertise to the AC; hence, previous literature confirms the favorable relationship between AC expertise and audit quality. The presence of experts on the committee mitigates agency problems, the possibility of earnings management, and the chances of potential scandals, and thus enhances auditors' fees and improves audit quality (Bhuiyan, Rahman, & Sultana, 2020; Ghafran & O'Sullivan, 2017; Khudhair et al., 2019). Moreover, experts on the AC also increase the reliability of the financial statements prepared by managers and ensure the quality of financial reports by improving efficiency and monitoring both internal and external audit processes (Asiriwa et al., 2018; Lutfi et al., 2022; Zalata, Tauringana, & Tingbani, 2018). Studies also report a negative or no relationship between AC expertise and audit quality. Expert members on the committee effectively supervise the auditing process of the firm, require a lower level of effort from external auditors, and lower the audit fee (Rani, 2018). Besides, an AC with expert members also engages non-Big Four auditors, which may reduce the audit fee (Boshnak, 2021). Some previous research (Abu & Okpe, 2021; Salawu, Okpanachi, Yahaya, & Dikki, 2017) also found no significant relationship between these variables. Therefore, the following hypothesis may be developed.

H₃: AC expertise positively affects audit quality.

2.2.4. The Relationship between AC meetings and Audit Quality

AC meetings refer to the number of meetings held throughout the year by the members of the AC. The members of the AC are bound to meet several times to review, assess, and resolve issues in the financial statements before presenting them to the board (Abu, Yahaya, & Abah, 2018). Recent studies conducted on AC characteristics and audit quality provide mixed results regarding their relationship. The findings from non-financial companies in Iraq illustrate a positive association between audit quality and AC meetings, but the relationship was not significant (Khudhair et al., 2019). Another study of Ghana's listed banks provides a positive and significant relationship between audit fees and the frequency of meetings (Awinbugri & Prince, 2019). Moreover, Abu et al. (2018) and Rani (2018) found a positive and significant association between audit quality, measured by audit fees, and frequent AC meetings. Hence, the following hypothesis may be proposed based on previous research.

H₄: AC meetings positively affect audit quality.

2.2.5. The Relationship between AC Gender Diversity and Audit Quality

The participation of women on the committee that supervises the auditing procedures related to the financial statements and internal control is referred to as AC gender diversity. Audit quality, measured by audit fees, is significantly and positively influenced by the presence of female members on the committee (Abu & Okpe, 2021; Miglani & Ahmed, 2019; Mnif Sellami & Cherif, 2020), as it is assumed that female members are more ethically accountable and provide audit services based on effective control mechanisms (Byrne, Chadwick, & Hancock, 2021). Another study by Nekhili, Gull, Chtioui, and Radhouane (2020) illustrates a negative association between audit fees and female members on the AC, as females are more likely to ensure monitoring and provide appropriate assurance, thus reducing audit fees. Based on the above discussion, the following hypothesis can be developed.

H₅: AC gender diversity positively affects audit quality.

2.2.6. The Mediating Relationship between ESG Disclosures (ESGD), AC characteristics, and Audit Quality

AC characteristics act as influential factors of corporate governance to enhance firms' sustainability-related information disclosure, which eventually increases audit quality. AC characteristics help increase the level of ESG disclosures, as a larger committee tends to provide its thoughts, views, and perspectives based on proper information and significantly affects the transparent disclosure of sustainability factors. Moreover, members are concerned about

their responsibilities and are accountable for various disclosures when meetings are more frequent. ACs with a greater number of independent directors tend to control reporting misstatements and transparently provide both financial and non-financial information to stakeholders, including environmental, social, and governance issues; conflicts of interest among stakeholders are reduced, which enhances audit quality (Karim et al., 2024). Also, members with financial literacy are better able to understand the importance of providing such sustainability disclosures to the related parties, and all of these characteristics of the AC influence audit quality through the mediating role of ESG disclosures (Jamil & Wahyuni, 2025). Based on the overall discussion, the following hypotheses may be developed.

H6(a): ESGD positively mediates the relationship between AC size and audit quality.

H6(b): ESGD positively mediates the relationship between AC independence and audit quality.

H6(c): ESGD positively mediates the relationship between AC expertise and audit quality.

H6(d): ESGD positively mediates the relationship between AC meetings and audit quality.

H6(e): ESGD positively mediates the relationship between AC gender diversity and audit quality.

3. METHODOLOGY

3.1. Sample and Data Collection

Samples for the study were collected from secondary sources, including annual reports, corporate governance reports, audit reports, and sustainability reports. The study was conducted based on 34 listed banks from the Dhaka Stock Exchange (DSE) for seven years, from 2019 to 2025, which include 238 firm-year observations. Originally, there were 35 listed banks on the DSE, but one bank was excluded due to the unavailability of data. The years from 2019 to 2025 were determined as the pre- and post-COVID periods. During this period, the implementation of sustainability measures, especially ESG reporting, gained remarkable attention in the global industry and also in developing countries like Bangladesh. Though the SDGs were introduced in 2015 and comprise 17 goals, ESG focuses specifically on three main issues: environmental, social, and governance. Moreover, these years provide the most recent results regarding this study.

3.2. Variable Specifications and Conceptual Framework

Table 1 presents the names and measurements of the variables, their symbols used in the study, the types of variables (dependent, independent, or mediating), and their sources from previous studies. In this study, audit committee characteristics were employed as independent variables, which were measured using audit committee size, independence, expertise, meetings, and gender diversity. Audit quality was used as the dependent variable, which was assessed and proxied using audit fees. The mediating variable, ESG disclosure, was measured through content analysis by averaging the scores obtained from the content analysis. Lastly, firm size, leverage, Tobin's Q, and firm age were used as control variables in this study.

Table 1. Variable (VAR) specifications.

VAR	Symbol	Type	Measurement	Sources
Audit Fees	AF	Dependent	Natural logarithm of annual audit fees (Proxy variable for audit quality).	Abu et al. (2018); Sobhan et al. (2026); Wang, Yu, and Li (2022) and Zahid, Khan, Anwar, and Maqsood (2022)
AC Size	ACSize	Independent	Natural logarithm of the number of AC members.	Sobhan et al. (2026); Karim et al. (2024); Mardessi (2021) and Abu et al. (2018)
AC Independence	ACInd	Independent	Percentage of independent directors on the board.	Karim et al. (2024); Mardessi (2021); Abu et al. (2018) and Sobhan et al. (2026)

AC Expertise	ACExp	Independent	Percentage of members with accounting or financial expertise in the committee.	Mardessi (2021); Abu et al. (2018) and Sobhan et al. (2026)
AC Meeting	ACMeet	Independent	Natural logarithm of the number of AC meetings held during the year.	Karim et al. (2024); Mardessi (2021) and Sobhan et al. (2026)
AC Gender Diversity	ACGD	Independent	Percentage of women members in the committee.	Amara, Alshdaifat, Bouzgarrou, and Ab Aziz (2025); Abu et al. (2018) and Sobhan et al. (2026)
ESG Disclosure	ESGD	Mediating	Average of the environmental, social, and governance disclosure binary scores.	Jamil and Wahyuni (2025) and Zhang and Guo (2024)
Firm Size	FSize	Control	Natural logarithm of total assets.	Ahmed (2025); Karim et al. (2024); Sobhan et al. (2026) and Tumpa, Amanullah, and Moni (2025)
Leverage	LEV	Control	Total debt divided by total assets of the firm.	Karim et al. (2024); Sobhan et al. (2026) and Tumpa et al. (2025)
Tobin's Q	TobinsQ	Control	$(\text{Total Book Value of Assets} + \text{Market Value of Equity} - \text{Book Value of Equity}) / \text{Total Book Value of Assets}$	Asante-Appiah and Lambert (2023); Karim et al. (2024); Tumpa et al. (2025) and Vaihekoski and Yahya (2025)
Firm Age	FAge	Control	Natural logarithm of firm's age since incorporation.	Ahmed (2025) and Karim et al. (2024)

3.3. ESGD Measurement

The manual content analysis method was applied to derive individual scores for Environmental, Social, and Governance metrics and calculate the ESGD score. Each dimension score was calculated by dividing the number of disclosed indicators by the total number of indicators, using a binary scoring system based on the presence of relevant keywords in secondary data sources, including annual and sustainability reports (Balasuntharam, 2021; Masmoudi & Alsmady, 2026). A total of 10 indicators were used for each ESG category, as detailed in Appendix A. The final ESGD score was calculated as the average of the Environmental, Social, and Governance dimension scores by dividing their sum by three. The measurement equations are presented as follows:

$$ES = (\sum_{i=1}^{10} E_i) / 10$$

$$SS = (\sum_{i=1}^{10} S_i) / 10$$

$$GS = (\sum_{i=1}^{10} G_i) / 10$$

$$ESGD = (ES + SS + GS) / 3$$

Where: $E_i = 1$ if the i -th environmental indicator is disclosed or present, and 0 otherwise; $S_i = 1$ if the i -th social indicator is disclosed or present, and 0 otherwise; $G_i = 1$ if the i -th governance indicator is disclosed or present, and 0 otherwise. Each ESG dimension consists of 10 indicators.

3.4. Research Model

The variable relationship is depicted in Figure 1. The study employs the Pooled Ordinary Least Squares (POLS) regression method. The selection of POLS is appropriate for several reasons. Firstly, the purpose of this study is to assess the overall impact of AC characteristics on audit quality and to understand whether ESG mediates this relationship, not to identify time- or firm-specific effects (Ahmed, 2025; Ha, Nguyen, & Ho, 2024; Han, Kim, & Yu, 2016; Nollet, Filis, & Mitro kostas, 2016). POLS combines both cross-sectional and time-series observations into a single dataset and estimates a common relationship across all observations. Secondly, the sample consists of a single industry (banking) with minimal heterogeneity regarding firm-specific characteristics. Therefore, unobserved firm-specific differences in the dataset are not a concern in our study. Therefore, the POLS method is justified on these grounds.

$$\text{Model 1: } AF_{it} = \beta_0 + \beta_1 ACSize_{it} + \beta_2 ACInd_{it} + \beta_3 ACExp_{it} + \beta_4 ACMeet_{it} + \beta_5 ACGD_{it} + \beta_6 FSize_{it} + \beta_7 LEV_{it} + \beta_8 Tobin'Q_{it} + \beta_9 FAge_{it} + \mu_i + \varepsilon_{it}$$

$$\text{Model 2: } AF_{it} = \beta_0 + \beta_1 ACSize_{it} + \beta_2 ACInd_{it} + \beta_3 ACExp_{it} + \beta_4 ACMeet_{it} + \beta_5 ACGD_{it} + \beta_6 ESGD_{it} + \beta_7 FSize_{it} + \beta_8 LEV_{it} + \beta_9 Tobin'Q_{it} + \beta_{10} FAge_{it} + \mu_i + \varepsilon_{it}$$

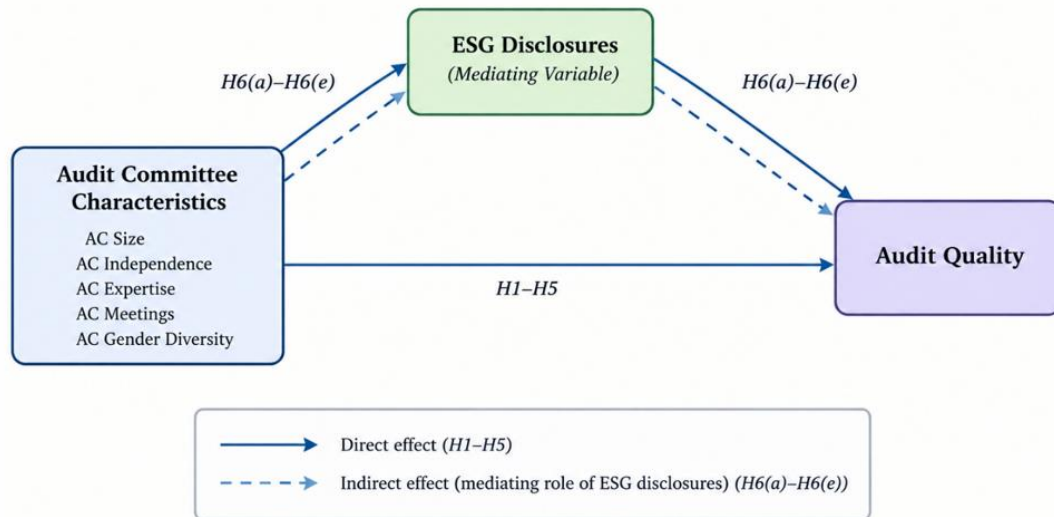


Figure 1. Design of the study.

Table 2 presents the descriptive statistics for the variables used in this study, including the number of observations, means, standard deviations, and the minimum and maximum values.

Table 2. Results of descriptive statistics.

Variables	Obs.	Mean	Std. Dev.	Min.	Max.
AF	238	14.223	0.86	12.737	17.899
ACSize	238	1.398	0.289	0	1.946
ACInd	238	0.494	0.208	0	2
ACExp	238	0.366	0.258	0	1
ACMeet	238	1.963	0.399	1.099	3.178
ACGD	238	0.104	0.175	0	0.75
ESGD	238	0.783	0.104	0.2	0.933
FSize	238	26.518	0.838	21.236	28.431
LEV	238	3.663	27.445	0.502	288.294
TobinsQ	238	0.817	0.725	-0.77	5.618
FAge	238	3.137	0.54	1.792	4.174

4. ANALYSIS AND RESULTS

4.1. Descriptive Statistics

The substantial audit fees indicated by the mean value of log 14.223 reflect the industry dynamics of the banking sector of Bangladesh. This industry is subject to regulatory complexities and faces heightened scrutiny from formal and informal entities, requiring banking firms to pursue extensive audit procedures (Rastogi, Sharma, Pinto, & Bhimavarapu, 2022). This is also reflected in the maximum value of 17.90. Moreover, a standard deviation of 0.86 implies that most of the firms in our sample incurred relatively consistent audit fees within a similar audit environment. The log mean value of 1.398 under ACSize and an SD of 0.289 imply that most of the firms maintain a moderate number of members on this committee, with limited variation across firms. This shows conformity with the corporate governance guidelines. Almost half of the AC members remain independent, as indicated by the mean ACInd value of 0.494. The presence of a minimum value of 0 implies that some firms failed to comply with the Bangladesh Securities and Exchange Commission (BSEC) (2018) regarding independent member requirements. The

presence of at least one-third of the total AC members with accounting and financial expertise is confirmed by the ACExp mean value of 0.366. Technical knowledge of the AC regarding financial aspects assists firms in effectively overseeing the ESG performance reporting process (Sahu, Mishra, Alahdal, & Sami, 2025). Active governance practices are reflected in the frequency of AC meetings, with a mean value of 1.963. The variation between the minimum and maximum values in this aspect illustrates that some entities maintain more proactive monitoring mechanisms, with a higher number of meetings throughout the year. Limited female participation in the AC is reflected in the mean ACGD value of 0.104. The range between the minimum and maximum values for this variable highlights a potential gender diversity gap among the sampled firms. ESGD is relatively high, with an average of 0.783. Extensive regulatory pressures and stakeholder expectations may prompt these firms to actively disclose associated sustainability concerns (Ahmed, 2025; Buallay, 2019). It can also be asserted that the firms are engaged in standardized sustainability reporting practices, as there is very little variation in ESGD scores. Among the control variables, FSize confirms the presence of relatively large and established banking institutions in the sample, with a mean log value of 26.518. Debt intensiveness is reflected in the LEV values, as the banking firms mainly operate through borrowed funds and various term deposits. Under interpretations of TobinsQ, on average, the market value of the banks remains slightly lower than their asset replacement value, with a mean of 0.817. Moreover, a higher SD reflects that investor perceptions range from the undervaluation to the overvaluation of the firms. The mean value of firm age is very close to the maximum value. This implies that the majority of the banking firms in our sample are mature enough and well established in the industry.

4.2. Variance Inflation Factor (VIF)

Table 3 captures multicollinearity issues among the explanatory variables using VIF. The mean value of VIF is 2.156, which is much lower than the stricter threshold of 5. This confirms that the independent variables are not highly correlated with each other (Welman, Kruger, & Mitchell, 2022). The tolerance values ($1/\text{VIF}$) are also within acceptable limits. Thus, this affirms the absence of multicollinearity problems.

Table 3. VIF results.

Variables	VIF	1/VIF
FSize	4.983	0.201
LEV	3.691	0.271
FAge	3.521	0.284
ACInd	1.763	0.567
ACSize	1.606	0.623
ACMeet	1.403	0.713
TobinsQ	1.206	0.829
ACExp	1.201	0.833
ESGD	1.123	0.89
ACGD	1.065	0.939
Mean VIF	2.156	-

Table 4 presents the Pearson correlation matrix of the variables, which measures the strength and direction of the linear relationships among the variables.

Table 4. Pearson correlation matrix.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) AF	1.000										
(2) ASize	-0.097	1.000									
(3) ACInd	0.262	-0.594	1.000								
(4) ACExp	0.262	-0.193	0.302	1.000							
(5) ACMeet	0.257	-0.017	0.161	0.217	1.000						

(6) ACGD	0.262	-0.006	0.070	0.101	0.063	1.000					
(7) ESGD	0.207	-0.029	0.035	0.026	-0.118	0.179	1.000				
(8) FSize	0.523	-0.186	0.297	0.241	0.149	0.043	0.097	1.000			
(9) LEV	0.009	0.032	-0.128	-0.055	0.196	0.069	-0.033	-0.622	1.000		
(10) TobinsQ	-0.229	-0.013	-0.096	0.063	-0.158	0.031	-0.049	-0.172	-0.002	1.000	
(11) FAge	0.564	-0.131	0.193	0.186	0.479	0.067	-0.067	0.499	0.179	-0.347	1.000

4.3. Matrix of Correlations

The matrix clarifies the direction and strength of the correlations among all the variables. First, the correlations with the dependent variable (Audit Fees) reveal some notable insights. Age has the highest positive correlation (0.564) with audit fees. This indicates that older firms incur greater audit fees, which may be due to their widespread branches and complex operations. Similarly, firm size also shows a similar pattern, with a positive correlation of 0.523. Larger firms often require extensive audit attention, with increased effort and commitment from the auditors (Widmann, Follert, & Wolz, 2021). Positive correlations of almost similar strengths (0.262 and 0.257) can be observed for ACInd, ACExp, ACGD, and ACMeet. This indicates that stronger governance mechanisms in the audit structures of the sampled firms are associated with greater audit fees. Therefore, superior audit quality resulting from better audit governance, engagement, and oversight has led to higher fees demanded by the auditors (Abdelhak & Hussainey, 2025; Nguyen & Nguyen, 2024). ESGD illustrates a positive correlation (0.207) with audit fees, which may mean that sustainability disclosures require extensive investigation and compliance procedures by the auditors to report such environmental, social, and governance commitments by the firms in their annual reports. Such comprehensive audit verification under information asymmetry may potentially increase audit fees (Ling, Xia, & Liu, 2024). Surprisingly, ACGD has a slight negative correlation of -0.097 with audit fees. Leverage shows almost no correlation (0.009), which implies that debt levels may not have any influence on audit fees. The negative correlation (-0.229) for Tobin's Q may suggest that higher market valuation does not necessarily lead to higher audit fees. Among the governance variables, ACGD and ACInd are negatively correlated ($r = -0.594$). This may imply that larger ACs may have a lower proportion of independent members. However, ACInd and ACExp exhibit a moderate positive correlation (0.302), meaning that the more independent the AC becomes, the more likely it is to include audit professionals with financial or accounting expertise. It can also be observed that ACs with more financial expertise may tend to engage in meetings more frequently, with the correlation between ACExp and ACMeet being $r = 0.217$. Furthermore, ESGD indicates a positive correlation of 0.179 with ACGD. This may indicate that female participation in ACs can bring greater transparency and actively promote sustainability disclosures (Ma, Ahmad, & Torelli, 2024). Among the control variables, FSize-Lev and FAge-TobinsQ are negatively correlated, with $r = -0.622$ and -0.347 , respectively. However, FSize and FAge show a moderately positive correlation of 0.499 (Ahmed, 2025). All of these values indicate moderate correlations, not extreme correlations ($>0.8-0.9$). Therefore, multicollinearity is unlikely to bias the coefficients severely. VIF values also support this.

4.4. Heteroskedasticity: Breusch-Pagan/Cook-Weisberg Test

Table 5 examines whether the variance of the error terms is constant across variables. The analysis generated a p-value of 0.0807. Therefore, we fail to reject the null hypothesis at the 5% significance level and conclude that this model satisfies the homoskedasticity assumption.

Table 5. Heteroskedasticity test values.

Test	Variable	H ₀	Chi ² (1)	Prob. > Chi ²
Breusch-Pagan/Cook-Weisberg test	Fitted values of AF	Constant error variance (homoskedasticity)	3.05	0.0807

Table 6. Regression Results of the Effects of Audit Committee Characteristics on Audit Quality

AF	Coef.	St. Err.	t-value	p-value	[95% Conf.	Interval]	Sig.
ACSize	0.362	0.188	1.92	0.056	-0.009	0.733	*
ACInd	0.522	0.274	1.90	0.059	-0.019	1.063	*
ACExp	0.267	0.183	1.46	0.146	-0.094	0.627	
ACMeet	-0.077	0.127	-0.61	0.543	-0.327	0.172	
ACGD	0.903	0.248	3.64	0	0.414	1.393	***
FSize	0.720	0.111	6.49	0	0.501	0.939	***
LEV	0.014	0.003	4.69	0	0.008	0.020	***
TobinsQ	-0.095	0.065	-1.47	0.144	-0.222	0.033	
FAge	0.141	0.146	0.97	0.334	-0.146	0.428	
Constant	-6.092	2.663	-2.29	0.023	-11.344	-0.840	**
Mean dependent var.	14.226			SD dependent var.		0.861	
R-squared	0.521			Number of obs.		238	
F-test	23.293			Prob. > F		0.000	
Akaike crit. (AIC)	385.120			Bayesian crit. (BIC)		418.252	

Note: *** p<0.01, ** p<0.05, * p<0.1.

4.5. Empirical Findings with Discussions: POLS Regression Method

4.5.1. Model 1: Direct Effects of AC Characteristics on Audit Quality

Table 6 identifies the impact of various AC characteristics on audit quality, proxied by audit fees (AF). The model remains highly significant, with a p-value of 0.000. Almost 52% of the variation in AF is explained by the independent variables in this model, as indicated by an R-square of 0.521. Therefore, the model has strong explanatory power. ACSIZE remains significant at the 10% ($p = 0.056$) level, with $\beta = 0.362$. Therefore, *H1 is accepted*, confirming that larger ACs are associated with higher audit fees, as they strengthen governance mechanisms through enhanced oversight, resulting in better audit quality (Bawuah, 2024; Karim et al., 2024; Mardessi, 2022).

Similarly, a positive relationship is found between ACInd and Audit Quality at the 10% significance level, and $\beta=0.522$. The presence of independent AC members can prevent earnings management, lead to better audit governance and accountability, and increase audit fees. Similar findings were previously reported by Algrady et al. (2025); Jamil and Wahyuni (2025); Karim et al. (2024); and Santonastaso et al. (2026). Therefore, *H2 is accepted*.

ACExp and ACMeet generated statistically insignificant results with p-values of 0.146 and 0.543, respectively. Thus, *H3 and H4 are rejected*. This finding contradicts Bawuah (2024), Naim (2025), Rahman (2024), and Sobhan et al. (2026), who found significant associations among these variables. However, Karim et al. (2024) highlighted that excessive unnecessary AC meetings may lead to inefficiency rather than to better audit performance.

Among the independent variables, ACGD shows the strongest and most positive ($\beta=0.903$) influence on audit quality. This result clarifies that female participation in the AC leads to a stronger voice for transparency and greater demands for rigorous governance. All of these factors translate into better audit quality with increased fees. This association was previously confirmed by Al Naim and Alomair (2025); Al-Jaifi (2020); Anisykurlillah et al. (2025); Handayati et al. (2025); Syahri, Meutia, and Widyastuti (2024); and Xiaohao, Rahmat, Waad, and Amin (2026). Thus, *H5 is strongly accepted*.

Among the control variables, FSize and Lev are positively and significantly associated with audit fees. Larger banks or highly leveraged banks usually involve operational complexity along with greater financial risks. These factors require auditors to perform extensive audit procedures and demand extra fees (Keka & Hoti, 2025; Saputra, Hakim, Wahjudi, Pratiwi, & Triani, 2024; Wahyuni, Sueny, Wahyu, & Fadewa, 2024). However, Tobin's Q and FAge do not show statistically significant results for AF. This suggests that, in our sampled banks, neither market valuation nor firm age statistically influences AF.

Table 7. Regression Results of the Effects of Audit Committee Characteristics on ESG Disclosure.

ESGD	Coef.	St. Err.	t-value	p-value	[95% Conf.	Interval]	Sig.
ACSize	0	0.03	0.00	0.997	-0.059	0.059	
ACInd	-0.001	0.044	-0.02	0.983	-0.087	0.085	
ACExp	0.005	0.029	0.16	0.872	-0.053	0.062	
ACMeet	-0.028	0.02	-1.40	0.163	-0.068	0.012	
ACGD	0.097	0.04	2.45	0.015	0.019	0.175	**
FSize	0.058	0.018	3.26	0.001	0.023	0.093	***
LEV	0.001	0	2.67	0.008	0	0.002	***
TobinsQ	-0.016	0.01	-1.58	0.115	-0.037	0.004	
FAge	-0.069	0.023	-2.96	0.004	-0.114	-0.023	***
Constant	-0.48	0.425	-1.13	0.26	-1.318	0.358	
Mean dependent var.		0.784		SD dependent var.		0.101	
R-squared		0.110		Number of obs.		238	
F-test		2.637		Prob. > F		0.007	
Akaike crit. (AIC)		-359.922		Bayesian crit. (BIC)		-326.790	

Note: *** p<0.01, ** p<0.05. It indicates significance at the 1% level, and 5% level.

4.5.2. Model 2: AC Characteristics and ESGD

Table 7 clarifies whether AC characteristics influence ESGD. This model also remains statistically significant with $p=0.007$. Moreover, the explanatory power of this model is also satisfactory, with an R-squared of 0.110. Surprisingly, ASize, ACInd, ACExp, and ACMeet do not have a statistically significant relationship with ESGD. This phenomenon in our study contradicts Arif, Sajjad, Farooq, Abrar, and Joyo (2021); Jamil and Wahyuni (2025); Metwally, Abdalla, Aly, and Ali (2025); Nurhandika, Manalu, and Rahimi (2025); Pernamasari and Chariri (2024); Pozzoli et al. (2022); Sahu et al. (2025) and Santonastaso et al. (2026). However, Pernamasari and Chariri (2024) found that AC independence and meeting frequency do not significantly influence ESG performance. Moreover, similar to our research, Masmoudi and Alsmady (2026) also found financial expertise in AC to be positively, but not statistically significantly, associated with ESG performance.

Most importantly, among the AC characteristics, only ACGD remains positively and significantly associated with ESGD ($\beta=0.097$) at the 5% level. Female members proactively advocate for better governance and transparency. A stronger ethical orientation and stakeholder sensitivity are commonly found in diversified ACs. Women's participation in ACs leads organizations to adopt sustainable operations and report them accordingly (Al Naim & Alomair, 2025; Alshdaifat, Amara, Ghardallou, & Hassanein, 2026; Amara et al., 2025; García-Sánchez, Suárez-Fernández, & Martínez-Ferrero, 2019; Syahri et al., 2024; Wong, 2024). Furthermore, our results also align with Handayati et al. (2025) and Xiaohao et al. (2026) because they indicate that ACGD with Women Audit Partners (WAP) is negatively associated with financial fraud potential and enhances sustainability performance. However, this association is not consistent with Hapsari and Ariefiara (2024), who found no impact of women on ACs on ESGD. The majority of the control variables remain significantly associated with ESGD. FSize and Lev have positive associations with $\beta=0.058$ and $\beta = 0.001$, respectively. Therefore, larger banks that rely on debt are more likely to pursue ESGD. Although Tobin's Q ($\beta=-0.016$) and FAge ($\beta=-0.069$) are negatively associated with ESGD, only FAge remains significant. Older firms disclose less ESG information because newer firms more actively respond to sustainability trends.

Table 8. Regression Results of the Mediating Role of ESG Disclosure in the Relationship between Audit Committee Characteristics and Audit Quality.

AF	Coef.	St. Err.	t-value	p-value	[95% Conf.	Interval]	Sig.
ACSize	0.362	0.186	1.95	0.053	-0.005	0.728	*
ACInd	0.523	0.271	1.93	0.055	-0.011	1.057	*
ACExp	0.261	0.18	1.45	0.149	-0.094	0.617	
ACMeet	-0.046	0.126	-0.37	0.715	-0.294	0.202	

ACGD	0.796	0.249	3.20	0.002	0.305	1.287	***
ESGD	1.105	0.445	2.48	0.014	0.227	1.983	**
FSIZE	0.656	0.113	5.83	0	0.434	0.878	***
LEV	0.012	0.003	4.20	0	0.007	0.018	***
TobinsQ	-0.077	0.064	-1.20	0.233	-0.203	0.05	
FAGE	0.217	0.147	1.48	0.141	-0.073	0.507	
Constant	-5.561	2.637	-2.11	0.036	-10.761	-0.361	**
Mean dependent var.	14.226			SD dependent var.		0.861	
R-squared	0.536			Number of obs.		238	
F-test	22.141			Prob. > F		0.000	
Akaike crit. (AIC)	380.702			Bayesian crit. (BIC)		417.147	

Note: *** p<0.01, ** p<0.05, * p<0.1. It indicates significance at the 1% level, 5% level, and 10% level.

4.5.3. Model 3: Mediation Regression

In this model, ESGD is introduced to examine whether it mediates the relationship between AC characteristics and audit quality, proxied by AF. Overall, this model remains highly significant at the 1% significance level with an R-squared value of 0.536. Notably, the explanatory power of this model has increased from the previous model (R-squared = 0.521). This implies that ESGD contributes to explaining variations in audit quality. ESGD remains statistically significant in this model at the 5% level. The positive coefficient value of $\beta = 1.105$ suggests that firms with higher sustainability disclosures incur higher audit fees. Therefore, improved audit quality is reflected in this relationship, as ESGD requires greater audit effort, increased attention to detail, and more extensive audit procedures.

ACSize and ACInd remain marginally significant at the 10% level. However, their coefficient values are almost unchanged compared with Model 1. Moreover, ASize and ACInd were not statistically significant in Model 2. This implies that there is no strong evidence that ASize and ACInd mediate the relationship. Therefore, *H6(a) and H6(b) are rejected*.

Moreover, ACExp and ACMeet yield statistically insignificant results in this model. Therefore, there is no evidence of mediation between these two variables, and thus, *H6(c) and H6(d) are rejected*.

Most importantly, in this model, ACGD remains highly significant at the 1% level. Though the coefficient value in Model 3 ($\beta = 0.796$) is slightly reduced from that in Model 1 ($\beta = 0.903$), ACGD significantly affected ESGD ($p = 0.015$, 5% significance level) in Model 2, while ESGD significantly affected audit quality ($p = 0.014$, 5% significance level) in Model 3. Therefore, it is confirmed that ESGD partially mediates the relationship between ACGD and audit quality. So, *H6(e) is accepted*. Control variable significance and direction of coefficients remain almost the same compared to those in the base Model 1. Table 9 presents the bootstrap results for the indirect effects of the variables, which evaluate the empirical distribution of resampled statistics to examine estimation bias, standard error, and confidence intervals.

Table 9. Bootstrap results.

	Observed	Bootstrap	Normal-based			
	Coefficient	Std. Err.	z	P> z	95% Conf. Interval	
Bootstrap_1	0.880	0.333	2.640	0.008	0.227	1.532

Number of obs. = 238; Replications = 5,000

4.5.4. Bootstrap Test of Mediation

Bootstrap analysis is conducted to clarify the mediating role of ESGD in the relationship between AC characteristics and audit quality. This analysis relies on a resampling technique that repeatedly draws samples from the original dataset to identify the indirect (mediation) effect and its significance. In the mediation analysis, this indirect effect clarifies the pathway through which a mediating variable influences the impact of the independent variable on the dependent variable (Hayes, 2022). In our analysis, 5,000 replications were performed to understand the mediating effect. This indirect effect is calculated in Table 9 based on the outcomes of two regression coefficients:

the effect of ACGD on ESGD from Model 2 and the effect of ESGD on audit quality from Model 3. In the bootstrap analysis, the mediation effect is considered significant if the confidence interval does not contain 0 (Hair, Hult, Ringle, & Sarstedt, 2022). Therefore, in our analysis, the indirect mediation effect of ESGD between ACGD and audit quality remains significant. Thus, the acceptance of *H6(e)* is justified. Table 10 summarizes the findings of the research and the decisions regarding whether the hypotheses are supported. The results illustrate the mediating role of ESG disclosures in determining the effect of audit committee characteristics on audit quality.

Table 10. Summary results.

Hypothesis	Key Findings	Decision
H1: AC size positively affects audit quality.	ACSize positively affects AF ($\beta = 0.362$, $p = 0.056$). Significant at the 10% level.	Supported
H2: AC independence positively affects audit quality.	ACInd positively affects AF ($\beta = 0.522$, $p = 0.059$). Significant at the 10% level.	Supported
H3: AC expertise positively affects audit quality.	ACExp positively affects AF ($\beta = 0.267$, $p = 0.146$) but remains statistically insignificant.	Not Supported
H4: AC meetings positively affect audit quality.	ACMeet negatively affects AF ($\beta = -0.077$, $p = 0.543$) and remains statistically insignificant.	Not Supported
H5: AC gender diversity positively affects audit quality.	ACGD positively affects AF ($\beta = 0.903$, $p < 0.01$). Strongest direct effect among AC characteristics.	Supported
H6 (a): ESG disclosure positively mediates the relationship between AC size and audit quality.	ACSize does not significantly affect ESGD ($p = 0.997$), and the coefficient remains unchanged after introducing ESGD.	Not Supported
H6 (b): ESG disclosure positively mediates the relationship between AC independence and audit quality.	ACInd does not significantly affect ESGD ($p = 0.983$), and the coefficient remains unchanged after introducing ESGD.	Not Supported
H6 (c): ESG disclosure positively mediates the relationship between AC expertise and audit quality.	ACExp does not significantly affect ESGD ($p = 0.872$) or AF.	Not Supported
H6 (d): ESG disclosure positively mediates the relationship between AC meetings and audit quality.	ACMeet does not significantly affect ESGD ($p = 0.163$) or AF.	Not Supported
H6 (e): ESG disclosure positively mediates the relationship between AC gender diversity and audit quality.	ACGD significantly affects ESGD ($\beta = 0.097$, $p = 0.015$); ESGD significantly affects AF ($\beta = 1.105$, $p = 0.014$); the bootstrap indirect effect is significant ($\beta = 0.880$, $p = 0.008$; CI $[0.227, 1.532]$).	Supported (Partial Mediation)

4.5.5. Summary of the Findings

Table 10 presents the proposed hypotheses, their findings, and decisions regarding those proposed hypotheses. H1, H2, and H5 are supported in this study, as audit quality is positively and significantly associated with audit committee size, independence, and gender diversity. Conversely, H3 and H4 are not supported, as audit committee expertise and meetings do not have any significant impact on audit quality. In the mediation analysis, H6(a), H6(b), H6(c), and H6(d) are not supported because ESGD does not mediate the relationship between audit committee size, independence, expertise, and meeting frequency and audit quality, whereas H6(e) is partially supported as ESGD mediates the relationship between a gender-diversified audit committee and audit quality.

5. CONCLUSIONS

The study clarified the role of AC characteristics in audit quality in the context of the banking industry in Bangladesh, a developing economy. The results confirmed an uneven role of AC attributes, as not all AC governance mechanisms influenced audit quality equally. Moreover, the model also incorporated the mediating role of ESG disclosures. AC size, independence, and gender diversity are positively and significantly associated with audit quality. Larger and independent committees incorporate broader and more diversified perspectives on audit matters. Reduced managerial influence leads to better monitoring and control by auditors, which results from their non-affiliation with

the auditing entity. However, our analysis did not show any significant relationship between AC expertise level and meeting frequency. Among the determinants of AC characteristics, gender diversity was found to be the most significant influencer of audit quality. Furthermore, the analysis showed that higher ESG transparency among the sampled firms demands more rigorous audit procedures. The inclusion of ESG factors in the second model improved the model's explanatory power. The mediation results clarified that AC gender diversity improves audit quality, as supported by the bootstrap results. Thus, gender-diverse ACs not only improve audit quality but also enhance ESG disclosure, which in turn further strengthens audit quality.

5.1. Implications

Organizations should actively promote greater female participation in AC. Regulatory bodies like the central bank or exchange commissions may introduce relevant legislation to promote such diversification. Frequent ineffective meetings or a lack of participation cannot generate meaningful outcomes for audit quality. Managers will be required to put more focus on ESG practices in corporations in both the operational and reporting aspects. Standardization of ESG reporting frameworks will bring consistency and improve comparability within industries. In summary, gender diversity in AC stands out as the most impactful, while ESG disclosure serves as a critical linking mechanism.

5.2. Limitations

The study is conducted only in the banking industry of Bangladesh, which is structurally and fundamentally different from other industries and economies. This may limit the generalizability of the findings. Another limitation of the study is that the extraction of data related to ESG disclosures was done through content analysis, as there is a lack of standardized frameworks in Bangladesh, and sustainability factors in this economy are still in a premature phase. Although content analysis is widely adopted in ESG-related research, the absence of a universally accepted disclosure framework may create variations in disclosure interpretation and measurement. Furthermore, audit quality is measured using audit fees as a proxy. Although such a proxy has been extensively used in prior literature, it may not fully capture all dimensions of audit quality, including audit effectiveness, outcomes, or reporting accuracy. The study also focuses on selected AC characteristics. Other governance factors such as board leadership structure, ownership concentration, institutional ownership, and internal control quality were not incorporated. These may provide additional insights into the determinants of audit quality.

5.3. Future Research Directions

Future research could consider some specific factors. Researchers may assess the mediating role of ESG in determining audit quality through the AC characteristics of various non-financial companies, as well as other types of companies across developed economies, to enhance the generalizability and validity of the findings. The quality and credibility of ESG may also be assessed rather than relying solely on its disclosure level, which would be more insightful. Longitudinal analysis will be effective in capturing how these relationships evolve over time. Further research may also be conducted by incorporating various governance factors, such as board characteristics, ownership structures, and gender diversity, that affect audit quality as mediated by sustainability reporting.

Funding: The authors received funding support for this study from Chandpur Science and Technology University, Bangladesh.

Institutional Review Board Statement: Not Applicable.

Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

Competing Interests: The authors declare that they have no competing interests.

Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

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Appendix A. ESGD Measurement.

Table A1 presents the ESGD indicators used in the study, categorized into Environmental, Social, and Governance dimensions (Clark, Feiner, & Viehs, 2015).

Table A1. ESGD Indicator.

Environmental (“E”)	Social (“S”)	Governance (“G”)
Biodiversity/Land use	Community relations	Accountability
Carbon emissions	Controversial business	Anti-takeover measures
Energy usage	Customer relations/ Product	Board structure/size
Raw material sourcing	Diversity issues	Bribery and corruption
Waste and recycling	Employee relations	CEO duality
Regulatory/legal risks	Health and safety	Executive compensation schemes
Supply chain management	Human capital management	Ownership structure
Waste and recycling	Human rights	Shareholder rights
Water management	Responsible marketing and R&D	Transparency
Weather events	Union relationships	Voting procedures

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