

# Gender diversity as a catalyst: enhancing corporate governance and environmental disclosures in Namibia

Longane Bhebhe – Mwelasi

Longane Bhebhe – Mwelasi is based at the Department of Finance and Information Management, DUT, Pietermaritzburg, South Africa.

## Abstract

**Purpose** – Drawing on a multi-theoretical framework that integrates stakeholder, resource dependence and gender difference theories, this study aims to investigate the mediating role of board gender diversity in the relationship between corporate governance and environmental disclosure.

**Design/methodology/approach** – This study uses a quantitative research design using a data set of 273 financial statements from 2017–2023, sourced from listed companies in Namibia via the Bloomberg database. The mediation analysis uses the established Baron and Kenny (1986) method, providing deeper insights into the mediating role of board gender diversity in the relationship between corporate governance and environmental disclosure practices. A two-step system generalised method of moments estimator is used to address potential endogeneity, and bootstrapping is used to validate the significance of the mediation effect.

**Findings** – The mediation analysis reveals that board gender diversity serves as a significant partial mediator in the relationship between corporate governance and environmental disclosure. While the direct effect of governance remains strong and dominant, the presence of women on boards acts as a critical conduit that reinforces the influence of structural governance on environmental disclosure.

**Originality/value** – This study highlights how board gender diversity mediates the relationship between corporate governance and environmental disclosure, emphasising the interplay among stakeholder theory, resource dependence and gender-difference perspectives under institutional pressures such as the NamCode and the zebra quota system.

**Keywords** Gender diversity, Corporate governance, Environmental disclosure, Namibia, Sustainable business practices

**Paper type** Research paper

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## 1. Introduction

A past study reveals that the presence of even a single female board member can significantly influence decision-making, especially in traditionally male-dominated settings (Bennouri *et al.*, 2020). There has been considerable debate about women's involvement in sustainability-related issues (Kilincarslan *et al.*, 2020; Agyemang *et al.*, 2020; Rouf and Al-Faryan, 2022). Firstly, female directors tend to be more stakeholder-oriented (Dhaliwal *et al.*, 2014). Therefore, their participation enhances the board's ability to comprehend and address the diverse interests of various stakeholder groups. Secondly, research reveals that men and women may take distinct approaches to sustainability (Ekundayo and Onefeli, 2023; Aabo and Giorici, 2023). Corporate governance disclosure is a critical aspect of non-financial reporting, involving the timely and accurate dissemination of information regarding a corporation's governance performance, which in turn influences other non-financial disclosures (Brogi and Lagasio, 2025). Given these features, Namibia provides a unique institutional context to examine how soft-law governance mechanisms operate in practice,

particularly through the NamCode, the country's corporate governance code that sets out "comply or explain" principles guiding responsible leadership and governance in companies (Dikuua *et al.*, 2024). At the same time, the zebra quota system, introduced in the political sphere to ensure equal gender representation by alternating male and female candidates on party lists, creates broader normative pressure for gender equality in corporate boards (Amupanda and Thomas, 2019). Against this backdrop, this institutional landscape offers a useful lens through which to analyse the intersection of corporate governance, environmental disclosure and board gender diversity.

Corporate governance disclosure is a critical pillar in the corporate world, significantly influencing environmental and social disclosures (Mirza *et al.*, 2024). By disclosing governance practices, companies enable shareholders to monitor management actions and hold them accountable, which is essential for good governance (Lemos *et al.*, 2022). Studies have shown that corporate governance attributes have a positive influence on environmental disclosure (Wahyuningrum *et al.*, 2025; Brogi and Lagasio, 2025). This study examines the conceptual relationship between structural governance frameworks informed by stakeholder theory and board dynamics rooted in resource dependence and gender difference theories, evaluating whether these societal norms catalyse and promote improvements in environmental reporting (Del Gesso and Lodhi, 2025). The following rationale underpins this focus: firstly, research by Naeem *et al.* (2022) indicates that gender-diverse boards bring diverse viewpoints, enhancing decision-making processes. Secondly, to build on previous studies, such as McKinsey (2020), which investigated the impact of gender diversity at work, this study underlines the importance of an inclusive atmosphere in which different opinions are recognised and used. The research found that organisations with gender-diverse boards outperform those with less diversity by 21%. This diverse perspective can significantly influence how boards address various issues, including environmental concerns (Aabo and Giorici, 2023). Finally, studies show that female directors often emphasise ethical considerations and corporate social responsibility more than their male counterparts (Agyemang *et al.*, 2020).

The Namibian corporate governance code, NamCode, emphasises the board's pivotal role in guiding companies towards sustainable and responsible practices (Dikuua *et al.*, 2024). Achieving gender balance within these crucial decision-making bodies remains an ongoing challenge. Societal and cultural preconceptions about women's roles in the workplace have historically hindered progress towards gender equality in professional settings across many African contexts, including Namibia (Ananias *et al.*, 2023; Kilincarslan *et al.*, 2020; Cicchiello *et al.*, 2021). Recognising the importance of diverse perspectives in governance, the Namibian government has taken proactive steps to enhance female representation in leadership. Notably, initiatives such as the "zebra quota" in the House of Assembly, which mandates alternating representation of women and men and requires a 30% quota for women in local administration, signify a commitment to embedding gender diversity within public governance structures (Amupanda and Thomas, 2019). While primarily in the public sector, these measures signal an evolving national consciousness that is also pertinent to corporate boardrooms, as principles of good governance increasingly advocate for diverse and representative leadership to ensure comprehensive oversight and align with stakeholder expectations for equitable and effective organisations.

Gender-diverse boards are associated with improved reporting practices and increased accountability (Bravo and Reguera-Alvarado, 2019; Khaireddine *et al.*, 2020). Investigating gender diversity as a mediator helps provide a more nuanced view of governance dynamics and environmental practices. This exploration also contributes to the expansion of governance theories by illustrating the impact of gender diversity on environmental reporting. The study is pertinent for several reasons. Firstly, Namibia's corporate landscape, as part of emerging economies, is often under-researched within the broader African context; for example, studies such as Dikuua *et al.* (2024) and Ananias *et al.* (2023) have

highlighted this need. Secondly, the study focuses on Namibia to address ongoing issues, such as workplace gender inequality, as highlighted by [Ananias \*et al.\* \(2023\)](#), and environmental concerns emphasised in studies like [Mapaure \(2022\)](#). This paper offers a significant theoretical advance by analysing the synergistic links between structural governance and environmental transparency within the unique institutional laboratory of Namibia. The findings establish that female board directors serve as an essential internal catalyst that strengthens the connection between governance disclosure and environmental disclosure, offering critical insights for policymakers seeking to improve corporate sustainability through board diversification.

This paper is structured as follows: Section 2 outlines the theoretical framework, and Section 3 reviews the empirical literature to develop the hypotheses. The conceptual framework is presented in Section 4 [Figure 1](#), followed by the data and methodology in Section 5. Section 6 provides the empirical results and discussion, while Section 7 details the study's implications. Finally, Section 8 concludes the study and suggests directions for future research.

## 2. Theoretical framework

This study adopts an integrated multi-theoretical perspective to move beyond parallel explanations and offer a cohesive view of organisational accountability and transparency. In this integrated model, stakeholder theory explains the direct path by which institutional pressure for transparency is exerted. Resource dependence and gender difference theories jointly explain the mediated path, illustrating how board gender diversity serves as the internal mechanism that translates governance into proactive environmental reporting. Stakeholder theory explains the direct relationship between corporate governance and environmental disclosure, positing that strong governance structures compel firms to be accountable to stakeholder demands for transparency to maintain legitimacy ([Jamil and Wahyuni, 2025](#); [Valentinov and Iliopoulos, 2024](#)). Stakeholder theory asserts that organisational legitimacy is earned and maintained by addressing the claims of various groups that can be affected by or affect the firm's activities ([Bohn \*et al.\*, 2025](#)). Therefore, robust corporate governance is the structural embodiment of this accountability, providing the processes necessary to ensure that stakeholder concerns, particularly those regarding environmental impact, are reflected in corporate policy and disclosure ([Forliano \*et al.\*, 2025](#)). The model's indirect, mediated pathway is explained by integrating resource dependence theory and gender difference theory. Resource dependence suggests that board gender diversity is a strategic resource, as female directors bring the firm unique human and social capital ([Nicolò \*et al.\*, 2022](#)). Gender difference theory complements this by positing that distinct values and socialisation lead female directors to prioritise collaboration, ethical considerations and comprehensive risk management, particularly with respect to environmental and reputational threats ([Lyu \*et al.\*, 2024](#)). This combination of unique resources and a heightened focus on stakeholder welfare makes female directors more likely to champion environmental reporting.

## 3. Hypothesis development

Empirical research has established a strong positive correlation between the quality of a firm's corporate governance and the comprehensiveness of its environmental disclosures ([Sena \*et al.\*, 2023](#); [Cosma \*et al.\*, 2024](#); [Buallay \*et al.\*, 2024](#); [Aliyu, 2019](#); [Khan \*et al.\*, 2021](#); [Shah \*et al.\*, 2024](#); [Cai \*et al.\*, 2023](#)). This relationship is firmly grounded in established theoretical frameworks. For instance, legitimacy theory posits that firms engage in environmental reporting to gain and maintain their "social license to operate" by demonstrating that their actions align with stakeholder norms and values ([Saha \*et al.\*, 2024](#)). Stakeholder theory suggests that effective governance structures are essential for managing diverse demands, including the growing call for

environmental disclosures (Jamil and Wahyuni, 2025). Despite this consensus, the literature is not without its contradictions. Significant debates persist regarding which specific governance attributes are most influential (Binh and Lee, 2024; Mansor *et al.*, 2024; Ellili, 2022; Chytis *et al.*, 2024):

H1. Corporate governance disclosure is positively and significantly associated with environmental disclosure.

A substantial body of literature documents that the quality of corporate governance is positively associated with board gender diversity (Ghofar *et al.*, 2024; Bukari *et al.*, 2024; Cosma *et al.*, 2024; Chebbi and Ammer, 2022; Ismail and Latiff, 2019; Alodat *et al.*, 2023; Ellili, 2024; Wang *et al.*, 2024; Githaiga, 2024; Suárez-Fernández *et al.*, 2024; Aabo and Giorici, 2023; Alkayed *et al.*, 2024; Handschumacher-Knors, 2023; Toerien *et al.*, 2023; Denhere, 2024; Lawati and Alshabibi, 2023). From the stakeholder theory perspective, well-governed firms are inherently more attuned to the demands of their external constituents (Jamil and Wahyuni, 2025; Valentinov and Iliopoulos, 2024). These stakeholders, including regulators and advocacy groups, increasingly view sound governance and board diversity as interconnected hallmarks of a progressive and well-managed organisation (Valentinov and Iliopoulos, 2024). Concurrently, resource dependence theory explains the internal strategic motivation: viewing the board as a critical resource (Aliyu, 2019; Gallego-Álvarez and Pucheta-Martínez, 2022; Branco *et al.*, 2022; Shakil *et al.*, 2020; Oyerogba *et al.*, 2024). These firms recognise that institutionalising structured and transparent director selection protocols is essential for accessing a broader talent pool and mitigating the influence of informal, homophilous networks (Wang *et al.*, 2023; Fleitas-Castillo *et al.*, 2024; Naveed *et al.*, 2021). Therefore, a commitment to superior governance fosters a corporate culture where diversity is framed not merely as a social objective but as a strategic imperative for enhancing board effectiveness, legitimacy and long-term value creation:

H2. Corporate governance disclosure is positively and significantly associated with board gender diversity.

The tenets of gender difference theory strongly support the link between board gender diversity and enhanced environmental reporting. This theory suggests that differing socialisation and experiences lead to the boardroom's distinct values and decision-making priorities (Handschumacher-Knors, 2023; Toerien *et al.*, 2023; Spenser *et al.*, 2022; López-Mosquera, 2016; Lyu *et al.*, 2024). Specifically, female directors are often found to be more risk-averse regarding reputational and environmental threats (Furlotti *et al.*, 2019; Wan Mohammad *et al.*, 2023), more oriented towards long-term stakeholder welfare, and more inclined to adopt collaborative, transformational leadership styles (Saadah *et al.*, 2024; Cambrea *et al.*, 2023). These attributes make them more likely to champion robust environmental reporting to mitigate risk and demonstrate a commitment to social responsibility (Yahya *et al.*, 2022). A growing body of empirical literature largely corroborates this theoretical proposition (Laskar, 2024; Magnanelli *et al.*, 2020; Handschumacher-Knors, 2023; Peng *et al.*, 2022; Toerien *et al.*, 2023). However, this relationship is not without complexity; contextual factors can play a moderating role, as seen in the work of Farida *et al.* (2024), who found that high creditor pressure negated the positive influence of gender diversity on disclosure. A study indicates a negative correlation between women on boards and environmental, social and governance (ESG) disclosure in Italian-listed companies (Cucari *et al.*, 2018). Similarly, in South Africa, while a positive correlation exists between female board representation and ESG disclosure, this relationship is not conclusive after controlling for time effects (Toerien *et al.*, 2023). Some studies report mixed or insignificant effects of board gender diversity on environmental reporting. For example, in BRICS countries, board gender diversity shows an insignificant or diminishing marginal effect on emission performance when interacted with corporate social responsibility reporting (Waked *et al.*, 2025). A study conducted in Turkey found that female board representation does not

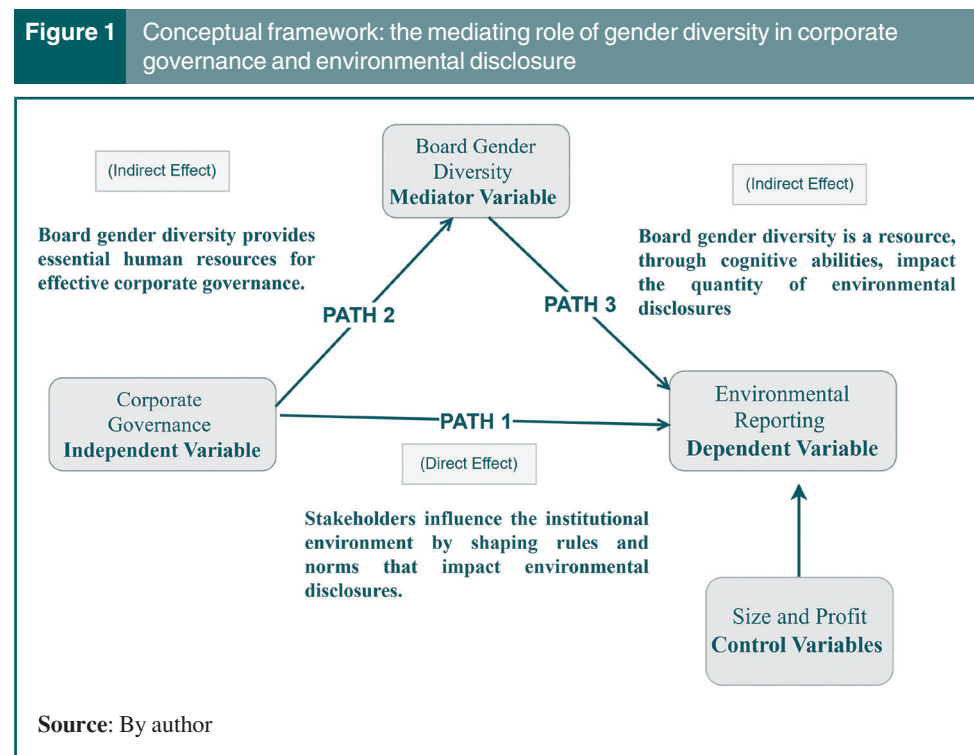
significantly affect climate change reporting, whereas active involvement in board committees does (Ararat and Sayedy, 2019). These inconsistencies highlight the need for research in emerging markets like Namibia, where institutional pressures and voluntary reporting standards may create distinct boardroom dynamics compared to those observed in developed economies. Despite these, the prevailing evidence aligns with theoretical expectations, suggesting a strong positive relationship:

*H3.* Board gender diversity is positively and significantly associated with environmental disclosure.

While the direct relationships between governance, diversity and disclosure are well-studied, recent literature has begun to explore the more complex, indirect pathways through which these variables interact, lending strong precedent to our mediation hypothesis (Kampoowale et al., 2024; Alodat et al., 2023; Kateb and Alahdal, 2024). This emerging body of work suggests that board characteristics and firm strategies often function as crucial channels through which governance principles are translated into tangible outcomes (Kateb and Alahdal, 2024). This perspective is important because it moves beyond simply viewing governance as a set of rules and instead sees it as a dynamic process. The composition of the board and the priorities embedded in corporate strategy are the conduits that determine how effectively high-level governance policies are operationalised and realised (Kateb and Alahdal, 2024). Grounded in resource dependence and gender difference theories, strong governance facilitates the appointment of female directors who, in turn, leverage their unique perspectives and focus on stakeholders to champion greater transparency and accountability:

*H4.* Board gender diversity mediates the relationship between corporate governance disclosure and environmental disclosure.

#### 4. Conceptual framework



## 5. Research methodology

### 5.1 Data collection

The study's data was collected from Bloomberg on enterprises listed on the Namibian Stock Exchange (NSX) from 2017 to 2023. Bloomberg's ESG disclosure score serves as a standardised measure of the quality and comprehensiveness of firms' publicly reported ESG information, based on approximately 120 indicators spanning these three dimensions (Yasmine and Kooli, 2022). Similar to studies like Kilincarslan *et al.* (2020) and Giannarakis *et al.* (2020), the study excluded delisted companies and those with missing data during the study period, resulting in a final sample of 39 NSX-listed companies across various industries. The study examined longitudinal data, totalling 273 annual financial statements presented in Table 1. According to Sekaran (2016), the final sample used is acceptable as it aligns with established research practices and guidelines for ensuring representativeness and reliability.

### 5.2 Analytical method

This study uses the well-established Baron and Kenny (1986) causal steps method to rigorously test the mediating role of board gender diversity in the relationship between corporate governance and environmental reporting. This sequential step, illustrated in Table 2, involves satisfying four distinct conditions corresponding to three key pathways as prescribed by MacKinnon (2012) and Taylor *et al.* (2008). It has been successfully used in studies such as those by Kampoowale *et al.* (2024), Kateb and Alahdal (2024) and Alodat *et al.* (2023). The Baron and Kenny (1986) approach is supplemented by the two-step system generalised method of moments estimator to address potential endogeneity and account for the dynamic tenacity of the variables. Further validation is achieved through bootstrapping to confirm the statistical significance of the indirect effect and ensure robustness within the constraints of the sample size.

**Table 1** Description of the sample

Industry	Financial statements	% of sample
Consumer goods	35	13
Energy	7	3
Financial services	84	31
Mining	119	43
Real estate	28	10
TOTAL	273	100

**Table 2** Sequential mediation pathway

Mediation step	Analytical objective
Step 1: Testing Path 1 ( <i>H1</i> )	This initial step establishes the total effect by testing for a significant direct relationship between the independent variable (CG) and the dependent variable (ER). This is crucial, as there must be an effect to be mediated
Step 2: Testing Path 2 ( <i>H2</i> )	This step tests the first part of the indirect effect by assessing whether the independent variable (CG) significantly predicts the proposed mediator (PWB). This confirms that better governance is associated with greater representation of women on the firm's board
Step 3: Testing Path 3 ( <i>H3</i> )	This step tests the second part of the indirect effect, determining whether the mediator (PWB) has a significant unique effect on the dependent variable (ER) after controlling for the independent variable (CG)
Step 4: Assessing for Mediation ( <i>H4</i> )	Finally, a regression model that includes both CG and PWB is tested. Complete mediation is supported if the effect of CG on ER (Path 1) becomes non-significant, while partial mediation is supported if the effect is substantially reduced but remains statistically significant

### 5.3 Model specification

The sequential analysis presented in Table 2 was operationalised using the following regression models:

$$ES_{it} = \beta_0 + \beta_1 GS_{it} + \beta_2 ROE_{it} + \beta_3 \ln ASSET_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

$$PWB_{it} = \beta_0 + \beta_1 GS_{it} + \beta_2 ROE_{it} + \beta_3 \ln ASSET_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (2)$$

$$ES_{it} = \beta_0 + \beta_1 GS_{it} + \beta_2 ROE_{it} + \beta_3 PWB_{it} + \beta_4 \ln ASSET_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (3)$$

The system GMM approach is operationalised through the following dynamic panel equations:

Outcome equation ( $GS \rightarrow PWB \rightarrow ES$ )

$$ES_{it} = \alpha_0 + \alpha_1 ES_{i,t-1} + \alpha_2 GS_{it} + \alpha_3 PWB_{it} + \alpha_4 ROE_{it} + \alpha_5 \ln ASSET_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (4)$$

Mediator equation ( $GS \rightarrow PWB$ )

$$PWB_{it} = \beta_0 + \beta_1 PWB_{it-1} + \beta_2 GS_{it} + \beta_3 ROE_{it} + \beta_4 \ln ASSET_{it} + \mu_i + \lambda_t + \nu_{it} \quad (5)$$

In the equations, the subscripts  $i$  and  $t$  denote firm-specific and time-specific effects, respectively, while  $\mu_i$  and  $\lambda_t$  represent unobserved firm and time-specific error components. Idiosyncratic error term  $\varepsilon_{it}$ . Idiosyncratic error term for the mediator equation  $\nu_{it}$ , and the lagged dependent variables are captured  $ES_{i,t-1}$  and  $PWB_{it-1}$ . The definitions of variables are presented in Table 3.

## 6. Results and discussions

### 6.1 Descriptive statistics

Table 4 contains a complete summary of the descriptive statistics.

The descriptive statistics, based on the mean scores, show a clear disparity between the high governance score,  $GS = 82.32$  and the much lower environmental score,  $ES = 25.75$ , highlighting an uneven regulatory landscape in Namibia. Strong governance largely reflects the influence of the NamCode, which provides comprehensive “comply or explain” guidance on corporate governance (Dikuuu *et al.*, 2024). In contrast, the absence of formal environmental reporting standards has created an implementation gap, with firms treating environmental disclosure as discretionary. This pattern is consistent with the ESG literature, suggesting that in emerging markets, firms tend to prioritise governance compliance initially (Eissa *et al.*, 2024; Kampoowale *et al.*, 2024). Cost and capacity constraints, as well as the lack of universal benchmarks, could be the reason for a low environmental disclosure. Similarly, the low presence of women on corporate board (PWB) score of 28.13 suggests that board gender diversity remains discretionary, with women underrepresented on corporate boards.

### 6.2 Correlation matrix and multicollinearity diagnostic test variance inflation factor

The correlation matrix in Table 5 reveals that ES is positively and significantly associated with GS  $\rho = 0.571$ ,  $p < 0.01$  and PWB  $\rho = 0.328$ ,  $p < 0.01$ , indicating that firms with stronger corporate governance reforms and higher levels of board gender diversity tend to exhibit better environmental sustainability outcomes. GS is also positively associated with PWB  $\rho = 0.231$ ,  $p < 0.01$ , suggesting that corporate governance initiatives may contribute to greater board gender diversity. All variance inflation factor (VIF) values are well below the critical threshold of 10 (and even below 5), with a mean VIF of 1.13, indicating no multicollinearity concerns (Myers, 1990). The correlation coefficients are moderate and do not suggest redundancy among predictors.

**Table 3** Operationalisation of variables

Code	Variable	Definition
ES	Y	<i>OUTCOME (DEPENDENT VARIABLE)</i>
	Environmental disclosure score	A company's environmental score measures its environmental sustainability performance. Based on Bloomberg data, this score ranges from 0% to 100%, with higher scores indicating better environmental practices. The environmental score evaluates corporate performance across metrics, including carbon emissions, waste, and water management (Giannarakis et al., 2020)
PWB	M	<i>MEDIATOR (INTERVENTING VARIABLE)</i>
	Board gender diversity	Board gender diversity refers to the proportion of female directors on a firm's board, measured as a percentage ranging from 0% (no female representation) to 100% (all directors are female), based on data disclosed by Bloomberg (Kampoowale et al., 2024)
GS	X	<i>PREDICTOR INDEPENDENT VARIABLE)</i>
	Corporate governance score	The corporate governance score measures the policies, processes, and frameworks in place to govern an organisation's operations and decision-making. Bloomberg's corporate governance score is from 0% to 100% (Giannarakis et al., 2020)
ROE	Profitability	<i>CONTROL VARIABLES</i> Profitability is operationalised using Return on Equity (ROE), a primary performance metric calculated as net income divided by total shareholder equity (Kampoowale et al., 2024)
InASSET	Firm size	Firm size is operationalised as the natural logarithm of the book value of total assets (Kampoowale et al., 2024)

**Note(s):** All variables were collected from Bloomberg to ensure data consistency and reliability across the sample of Namibian listed firms. Bloomberg environmental and governance disclosure scores are proprietary, weighted indices derived from over 120 data points sourced from public filings, such as annual reports and sustainability disclosures. These scores are calculated by aggregating quantitative and qualitative data to provide a standardised measure of transparency that enables objective comparison across firms and industries. The weighting methodology ensures that each disclosure point is prioritised based on its materiality to the firm's specific industry, helping minimise reporting bias

**Table 4** Descriptive statistics

Variables	Obs	Mean	SD	Min.	Max.	SKEW.	KURT.
ES	273	25.746	16.717	0	79.036	0.996	4.05
GS	273	82.323	10.905	47.08	100	-0.188	2.772
PWB	273	28.134	13.75	0	66.5	0.175	2.654
ROE	273	10.447	39.809	-256.131	223.583	-3.439	28.449
ASSET	273	442000	762000	0.517	3065745	1.766	5.093

**Note(s):** The Table presents means, standard deviations, minimum and maximum values, skewness and kurtosis for all study variables. These descriptive statistics provide an overview of the data's distribution and variability

### 6.3 Baron and Kenny (1986) mediation analysis

Table 6 presents the regression results for the proposed hypothesis.

Model 1 examined the direct relationship between corporate governance and environmental reporting, controlling for various predictors. The results show a highly

**Table 5** Pairwise correlation

Variables	(1) ES	(2) GS	(3) PWB	(4) ROE	(5) lnASSET	VIF	1/VIF
(1) ES	1.000						
(2) GS	0.571* (0.000)	1.000				1.13	0.888
(3) PWB	0.328* (0.000)	0.231* (0.000)	1.000			1.06	0.940
(4) ROE	0.035 (0.561)	-0.029 (0.636)	-0.079 (0.194)	1.000		1.13	0.882
(5) lnASSET	-0.081 (0.184)	-0.257* (0.000)	-0.113 (0.063)	0.333* (0.000)	1.000	1.21	0.827
Mean VIF							1.13

**Note(s):** The correlation matrix is used together with the variance inflation factor (VIF) to assess multicollinearity among independent variables. The correlation matrix provides a preliminary view of the pairwise linear relationships among variables, helping identify highly correlated predictors. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

significant, positive coefficient for GS ( $\beta=0.900$ ,  $p < 0.01$ ), indicating that stronger governance is associated with higher levels of environmental reporting. This finding is consistent with a significant body of prior literature that demonstrates similar evidence (Kilincarslan *et al.*, 2020; Alsheikh, 2024; Wicaksono *et al.*, 2024; Aboud and Diab, 2018; Ofogbu *et al.*, 2018; Alsayegh *et al.*, 2020; Gerged *et al.*, 2023; Raimo *et al.*, 2022; Bernardi and Stark, 2018; Barro *et al.*, 2025; Wang *et al.*, 2022; Darsono *et al.*, 2024; Makhdalena *et al.*, 2023). Secondly, the results of this study demonstrate that the fundamental principle linking good governance to transparency holds even in emerging markets, such as Namibia, where disclosure may be more voluntary, suggesting that transparency is a foundational element of modern corporate accountability. This finding aligns with stakeholder theory, which posits that effective corporate governance serves as the primary mechanism for ensuring accountability to various stakeholders. Well-governed firms strategically use environmental reporting to manage expectations and translate external pressures into transparent corporate action (Doni *et al.*, 2022). The implications of this direct effect are multifaceted, suggesting that efforts to improve environmental transparency should not focus solely on mandating disclosure but also on strengthening the underlying Namcode. Prior studies reinforce this implication, showing that compliance with Corporate Governance Codes improves ESG disclosure practices (Moreno-Ureba and Bravo-Urquiza, 2019). Secondly, for listed firms, the result underscores that investing in strong governance frameworks can be a direct pathway to building stakeholder trust and enhancing corporate reputation as stakeholder demands are not ignored but are instead translated into concrete actions, such as transparent environmental disclosures, which

**Table 6** Baron and Kenny sequential mediation results

Variables	(1) Direct effect: PATH 1	(2) Indirect effect PATH 2	(3) Indirect effect PATH 3
GS	0.900*** (0.0927)	0.277*** (0.0814)	0.828*** (0.0857)
PWB			0.261*** (0.0611)
ROE	0.0137 (0.0191)	-0.0209 (0.0171)	0.0191 (0.0215)
LnASSET	0.295 (0.285)	-0.149 (0.275)	0.334 (0.276)
Constant	-51.24*** (9.030)	6.935 (8.021)	-53.05*** (8.393)
Industry_d	Yes	Yes	Yes
Year_d	Yes	Yes	Yes
Observations	273	273	273
R-squared	0.331	0.060	0.375

**Note(s):** The results present the mediation analysis, following the procedure outlined by Baron and Kenny (1986). The table shows the relationships among the independent variable, the mediator, and the dependent variable. Significance levels are indicated as: \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

ensures its long-term operational viability in an increasingly eco-conscious world, thus the results of Model 1 and path 1 strongly support hypothesis H1.

Model 2, which examined the effect of GS on the mediator, board gender diversity PWB, yielded a positive and highly significant coefficient ( $\beta=0.277$ ,  $p < 0.01$ ). This demonstrates that better-governed firms are more likely to have greater female representation. This finding corroborates an established stream of research that links specific governance mechanisms to higher board diversity (Oradi and Izadi, 2020; Cosma *et al.*, 2024; Ghofar *et al.*, 2024; Nuber and Velte, 2021; Wang *et al.*, 2023; Naveed *et al.*, 2021; Temiz and Acar, 2023; Wasiuzzaman and Subramaniam, 2023). It is consistent with the resource dependence theory, which suggests that a well-governed firm ensures a balanced board composition as a key resource (Shakil *et al.*, 2020). Strong governance structures, including independent nomination committees, are likelier to seek directors with diverse skills, experiences and gender (Iannuzzi *et al.*, 2023).

A diverse board composition brings a variety of perspectives, leading to more innovative solutions and a deeper understanding of complex issues. This diversity can improve risk management by challenging groupthink and encouraging thorough discussions. Moreover, it enhances the company's reputation and aligns it with modern societal values, which can attract investors and improve stakeholder relations. According to stakeholder theory, well-governed firms are better equipped to meet the expectations of society, institutional investors and regulators, all of whom advocate for greater gender diversity as a matter of equity and good practice (Gallego-Álvarez and Pucheta-Martínez, 2020; Cai *et al.*, 2024; Aabo and Giorici, 2023). This study finds that strong corporate governance is a significant driver of board gender diversity, offering crucial policy implications for Namibia. The most effective policy lever would be to strengthen underlying corporate governance frameworks. This involves reinforcing the rules surrounding the independence and transparency of nomination committees, and encouraging a meritocratic, skills-based selection process that naturally identifies talent from the broadest possible pool. Hence, hypothesis H2 is supported.

Model 3 tested the final leg of the indirect path and the overall mediation. The results indicate that board gender diversity PWB has a significant and positive impact on ES,  $\beta$  of 0.261,  $p < 0.01$  and GS has a significant and positive impact on ES  $\beta$  of 0.828,  $p < 0.01$ . The results of the sequential mediation analysis confirm partial mediation: the presence of women on corporate boards can act as an intermediary factor, enhancing the effectiveness of corporate governance mechanisms and leading to improved environmental disclosures. The increase in R-squared from 0.331–0.375 further validates that board gender diversity provides additional explanatory power for environmental accountability in Namibian firms. These findings demonstrate that board gender diversity acts as a reinforcing channel through which governance principles are translated into improved disclosure outcomes. This result aligns with research demonstrating a positive link between female board representation and sustainability-related issues (Ghofar *et al.*, 2024; Zhu *et al.*, 2024; Sætra, 2023; Tyrowicz *et al.*, 2020; Moreno-Ureba *et al.*, 2022; Ghazwani *et al.*, 2024; Galbreath, 2011; Samidi and Kwan, 2024; Laskar, 2024; Shaheen *et al.*, 2021; Bukari *et al.*, 2024; McLaughlin *et al.*, 2021).

This finding also aligns with the integrated application of gender difference theory and resource dependence theory, which together suggest that gender-diverse boards bring unique cognitive resources that strengthen governance and disclosure outcomes. Gender difference theory posits that distinct socialisation and values lead female directors to focus more on ethical considerations, community welfare and comprehensive risk management (Handschemacher-Knors, 2023; Toerien *et al.*, 2023). Females are often more attuned to non-financial risks, such as reputational damage from poor environmental stewardship (Spenser *et al.*, 2022). Resource dependence theory complements this by framing female directors as a strategic resource. They bring unique human capital (different perspectives

and expertise) and social capital (connections to various stakeholder networks) to the boardroom. In this context, female directors use their unique insights to champion environmental reporting as a crucial strategy for managing stakeholder dependencies and securing corporate legitimacy; thus, this finding supports hypothesis H3.

The central hypothesis of this study, proposed in H4, is supported, indicating that board gender diversity partially mediates the relationship between corporate governance and environmental disclosures. Partial mediation means that while board gender diversity accounts for part of the effect of corporate governance on environmental disclosures, the direct effect of corporate governance on environmental disclosures remains statistically significant even after including the mediator. The partial mediation result suggests that collaborative synergies exist among corporate governance variables, with board gender diversity acting as an intermediary in the relationship between corporate governance and environmental disclosure practices. The persistence of a significant direct effect suggests that other governance mechanisms also contribute to this relationship, implying that enhancing board gender diversity can strengthen governance outcomes and environmental disclosure. Comprehensive, holistic corporate governance reforms are necessary to optimise disclosure practices fully.

#### 6.4 Dynamic generalised method of moment and endogeneity analysis

Table 7 presents the system GMM estimation results for the dynamic panel models, including both the outcome and mediator equations, along with diagnostic tests for endogeneity and instrument validity.

The results of Models 4 and 5, presented in Table 7, report the two-step System GMM estimates examining the relationship between GS, ES and the mediating role of PWB. Overall, the findings provide evidence of partial mediation, consistent with the mediation results following Baron and Kenny (1986), thereby supporting the validity of the study's hypotheses within a dynamic panel framework. The coefficient on the lagged dependent variable in Model 4, L.ES  $\beta = 1.014$ ,  $p < 0.01$ , is positive and highly significant, indicating strong persistence in firms' environmental sustainability performance over time. This finding

<b>Table 7</b> Two-step system GMM estimation results		
<i>Variables</i>	(4) SYSTEM GMM: ES	(5) GMM – MEDIATOR: PWB
L.ES	1.014*** (0.132)	
GS	0.256** (0.101)	0.486*** (0.170)
PWB	0.109* (0.073)	
ROE	-0.007 (0.006)	-0.014 (0.016)
lnASSET	0.135 (0.087)	0.356 (0.254)
L.PWB		0.271** (0.212)
Constant	-21.26** (8.035)	-22.746 (16.789)
Industry_d	Yes	Yes
Year_d	Yes	Yes
Observations	273	273
Number of firms	39	39
Model	Dynamic panel	Dynamic panel
Estimator	Two-step system GMM	Two-step system GMM
Number of instruments	8	11
AR(1) <i>p</i> -value	0.000	0.000
AR(2) <i>p</i> -value	0.312	0.312
Hansen <i>p</i> -value	0.428	0.428

**Note(s):** The table presents the Two-step system GMM estimation results examining the relationship between environmental disclosure and the mediator. Diagnostic tests for endogeneity and instrument validity are also reported. Significance levels are indicated as: \*\*\* $p < 0.01$ , \*\* $p < 0.05$ ,  $p < 0.1$

is consistent with prior studies that document path dependence in environmental disclosure, for example, [Gartia et al. \(2024\)](#) and [Chouaibi and Affes \(2021\)](#). Similarly, in Model 5, the coefficient on the lagged mediator, L.PWB  $\beta=0.271$ ,  $p < 0.05$ , is positive and statistically significant, indicating that board gender diversity exhibits intertemporal persistence. This dynamic behaviour underscores the relevance of board gender diversity for policy formulation, enabling improvements beneficial to organisational outcomes, including environmental disclosure practices.

GS has a positive and statistically significant effect on ES in Model 4,  $\beta=0.256$ ,  $p < 0.05$ , indicating that firms adopting robust corporate governance practices contribute to achieving superior environmental sustainability outcomes. This result aligns with stakeholder theory, a theoretical perspective that emphasises the performance-enhancing role of proactive environmental engagement to a broader base of stakeholders ([Del Gesso and Lodhi, 2025](#)). In Model 5, GS also has a positive and highly significant effect on PWB  $\beta=0.486$ ,  $p < 0.01$ , indicating that GS initiatives contribute to enhanced PWB, potentially through improved ethical alignment, organisational legitimacy and stakeholder engagement. Regarding the mediating mechanism, PWB exhibits a positive but weakly significant effect on ES in Model 4, with  $\beta=0.109$  and  $p < 0.10$ . Although modest in magnitude, this finding suggests that higher levels of PWB are associated with improved ES outcomes. Taken together, these results provide evidence of partial mediation. GS influences environmental sustainability both directly and indirectly through PWB. However, the relatively weaker indirect effect suggests that PWB functions as a complementary transmission mechanism, rather than a dominant pathway, through which GS translate into enhanced ES outcomes. This study recommends that regulators implement well-defined quotas to enhance female representation on corporate boards, supported by strengthened nomination processes. Furthermore, the adoption of comprehensive board training programs is likely to provide additional benefits in improving governance and board effectiveness.

To ensure the robustness of the dynamic panel estimates, the two-step System GMM was used with [Windmeijer \(2005\)](#) robust standard error corrections to account for potential downward bias in small-sample contexts,  $n=39$ . Following the diagnostic guidelines proposed by [Roodman \(2009\)](#), the number of instruments was strictly limited to avoid proliferation. Specifically, the outcome equation (Model 4) used 8 instruments, while the mediator equation (Model 5) used 11 instruments. In both specifications, the instrument count remains significantly lower than 39, directly addressing concerns regarding overfitting and biased estimates. The validity of these specifications is further supported by the Hansen tests,  $p = 0.428$ , confirming that the instrument sets are valid. In addition, the Arellano-Bond tests satisfy the requirements for consistent GMM estimation, with significant first-order autocorrelation (AR(1)  $p = 0.000$  and a lack of second-order autocorrelation (AR(2)  $p = 0.312$ ).

## 6.5 Analysis of control variables

The analysis of the control variables indicates that financial performance and firm size do not serve as primary drivers of environmental accountability in the Namibian context. Profitability, measured by ROE, shows coefficients of 0.0137 in Model 1 and 0.0191 in Model 3, which lack statistical significance. This suggests that environmental disclosure is not a by-product of financial surplus but rather a result of governance quality. Similarly, firm size, represented by  $\ln\text{ASSET}$ , with coefficients of 0.295 and 0.334, remains non-significant across all models, proving that reporting behaviour is consistent regardless of company scale. Past studies show that in emerging economies, the relationship between profit, firm size and environmental reporting is complex and influenced by various factors that diminish the significance of profit and firm size as primary drivers. [Saleem et al. \(2023\)](#) reveal that regulatory frameworks and external pressures play a crucial role in shaping environmental

reporting practices. [Ofoegbu et al. \(2018\)](#) explain that Strong governance structures can drive environmental reporting, regardless of the firm's size or profitability.

## 7. Theoretical and practical implications

The study makes significant theoretical contributions by validating an integrated model that posits structural governance and human capital as complementary forces. Instead of treating theories as parallel explanations, this research synthesises stakeholder theory with resource dependence and gender difference perspectives to explain the internal mechanisms of corporate accountability. The validation of partial mediation suggests that structural oversight is not an independent driver, but instead requires an internal catalyst to translate high-level governance principles into environmental transparency. Furthermore, by using the institutional setting of Namibia, the research provides a unique test of how political gender norms, such as the zebra quota system, create a normative backdrop that influences private sector disclosure behaviour, moving the academic discourse beyond geographical description towards a more nuanced understanding of how soft law governance interacts with board demographics in emerging markets. For corporate leaders and boards, the findings provide an evidence-based case for viewing diversity as a strategic imperative rather than a matter of social compliance. The results indicate that the presence of female directors serves as a crucial internal oversight mechanism, enhancing the quality of environmental reporting. However, the modest coefficient of 0.261 and the low baseline environmental score of 25.75 suggest that diversity must be integrated with robust structural governance to be effective. For policymakers in Namibia, the research supports a shift from voluntary gender targets towards a formal "comply or explain" framework within the Namcode. This would strengthen the link between the national commitment to gender equity and corporate accountability. In addition, the introduction of mandatory disclosure standards by the Namibian Stock Exchange would address the high reporting variability of 16.72 and ensure that board gender diversity becomes a tangible driver of environmental sustainability.

## 8. Conclusion

This study examined the mediating role of board gender diversity in the relationship between corporate governance disclosure and environmental disclosure within the Namibian institutional context, drawing on stakeholder theory, resource dependence theory and gender difference theory. Using the Baron and Kenny mediation framework, complemented by a two-step system Generalised Method of Moments estimator and bootstrapping techniques, the findings demonstrated that board gender diversity acted as a significant partial mediator. Corporate governance disclosure exerted a strong and direct influence on environmental disclosure, underscoring the central role of governance mechanisms in ensuring transparency, accountability and credibility in sustainability reporting. These results suggest that robust governance structures not only directly enhance disclosure practices but also facilitate the effective inclusion of diverse board perspectives, thereby strengthening environmental accountability [Table 8](#).

From a theoretical perspective, the study contributed to the corporate governance and sustainability literature by empirically validating a multi-theoretical framework within an underexplored emerging market context. The findings extended stakeholder and resource dependence theories by demonstrating how gender-diverse boards enhanced firms' responsiveness to environmental stakeholders, while gender difference theory provided insight into the behavioural mechanisms through which diversity influenced disclosure outcomes. By positioning board gender diversity as a mediating governance mechanism rather than a standalone determinant, the study's findings demonstrate a synergistic governance effect in which other corporate governance variables and board gender diversity work collaboratively to enhance the quality and credibility of environmental disclosure. Practically, the results held important implications for policymakers, regulators

**Table 8** Summary of results

Hypothesis	Hypothesis statement	Path tested	Result	Empirical evidence
H1	Corporate governance has a significant positive effect on environmental reporting	GS → ER	Supported	The direct effect was positive and highly significant, with a coefficient of 0.900 at a $p < 0.01$ in model 1
H2	Corporate governance has a significant positive effect on board gender diversity	GS → PWB	Supported	The effect was positive and highly significant with a coefficient of 0.277 at a $p < 0.01$ in model 2
H3	Board gender diversity has a significant positive effect on environmental reporting	PWB → ER	Supported	The effect was positive and highly significant with a coefficient of 0.261 at a $p < 0.01$ model 3
H4	Board gender diversity mediates the relationship between corporate governance and environmental reporting	GS → PWB → ER	Partly supported (partial mediation)	Both stages of the indirect path were significant, and the direct effect decreased from 0.900–0.828 while remaining significant at the 1% level

and corporate leaders in Namibia and similar institutional environments. The evidence highlighted the need for a more comprehensive approach to enhancing corporate governance performance, stressing that effective governance cannot be achieved in isolation. By integrating board gender diversity with other key governance mechanisms, firms can create a more robust framework that not only strengthens oversight but also fosters transparency and accountability in environmental disclosure.

Despite its contributions, the study had certain limitations. The relatively small sample size of 39 firms and the focus on a single national context limited the generalisability of the findings. Future research could extend this analysis to larger samples, multiple emerging markets or longitudinal settings to further explore the dynamic role of board diversity in sustainability disclosure. In addition, future studies may examine other dimensions of board diversity or alternative governance mechanisms to deepen understanding of how corporate governance structures shape environmental and broader sustainability outcomes. Overall, the findings showed that corporate governance disclosure was the primary driver of environmental disclosure, and that board gender diversity played a critical reinforcing role by functioning as a vital cognitive resource that strengthened board oversight, aligned disclosure practices with stakeholder environmental expectations, and enhanced the credibility of environmental reporting among Namibian firms.

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## Corresponding author

Longane Bhebhe Mwelasi can be contacted at: [loebhebhe@gmail.com](mailto:loebhebhe@gmail.com)

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