“The effect of executives’ attributes on environmental performance: Evidence from the Gulf Cooperation Council (GCC)”

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THE EFFECT OF EXECUTIVES' ATTRIBUTES ON ENVIRONMENTAL PERFORMANCE: EVIDENCE FROM THE GULF COOPERATION COUNCIL (GCC)

Abstract

Environmental reporting and corporate governance are considered focal points for corporate reputation and competitive advantage in the Gulf Cooperation Council (GCC) context. Therefore, this study aims to examine the effect of CEO attributes on corporate environmental performance using strong, balanced data from 90 listed firms in the Gulf Cooperation Council from 2018 to 2023. A fixed effects model and two-stage least squares were used to detect endogeneity and assess the robustness of our estimated model. The empirical results reveal that female leaders and CEO duality adversely affect environmental performance. In contrast, CEO experience positively impacts environmental initiatives, while CEO education and long tenure are not statistically significant. The findings also conclude that large firms are more likely to engage in environmental activities, while profitable firms are more likely to exacerbate corporate environmental issues. This study contributes to the extent literature by providing empirical evidence from developing countries and demonstrating the strategic role of CEO qualities in shaping the environmental pillar of sustainable development through mitigating risks of CEOs' entrenchment and strengthening board oversight and corporate decisions regarding ESG performance. The insights can benefit regulators and policymakers to optimize their future sustainable development and to undertake environmentally responsible action.

Keywords female executives, dual leadership, long tenure, environmental performance

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INTRODUCTION

Environmental practices have become significant and a tipping point for corporations to reinforce their reputation and performance globally. Environmental practices are encouraged by the attention of large corporations and their stakeholders' interests (Liakh & Spigarelli, 2020). Recently, most corporate managers have started to incorporate sustainability issues in their strategic action plans in order to gain profits and a competitive advantage (Almaqtari et al., 2024). The significance of environmental initiatives on global businesses is substantial, including corporate value and company reputation (Yoo, 2025). Undoubtedly, sustainability pillars have become crucial for building investors' trust to attain more profits.

Board oversight and sustainability issues are considered priorities for executives to incorporate into their goals and decision-making. Chief Executive Officer (CEO) attributes such as gender and experience have gotten a lot of attention from research scholars because CEOs have authority in making decisions for business activities,

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including environmental practices (Difitri & Wijayanti, 2025). Indeed, such a relationship has received limited attention from research scholars, particularly in developing countries such as the Gulf Cooperation Council (GCC).

These countries are a significantly interesting case because the nexus between CEO qualities and ESG metrics is unique and not merely addressed in the GCC. Thus, the majority of businesses in the GCC are classified as family-owned and resource-intensive companies, and they control more than 20% of oil and natural gas reserves globally (ElMassah & Hassanein, 2023). Moreover, these countries are heavily reliant on fossil fuel industries, posing environmental challenges (Elalfy et al., 2025). They face profound corporate obstacles and climate change threats in implementing their sustainable strategic plans. They face variability in environmental, social, and governance practices across sectors and a lack of standardized regulations that hinder corporate sustainability efforts (Driver & Elalfy, 2023). This motivates the GCC to undergo a meaningful transformation toward sustainable environmental practices, driven by visionary initiatives such as the UAE Green Agenda 2030.

However, in the GCC, the influence of executives' attributes on environmental practices remains insufficiently understood. This study therefore examines how CEO characteristics (female leader, duality, education, tenure, and experience) shape environmental performance in the GCC context.

1. LITERATURE REVIEW AND HYPOTHESES

Research on corporate sustainability has recognized and demonstrated the three pillars of sustainability as the triple bottom line: Environmental, Social, and Governance (ESG). Hence, the environmental pillar has challenged managers to pay more attention to this issue in response to stakeholders' expectations, corporate reputation, and governance practices. Therefore, three relevant theories primarily link CEO attributes and sustainability performance.

Upper Echelons Theory (UET) was initially developed by Hambrick and Mason (1984) and consequently extended by Hambrick (2007). This theory focuses on the relationship between the demographic attributes of CEOs and managerial decisions. This theory posited that CEOs' attributes and their behavior can shape decision-making and significantly affect a company's future plans and profits (Mukherjee & Sen, 2022). CEO attributes (gender, education, experience, and tenure) affect managerial decisions and ultimately shape corporate value and environmental performance (Velte, 2026; Gupta & Mahakud, 2020).

With respect to the agency perspective, Jensen and Meckling (1976) delineate a separation between company ownership and managerial executives. This separation may create potential conflicts between shareholders and managers (Fama & Jensen, 1983). Therefore, corporate governance mechanisms are critical for promoting a company's accountability and board effectiveness. In ESG contexts, CEOs may feel discouraged from investing in sustainability pillars unless controlled by the board of directors or motivated by stakeholders (Petrenko et al., 2016). Thus, CEO personal traits such as CEO duality might weaken board oversight and increase agency costs, thereby leading to reduced ESG performance (Arici et al., 2024).

According to stakeholder theory, firm value creation is not only for shareholders but also for all stakeholders, including environmental concerns (Freeman, 1984). Indeed, this theory posited that corporate goals should align with stakeholders' interests. Liberal CEOs with stakeholder-oriented values strongly support environmental reporting (Chin et al., 2013). CEOs who conflict with stakeholders' interests are less supportive of ESG performance (Petrenko et al., 2016). Accordingly, CEOs' attributes aligned with stakeholders' interests are more likely to participate in environmental activities (Freeman, 1984).

CEO gender diversity is recognized as a critical factor of ESG performance (Huang et al., 2025). Therefore, the presence of a female leader can significantly shape corporate decisions regarding

environmental practices (Mansour et al., 2024). Previous literature acknowledged the robust positive connection between female CEOs and sustainability issues (Lu & Wang, 2021; Pucheta-Martínez et al., 2019). For instance, Khan et al. (2020) report that female leaders exhibit societal attributes and are more interested in environmental issues than males. Furthermore, Almaqtari et al. (2024) argue that female CEOs can enhance environmental performance through emphasizing green innovation and social activities. From an agency perspective, female leaders often enhance ESG performance in alignment with stakeholders' interests (Gavana et al., 2025). They can mitigate conflict of interest between stakeholders and the executive committee through improving ESG accountability and transparency (Fernández-Méndez et al., 2025). By contrast, Sumarta et al. (2021) reveal that female executives have not affected environmental performance.

CEO duality represents the dual leadership structure of a company and occurs when one person simultaneously holds the position of chief executive officer and chair of the board (Yu, 2023). Thus, the CEO's responsibilities include reporting on and overseeing all managerial activities in the company (Francoeur et al., 2021). Under an agency perspective, a CEO who occupies the position of chair of the board may misuse his corporate power to achieve his personal interests (Jensen & Meckling, 1976). Therefore, prior studies have argued that dual leadership is less supportive than single leadership in environmental practices, thereby threatening corporate legitimacy (Peng & Zhang, 2022; Lu & Wang, 2021; Arayssi et al., 2020). Conversely, Almaqtari et al. (2024) report that CEO double position positively affects environmental performance and substantially enhances sustainable development. Similarly, Khan et al. (2020) argue that the dual role of CEO positively impacts sustainability pillars.

Corporate boards are interested in appointing CEOs with high qualifications and experience (King et al., 2016). CEOs with higher education significantly contribute to improving corporate skills and knowledge, which can improve corporate decisions and firms' growth (Nguyen & Fan, 2022; Wang et al., 2022). In this sense, Cahyono et al. (2024) report that more highly educated CEOs are more inclined to engage in environmental activities and climate change. Moreover, Zhou et al. (2021) affirm that highly educated CEOs are more likely to push the company toward environmental innovations. In developing countries, CEOs with an educational background are likely to participate in corporate activities that support environmental initiatives (Oyinlola, 2025; Khalid et al., 2022; Shahab et al., 2019; Amore et al., 2019).

Consistent with echelon theory, the CEO' life cycle is considered an important attribute of CEO personal traits (Hambrick & Mason, 1984). The longevity of the CEO position significantly affects corporate decisions (Khan et al., 2020). In this sense, long-serving CEOs have the ability to make effective corporate decisions and transform their business in the right direction (Ghardallou, 2022). The majority of prior studies provide a positive association between CEO long tenure and sustainability pillars (Xu et al., 2022; Saha et al., 2023; Lu & Wang, 2021). Moreover, recent studies from developed countries affirm that CEO longevity positively affects environmental performance (Bai et al., 2025; Nashilyo et al., 2024; Al-Najjar & Abualqumboz, 2024).

CEO experience is the accumulated knowledge, skills, and leadership exposure that executives gain over time in the workplace (Sang et al., 2024). This demographic factor can critically shape the value and managerial decisions that guide company strategic plans (Hambrick & Mason, 1984). That is, CEOs with long life experiences are more likely to participate in sustainability issues (Liu & Hooy, 2025). Previous studies have confirmed that the relationship between CEO experience and environmental performance is significant and positive (Zhang et al., 2025; Shahab et al., 2019). By contrast, Khan et al. (2020) reveal that CEOs with long experience are often resistant to new changes and reduce the depth of environmental practices.

Building on the earlier evidence, this study aims to examine the influence of CEO attributes on environmental performance in the Gulf Cooperation Council (GCC). Thus, the proposed research hypotheses are as follows:

H_1: CEOs' gender diversity positively affects environmental performance in the GCC context.

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H_2: CEOs with dual positions negatively affect environmental performance in the GCC context.

H_3: Educated CEOs positively affect environmental performance in the GCC context.

H_4: CEOs with long tenure positively affect environmental performance in the GCC context.

H_5: CEOs' experience positively affects environmental performance in the GCC context.

2. METHODOLOGY

This study employs a quantitative approach to examine the impact of CEO qualities on environmental performance. Thus, we use balanced panel data collected from the Gulf Cooperation Council (Saudi Arabia, Qatar, Kuwait, Bahrain, Oman, and the United Arab Emirates), covering 90 listed firms from 2018 to 2023. Therefore, data processing and filtering were conducted based on the following criteria:

1) we excluded the banking and insurance sectors due to their natural activities and different financial records;

2) the sample comprised 90 listed firms that periodically report their ESG scores in these countries;

3) companies with missing values were excluded to attain strong balanced panel data and to ensure consistency of data through the estimated models.

Consequently, our empirical analysis is based on strongly balanced panel data (T = 6, N = 90, yielding 540 observations). Hence, data were collected from the Refinitiv Eikon Database, which offers accessible data of ESG metrics for corporations worldwide.

The dependent variable is environmental performance measured as a score ranging from 0 to 100. Importantly, this indicator is calculated by Refinitiv Eikon Thomson Reuters for each company. Accordingly, the environmental practices of each company include emissions, green innovation, and resource efficiency (Al-Shaer et al., 2022; De Masi et al., 2022).

The explanatory (independent) variables consist of CEO attributes. CEO gender diversity (CGD), which represents the female leader who holds the CEO position (Aabo et al., 2024), is measured by 1 if the CEO is female and 0 otherwise (Huang et al., 2025). CEO duality (DUAL) refers to a person who simultaneously holds two positions: CEO and chair of the board (Lopatta et al., 2022), coded as 1 if the company has dual leadership and 0 otherwise (Mahran & Elamer, 2024). CEO education (EDUC) is measured with a dummy variable: 1 if the CEO holds a Bachelor's degree, 2 if a Master's degree, and 3 if a Ph.D. (Amore et al., 2019). CEO tenure (TENU) refers to the life-cycle position of the CEO, measured by the number of years the executive manager holds the CEO position (Saha et al., 2023). CEO experience (EXPE) indicates the number of years that CEOs have worked at a particular company (Nashilyo et al., 2024), measured as 1 if CEO experience is greater than 10 years and 0 if less than 10 (Sang et al., 2024). As for control variables, we include firm size (SIZE), calculated as the natural logarithm of total assets (Xu et al., 2022), and return on assets (ROA), measured as net profits divided by total assets (Pucheta-Martínez et al., 2019). Table 1 presents a summary of variable measurements.

With respect to data processing, we conducted panel data regression using a fixed-effects model to detect heteroscedasticity at both the firm and time-series levels. For further analysis, we deployed Two-Stage Least Squares (2SLS) and Heckman's model as instrumental variable approaches in order to control for causality effects and mitigate endogeneity issues. We also use ESG score as an alternative variable measurement to ensure the robustness of our findings.

To test the research hypotheses, we estimate the following regression model:

$$\begin{aligned} ENVIR_{it} &= \beta_0 + \beta_1 CGD_{it} + \beta_2 DUAL_{it} \\ &+ \beta_3 EDUC_{it} + \beta_4 TENU_{it} + \beta_5 EXPE_{it} \\ &+ \beta_6 SIZE_{it} + \beta_7 ROA_{it} + \varepsilon_{it}, \end{aligned} \quad (1)$$

where $ENVIR_{it}$ refers to environmental scores that measure the environmental performance of each firm *i*. CGD_{it} indicates the presence of a woman

Table 1. Variable's measurement

Variable	Abbreviation	Type	Measurement
Environmental score	ENVIR	Dependent	Environmental score ranging between 0 and 100 for each company
CEO gender diversity	CGD	Independent	Female director holds CEO position = 1, and otherwise = 0
CEO duality	DUAL	Independent	The double position of CEO in a particular company. Dual = 1 and Single = 0
CEO qualification	EDUC	Independent	The academic certificate that was awarded to the CEO out of the three levels of education
CEO Tenure	TENU	Independent	Number of years that the CEO has worked in the CEO position
CEO experience	EXPE	Independent	Number of years of working experience of the CEO
Firm size	SIZE	Control	The natural logarithm of total assets for a particular company
Profitability	ROA	Control	Net profits from total assets for a company

executive in the CEO position. $DUAL_{it}$ implies the CEO duality. EDU_{it} denotes the CEO educational level. $TENU_{it}$ represents the long-life cycle of the CEO. $EXPE_{it}$ stands for CEO experience. The control variables are $SIZE_{it}$ (firm size) and ROA_{it} (return on assets). t represents the fiscal year, and ε_{it} is the residual error term. Thus, using the Hausman specification test, the fixed effects model (FE) is the best model for panel data estimation.

3. RESULTS

Table 2 summarizes the statistical results for the variables, including the mean, standard deviation, maximum, and minimum values. Firms in the GCC region have an average environmental reporting score of 22.9%, with a maximum of 88.5% and a standard deviation of 22.2%, indicating that the overall level of listed firms' fulfillment of their environmental responsibilities is relatively low. Moreover, this score is relatively low compared to the average environmental score in developed countries; for instance, Schoonjans (2024) found a mean value of 48.25% in Europe. The average percentage of females that hold CEO positions is 13.5% and deviated by 34.2%, implying that the majority of CEOs (89.6%) who hold CEO positions are males; however, the remaining ratio is females. On the other hand, the average score of CEO education is 1.12 and largely deviated by 30% across GCC countries. This result indicates that most CEOs and managers held an undergraduate degree (B.A.). The CEO dual role has a mean value of 32.2% and is largely deviated by 46.8%. This ratio is relatively high compared to CEO duality of listed firms in EU markets, where the prevalence ranges from 10% to 25% (La Rocca et al., 2024). The mean CEO tenure is 3.13 years, suggesting that CEOs serve less than 3.5 years after appointment to the company. The average CEO experience is 31.1%, implying that 31.1% of CEOs in GCC have experience of more than 10 years.

Table 2. Summary statistics

Variable	Obs.	Mean	Std.	Max	Min
ENVIR	540	0.229	0.222	0.885	0
CGD	540	0.135	0.342	1	0
DUAL	540	0.322	0.468	1	0
EDUC	540	1.121	0.301	3	1
TENU	540	3.133	1.859	8	1
EXPE	540	0.310	0.458	1	0
SIZE	540	10.28	0.959	12.68	7.67
ROA	540	0.045	0.077	0.920	–0.521

Table 3 presents a correlation coefficient matrix of research variables. The results of the Pearson correlation test provide significant evidence of the absence of collinearity among CEO attributes. The highest correlation among explanatory variables was 0.249 between CEO gender diversity and ROA. In addition, the Variance Inflation Factor (VIF) was tested to ensure that the estimated model was free from multicollinearity. The VIF of this model had a mean value of 1.26, indicating that there was no collinearity among regressors. These results indicate that CEO attributes such as CEO education and experience were positively correlated with environmental performance.

On the other hand, this study checked the primary assumption tests for panel data regression in order to avoid heteroscedasticity and serial autocorrelation among explanatory variables. As for homogeneity, the Cook–Weisberg test was performed

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Table 3. Correlation coefficients and collinearity

Variable	VIF	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) ENVIR	–	1							
(2) CGD	1.16	0.047	1						
(3) DUAL	1.11	0.012	0.168**	1					
(4) EDUC	1.16	0.132**	0.077	0.125**	1				
(5) TENU	1.02	–0.033	–0.070	–0.064	0.017	1			
(6) EXPE	1.84	0.298**	0.082	–0.201**	–0.047	–0.012	1		
(7) SIZE	1.03	–0.079	–0.055	0.084–	0.048	0.068	–0.052	1	
(8) ROA	1.10	0.141**	0.249**	–0.013	0.031	0.028	0.145**	–0.088*	1
Mean VIF	1.26								

Note: * p < 0.05; and ** p < 0.01.

to assess how the variance among variables behaves (Goldstein, 1993). The result (X^2 (1) = 12.2, $p < 0.000$) shows the variance among the variables was not constant. This result indicates that the panel data were not homogeneous. As for autocorrelation, the Wooldridge test was conducted to assess serial autocorrelation in our panel data model (Wooldridge, 2002). Thus, the *p*-value was 0.197, which is greater than 0.05; therefore, the null hypothesis was accepted. This provides evidence of the absence of serial autocorrelation in our estimated model.

Table 4 depicts the results of the fixed effects model. Hence, this study runs a Hausman specification test to check which model was the best (fixed effects or random effects) in panel data analysis (Hausman, 1978). The result from the Hausman test (X2 (8) = 33.72, $p = 0.000$) shows that the *p*-value was lower than the significance level of 0.01. This underscores that the fixed-effects technique is more appropriate for estimating our research model.

Our results show that female executives have a negative and significant effect on environmental reporting (β = –0.105, $p < 0.05$). Thus, this result does not support H_1. A possible explanation for this result is that GCC corporate leadership is dominated by male-driven and female CEO facing limited authority and influence on strategic decisions (symbolic). Moreover, lower female leaders who hold the CEO position weaken their ability to engage in environmental issues. Conversely, this argument is contrary to prior research (Tran & Pham, 2020), which supports the idea that CEO women are more oriented toward participation in environmental issues than men.

The coefficient of CEO duality is negative and has a significant effect on the environmental pillar of ESG reporting in the GCC (β = –0.036, $p < 0.01$). Therefore, this finding supports H_2, suggesting that dual leadership is less likely to support environmental performance. This finding is consistent with the results of prior research (Peng & Zhang, 2022; Lu & Wang, 2021; Arayssi et al., 2020), which affirm that dual leadership is less supportive of environmental reporting and undermines the company's corporate legitimacy.

CEO education has a negative and insignificant effect on environmental reporting (β = –0.021, $p < 0.05$). This result does not support H_3, implying that more highly educated CEOs will not engage in environmental reporting. This outcome is in conflict with Cahyono et al. (2024), Zhou et al. (2021), and Amore et al. (2019), who validate that educated CEOs are more likely to participate in environmental innovations. The finding underlines that the CEO's long tenure exerts a positive and significant effect on ENVIR (β = 0.006, $p < 0.05$). This result supports H_4, suggesting that the long-life cycle of the CEO is likely to improve environmental contributions. This argument is in line with previous research (Al-Najjar & Abualqumboz, 2024; Saha et al., 2023), which supports a positive nexus between CEO long tenure and environmental practices. Consequently, CEO longevity allows firms to receive positive advantages, including correct corporate decisions (Ghardallou, 2022), and serve sustainability and green innovation (Xu et al., 2022).

The coefficient of CEO experience is positive and has a significant effect on ENVIR (β = 0.063, $p <$ 0.01). Thus, this finding strongly supports H_5, in-

Table 4. The impact of CEO attributes on environmental performance

Model (ENVIR)	Coefficient	Std. error	t-statics	p < |t|	Sig.
CGD	–0.105	0.047	–2.23	0.026	*
DUAL	–0.036	0.012	–2.93	0.004	**
EDUC	–0.021	0.023	–0.88	0.308	
TENU	0.006	0.003	2.30	0.024	*
EXPE	0.063	0.012	5.15	0.000	**
SIZE	0.089	0.017	5.20	0.000	**
ROA	–0.275	0.087	–3.17	0.002	**
Intercept	–0.664	0.179	–3.71	0.000	**
Year dummy	Yes				
Industry dummy	Yes				
R-squared	0.214				
F statistics/Prob.	17.23 (0.000)				**
N*T (Obs.)	540				
Hausman (Chi2/ Prob.)	33.72 (0.000)				**

Note: * p < 0.05; and ** p < 0.01. N = 90; and T = 6.

dicating that CEOs with high expertise are more likely to support environmental initiatives. This argument theoretically supports upper echelons theory (Hambrick & Mason, 1984), which posits that CEOs with long experience are important in executing corporate and environmental policies. Additionally, our finding is consistent with prior research (Sang et al., 2024; Shahab et al., 2019), which argues that companies are more likely to report their environmental contributions when CEOs have long periods of experience. Lastly, regarding our control variables, Table 4 shows that large firms increase environmental contributions in the GCC. However, highly profitable firms in the GCC are less likely to engage with environmental issues.

To validate our results, we deploy two important robustness checks. First, we conduct additional analysis to check the robustness of our research model by predicting the triple bottom line of sustainability (ESG) instead of environmental reporting (ENVIR). We applied the same CEO characteristics and control variables as in our initial regression models. As reported in Table 5, the robustness test shows no substantial changes relative to the earlier fixed-effects results. Despite this, there are some deviations in the coefficients, standard errors, and *t*-values. But *p*-values remain significant and the directional signs unchanged. This provides evidence that our original results are still valid and robust across all estimations.

Table 5. Robustness test (ESG as alternative variable measurement)

Model (ESG)	Coefficient	Std. error	t-statics	p < |t|	Sig.
CGD	–0.118	0.054	–2.18	0.030	*
DUAL	–0.041	0.014	–2.92	0.004	**
EDUC	–0.022	0.027	–0.83	0.407	
TENU	0.007	0.003	2.32	0.021	*
EXPE	0.063	0.014	5.20	0.000	**
SIZE	0.102	0.019	5.19	0.000	**
ROA	–0.319	0.100	–3.19	0.002	**
Intercept	–0.766	0.206	–3.71	0.000	**
Year dummy	Yes				
Industry dummy	Yes				
R-squared	0.215				
F statistics/Prob.	17.27 (0.000)				**
N × T (Obs)	540 (N = 90 × 6 years)				
Hausman (Chi2/Prob)	40.40 (0.000)				**

Note: ESG refers to Environmental, Social, and Governance score. * p < 0.05; and ** p < 0.01.

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Second, we mitigate endogeneity bias by controlling for unobservable heterogeneity in panel data estimates. Thus, we employed Two-Stage Least Squares (2SLS) to detect the risk of endogeneity and to ensure that explanatory variables are exogenous and isolated from the error term to obtain robust and reliable estimates (Khatib, 2025). In addition, we use Heckman's estimator (two-step) to address endogeneity arising from sample selection bias by using Probit regression and the Inverse Mills ratio to confirm our estimates (Heckman, 1979). The results of 2SLS are reported in Table 6. Our findings reveal a significant negative effect of CEO gender diversity and dual leadership on environmental reporting. Meanwhile, CEO experience has a significant and positive effect. These findings are consistent with the results of the fixed effect model as reported in Table 4. The endogeneity test confirms the reliability of our results; Heckman selection of two-stage estimation provides evidence that instrumental variables are strong (Wald chi2 = 66.5, $p < 0.01$) and the lambda/Mills ratio is not significant ($p = 0.749$), indicating that our panel data do not suffer from selection bias or endogeneity problems. Table 6 shows Heckman's estimation results, which validate our earlier findings.

4. DISCUSSION

The findings confirm that CEO characteristics are a tipping point for environmental performance in the GCC. The existence of female executives was associated with lower environmental initiatives. Male-driven power limits female leaders, making their authority just tokenism in environmental issues (Kanter, 1977). This evidence is supported by prior evidence arguing that female CEOs are less likely to participate in environmental activities under high-uncertainty circumstances (Huang et al., 2025). By contrast, our research findings conflict some studies (Khan et al., 2020; Lu & Wang, 2021; Tran & Pham, 2020), which support the positive association between CEO gender diversity and sustainability pillars.

The relationship between CEO duality and environmental engagement is also significantly nega-

Table 6. Endogeneity check (Instrumental variable approaches)

Model	Two-stage Least Squares (2SLS)		Heckman's selection model	
	Coefficient	z-statics	Coefficient	z-statics
CGD	−0.050	1.86*	−0.049	1.82*
		(0.063)		(0.069)
DUAL	−0.040	2.05**	−0.041	1.96**
		(0.040)		(0.049)
EDUC	−0.033	−1.10	−0.033	−1.08
		(0.272)		(0.280)
TENU	−0.003	−0.62	−0.003	−0.57
		(0.533)		(0.569)
EXPE	0.131	6.42***	0.132	6.08***
		(0.000)		(0.000)
SIZE	−0.016	−1.66 *	−0.015	−1.58
		(0.097)		(0.114)
ROA	0.277	2.34 **	0.276	2.31**
		(0.019)		(0.021)
Intercept	0.381	3.66***	0.378	3.35***
		(0.000)		(0.001)
Year dummy	Yes		Yes	
Industry dummy	Yes		Yes	
R-squared	0.111			
Wald chi2 (7)	67.80 ***		66.56**	
	(0.000)		(0.000)	
Obs	540		538 (selected)	
Lambda (λ)/Mills			0.121	0.320
				(0.749)

Note: p-values are in parentheses. The levels of significance are * p < 0.1; ** p < 0.05; and *** p < 0.01.

tive. Dual leadership power concentration under weak board accountability tends to undermine environmental concerns. This result is aligned with the agency perspective, which posited that CEO dual role potentially weakens board oversight and reduces participation in environmental activities (Jensen & Meckling, 1976). Several outcomes from previous studies are consistent with our research findings (Arici et al., 2024; Arayssi et al., 2020; Peng & Zhang, 2022; Lu & Wang, 2021), which argue that CEOs with dual positions give low priority to environmental issues.

With respect to CEO education, this paper finds that educated CEOs in the GCC did not affect environmental practices. ESG actions are driven by family-owned and institutional pressures, not by the CEO academic degree. This argument is consistent with Katsikas et al. (2024), who argue that the level of education does not influence ESG practices. By contrast, this finding contradicts many prior works (Oyinlola, 2025; Cahyono et al., 2024; Zhou et al., 2021), which affirm that CEO educational background is positively related to environmental performance.

The robustness result provides evidence that a long life cycle of the CEO did not affect ENVIR. This finding could be explained by the fact that environmental decisions are usually shaped by family ownership and government mandates. This evidence is inconsistent with prior studies (Xu et al., 2022; Lu & Wang, 2021; Khan et al., 2020), which strongly support the nexus between CEO tenure and environmental performance. In contrast, this argument conflicts with the upper echelons theory, which posits that CEO long tenure is more likely to monitor corporate activities, including environmental reporting (Hambrick & Mason, 1984). Moreover, this finding is contrary to recent literature (Bai et al., 2025; Liu & Hooy, 2025; Zhang et al., 2024; Nashilyo et al., 2024), which validates that CEO tenure is positively related to environmental performance.

CEO experience displayed a strongly positive influence on environmental performance in the GCC context. Experienced CEOs have gained great credibility from the board and are often focused on firm legacy and reputation that usually come from participating in environmental activities. This finding is aligned with previous studies (Liu & Hooy, 2025; Sang et al., 2024), which argue that executives with high experience have greater exposure to environmental activities, thereby leading to increased accountability and transparency of ESG reporting.

CONCLUSION

This study aimed to examine the impact of executives' attributes on environmental performance in the Gulf Cooperation Council (GCC) between 2018 and 2023. The empirical analysis showed that female leaders negatively impact environmental issues. Moreover, CEOs' dual role negatively affects environmental issues, suggesting that dual leadership diminishes GCC firms' engagement in environmental initiatives. Therefore, this conclusion strongly aligns with the agency perspective, which posited that CEO duality may have entrenched power that reduces transparency and accountability of environmental practices. By contrast, higher CEO experience was linked to greater credibility of the board, resulting in higher environmental engagement. This result is consistent with stakeholder theory, which argues that experienced CEOs have the ability to convey a signal of competence to their stakeholders and strategically enhance voluntary environmental reporting.

These findings highlight the need to strengthen board oversight by separating the CEO position from the chair of the board in order to encourage ESG performance. Regulators in GCC firms should focus on ensuring accountability for environmental issues to mitigate conflicts of interest and to maintain corporate goals aligned with stakeholders' interests. Thus, the board must nominate qualified female CEOs to legitimize their environmental practices. Lastly, the board of directors should have a specialized environmental committee, in addition to experienced CEOs, to execute sustainability goals and turn CEOs' intentions into green innovation and climate change. Therefore, the board of directors

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should make sure that the environmental committee is empowered with autonomy and regulatory authority to have an impact on corporate sustainability reporting.

Despite these significant findings, some limitations should be considered. First, the scope of this study is limited to the listed firms in the GCC, which restricts the generalizability of our results to other capital markets. Thus, future research could extend this analysis by applying panel data regression to additional datasets from other emerging markets, such as the Middle Eastern countries. Second, comparative studies across economies in emerging markets and Europe may yield deeper insights into the executives' personal traits, and it can be useful in developing ESG metrics and sustainable development.

AUTHOR CONTRIBUTIONS

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