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Does Board Gender Diversity and Independent Drive Affect Corporate Sustainability Performance? Evidence from Malaysia

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Abstract: The underrepresentation of women on corporate boards remains a global concern. Malaysia has taken steps to address this issue through the Malaysian Code of Corporate Governance (MCCG 2021), which recommends a minimum of 30% female directors on boards. However, as of April 2025, the percentage of women directors in Bursa Malaysia stood at only 28% across all PLCs, indicating a gap between policy recommendations and actual implementation. This study examines the impact of board gender diversity and independence on corporate sustainability performance (CSP), proxied by the total ESG score. Using data from Refinitiv Eikon, the study covers 1,028 firms listed on Bursa Malaysia's main and ACE markets between 2019 and 2024, resulting in 6,168 firm-year observations. After excluding firms with insufficient ESG data, the final sample comprises 936 firm-year observations. A fixed-effects model was employed to analyse the unbalanced panel data. The results reveal that board gender diversity and board independence significantly enhance CSP. Additionally, board independence strengthens the positive relationship between board gender diversity and CSP, demonstrating its moderating effect. Robustness checks confirm that board gender diversity similarly influences both the environmental and social pillars. The findings provide empirical evidence supporting the role of board gender diversity and independence in promoting corporate sustainability. These insights have practical implications for investors and policymakers, emphasising the need to prioritise gender-diverse board compositions as Asian markets increasingly focus on corporate governance reforms.

Keywords: *Board Gender Diversity, Board Independence, Corporate Sustainability Performance.*

1. Introduction

In recent years, firms have increasingly prioritised corporate social performance (CSP), recognising its critical role in ensuring long-term sustainability and stakeholder trust (Amorelli & García-Sánchez, 2021). Integrating environmental, social, and governance (ESG) factors into corporate strategies has become a pressing issue, reflecting the growing expectations of regulators, investors, and the public. ESG disclosure, now a crucial part of corporate reporting, signals a company's commitment to sustainability and ethical conduct (Khan, 2022; Carnini Pulino et al., 2022). Despite its importance, many firms struggle with transparency in ESG disclosures, which can impact investor confidence and firm reputation (Albitar et al., 2022; Shaikh, 2022). As ESG considerations gain prominence, firms failing to meet disclosure expectations may face reputational and financial risks, making it imperative to explore the factors that enhance CSP.

The growing emphasis on ESG performance has also reshaped investment preferences, with investors seeking companies that demonstrate strong corporate sustainability practices (Park & Jang, 2021; Chen & Xie, 2022). Firms with robust ESG disclosures often enjoy greater investor trust, better access to capital, and lower financial risks (Naveed et al., 2020; Yadav & Jain, 2023). However, not all firms effectively align their governance structures with sustainability goals, leading to inconsistencies in corporate sustainability performance. This raises concerns about the governance mechanisms that drive ESG strategies and whether firms are equipped to align with evolving sustainability expectations.

Board composition, particularly gender diversity and board independence, plays a critical role in shaping corporate sustainability performance (CSP). Many advanced economies, including Norway, France, Germany, and Belgium, have implemented policies mandating female representation on corporate boards to enhance decision-making and governance quality (Ginglinger & Raskopf, 2023; Lückerath-Rovers, 2013; Chatterjee & Nag, 2023). Gender-diverse boards bring varied perspectives, contributing to ethical governance and long-term sustainability (Eagly, 2016). However, in markets like Malaysia, female representation remains below recommended levels, with only achieved 28% only as of April 2025 (Maisca, 2024) that raising concerns about its impact on CSP.

Gender diversity in leadership fosters sustainability by driving innovation and responsible governance. Diverse boards enhance decision-making, transparency, and corporate social responsibility (CSR), attracting socially conscious investors (Pareek, Sahu & Gupta, 2023; Khunkaew, Wichianrak & Suttipun, 2023). Evidence from India and ASEAN suggests that gender-diverse leadership correlates with stronger sustainability reporting and stakeholder engagement (Pareek, Sahu & Gupta, 2023; Khunkaew, Wichianrak & Suttipun, 2023). In Europe, women leaders are linked to greater CSR initiatives (Paoloni, Lombardi & Principale, 2023). Additionally, diverse leadership improves financial and environmental performance, as seen in transportation and logistics companies, where gender diversity enhances operational efficiency and sustainability (Shakil et al., 2024). Women in leadership roles also contribute to improved environmental outcomes, reinforcing responsible corporate practices (Muhammad & Migliori, 2023).

Beyond gender diversity, board independence is another key governance factor influencing CSP. Independent directors strengthen accountability, mitigate conflicts of interest, and promote ethical oversight (Johanson & Østergren, 2010; Ortas et al., 2017). Studies indicate that independent boards are more likely to prioritise sustainability over short-term financial gains (Dunn & Sainty, 2009; Jo & Harjoto, 2012; Sahin et al., 2011). However, the combined impact of gender diversity and board independence on CSP remains underexplored, particularly in emerging markets, highlighting the need for further research.

Understanding the relationship between corporate governance and CSP is essential as firms navigate increasing regulatory pressures, investor expectations, and sustainability challenges. While gender diversity and board independence have been individually linked to corporate governance improvements, their interactive effects on CSP remain underexplored. This study addresses these gaps by examining how board gender diversity and independence influence CSP and whether board independence strengthens the impact of gender diversity on corporate sustainability performance. Focusing on Malaysian firms, this research contributes to the broader discourse on corporate governance in emerging markets, offering insights that can inform policy decisions, corporate strategies, and investor considerations in promoting sustainable business practices.

The issue of gender diversity in corporate boards is gaining traction as policymakers and investors recognise the need for more inclusive and representative leadership structures. Moreover, with Malaysia enforcing the Malaysian Code of Corporate Governance (MCCG 2021), which recommends at least 30% female representation on corporate boards, assessing its impact on sustainability performance is timely. Guided by Upper Echelons Theory, this study aims to fill the gaps by examining how board gender diversity and independence influence CSP, assessing their combined impact on ESG outcomes in Malaysian firms. This study differs from the prior study as this study considers the data after 2019, which significantly affected the board composition, as the company focuses more on sustaining in the market rather than improving its board composition during this crucial period, compared to prior studies by Nashri et al. (2023); Zawawi et al. (2023) that also used a Malaysian sample.

This study explores the impact of board gender diversity on CSP, using ESG scores as a measure. It analyses data from 1,028 firms listed in Bursa Malaysia's main and ACE markets (2019–2024), with a final sample of 936 firm-year observations. A fixed-effects model examines the role of board gender diversity and independence in shaping CSP across environmental, social, and governance pillars. We found that board independence (BIND) and board gender diversity (BGEN) significantly improved CSP among the Malaysian publicly listed firms. Furthermore, the existence of BGEN strengthens the positive effect between BIND and CSP.

The findings of this study will provide valuable insights for regulators, investors, and firms in pursuing enhanced corporate governance and sustainability. Given the relevance of women directors and board independence, this study offers a three-fold contribution to the literature. First, it seeks evidence of any relationship between board gender diversity and CSP. Second, this paper examines whether board independence influences CSP. Third, it investigates the moderating effect of board independence on the relationship between board gender diversity and CSP.

This study contributes to the ongoing discourse on corporate governance and sustainability, emphasising the

critical role of board diversity and independence in shaping firm performance. The findings have significant implications for investors, regulators, and corporate decision-makers striving to enhance corporate governance through gender inclusivity and independent oversight.

This paper is organised as follows. The next section reviews the literature on CSP, board gender diversity, and board independence, along with an explanation of the theoretical framework. Following this, the methodology is described. The subsequent sections present the findings, conclusion, and recommendations for future research.

2. Literature Review

The role of gender diversity in shaping corporate sustainability performance has gained increasing attention as firms strive to enhance their corporate sustainability performance through improved governance, ethical decision-making, and stakeholder engagement (Nielsen & Madsen, 2017; Bear et al., 2010). As organisations worldwide seek to integrate ESG principles into their operations, gender diversity has emerged as a key factor influencing corporate decision-making, stakeholder engagement, and long-term sustainability outcomes (Galbreath, 2018; Zhang et al., 2022). The presence of women in leadership positions, particularly on corporate boards and executive teams, has been linked to improved sustainability practices, enhanced corporate social responsibility (CSR) initiatives, and stronger financial resilience (Bear et al., 2010; García-Sánchez et al., 2019). However, empirical evidence on this relationship remains mixed, with some studies suggesting that the effectiveness of gender diversity depends on contextual factors such as industry characteristics, regulatory frameworks, and cultural influences (Nadeem et al., 2020).

In the Malaysian corporate landscape, the government and regulatory bodies have implemented various initiatives to promote gender diversity, including the MCCG and national policies advocating for greater female representation in boardrooms (Securities Commission Malaysia, 2021). Despite these efforts, the actual impact of gender diversity on corporate sustainability performance in Malaysia remains underexplored. Given Malaysia's unique socio-economic and regulatory environment, further research is necessary to examine how gender diversity interacts with corporate sustainability strategies and whether it serves as a catalyst for responsible business practices.

Upper Echelon Theory serves as the primary theoretical lens for this analysis, emphasising how the characteristics of top executives, including gender diversity, influence corporate decision-making and strategic outcomes (Hambrick & Mason, 1984). This theory posits that organisational outcomes are a reflection of the values, experiences, and cognitive biases of top management, suggesting that diverse leadership teams can bring varied perspectives that enhance corporate sustainability performance (Dhir et al., 2023).

Underpinning theory

Firms seeking to attract, retain, and capitalise on varied talent are frequently urged to start by enhancing the diversity of their senior management (Nishii et al., 2007). Thus, firms with more diverse senior management teams will likely implement diversity initiatives that attract a wider range of talent. Bannò et al. (2023) use the term "women in top echelon positions" to encompass all significant roles within the firm that can be held by women.

The upper echelons theory, which was proposed by Hambrick and Mason in 1984, proposes that the outcomes of an organisation can be partially predicted by the background characteristics of the top-level management team (Hambrick & Mason, 1984). It posits that organisational outcomes are partly predicted by the characteristics of its top executives, such as their values, experiences, and demographics.

Regarding the relationship between board diversity and CSP, the upper echelons theory suggests that women bring diverse perspectives to the boardroom, which can enhance decision-making processes (Bannò et al., 2023). This diversity leads to more comprehensive discussions on CSP issues, ensuring that different viewpoints are considered, which can result in better CSP strategies and initiatives (Frankl & Roberts, 2018). Consequently, increasing the female representation on boards is not only a matter of equality but also provides a strategic advantage for the firm, specifically regarding CSP.

Applying upper echelons theory to the relationship between corporate governance and CSP involves examining how the characteristics and composition of a company's board influence its decisions and actions regarding social responsibility (Dunn & Sainty, 2009). Independent directors frequently contribute broad expertise and an objective viewpoint to the board, free from the influence of the company's management (Li et al., 2012). This objectivity enables them to make decisions that are more balanced and aligned with long-term societal and environmental sustainability, enhancing CSP.

Further, independent directors play a crucial role in overseeing and monitoring management, ensuring that executives are held accountable for their decisions and actions (Kallamu, 2016). This oversight can lead to more responsible corporate behaviour and better adherence to CSR principles, as independent directors can advocate for more openness and ethical conduct.

Board Gender Diversity and CSP

It is argued that women bring different life experiences, values, and perspectives to the boardroom (Isidro & Sobral, 2015). This diversity can enhance decision-making by incorporating a wider range of viewpoints, leading to more comprehensive and innovative solutions (Dang et al., 2021).

Boards that incorporate gender diversity in their composition are often observed to make strategic decisions that involve being ready to take calculated risks and adopting a careful approach to potential challenges (Birindelli et al., 2020). This balanced decision-making dynamic supports sustainable growth and cultivates a conducive environment to inculcate innovation within the firm. Applying the upper echelon theory to the relationship between women on corporate boards and CSP, one can argue that the presence of women directors influences CSP positively. This is because diversity would ensure different viewpoints, which would result in better decision-making and strategy initiatives (Frankl & Roberts, 2018).

The findings of Arayssi et al. (2016) indicate that the existence of women on the board positively impacts a company's risk and performance by encouraging the company to invest in meaningful social activities and effectively communicate about them. Bennouri et al. (2018) examine the relationship between female directorship and firms' performance in French companies. Their findings, using accounting-based measures of firm performance, indicate that female directorship significantly enhances firm performance (ROA and ROE). Velte (2016) analysed the presence of women on management boards in a sample of German and Austrian companies over the business years 2010-2014. The study found that female members on the management board positively impact CSP. In the same vein, Mallin and Michelon (2011) also found that the female directors on the board are positively associated with CSP.

In addition, Byron and Post (2016) conducted a meta-analysis of 87 independent samples that suggests a generally positive relationship between female board representation and social performance. They found that this relationship is particularly strong in national contexts where boards may be more motivated to utilise women directors' resources. In other words, their meta-analysis shows that having women on corporate boards has benefits that go beyond just representation. In specific national contexts, there is a greater acknowledgement of the value and contributions that women directors can make to the overall social performance of the company. This indicates that having a diverse representation on corporate boards demonstrates a dedication to equality and improves corporate social responsibility and performance indicators, particularly in situations where their contributions are recognised and utilised more effectively.

Hyun et al. (2016) argue that female independent directors may prioritise CSP more than their male counterparts. They further argue that the action is not simply due to their greater moral values but also due to their desire to maintain a positive reputation. Hyun et al.'s (2016) findings, employing a sample of firms from the Standard & Poor's (S&P) 1500 index covering the years 2000 to 2009, show robust evidence supporting their arguments. Using the Malaysian sample, Nashri et al. (2023) and Zawawi et al. (2023) have found that female directors significantly improve ESG disclosure. Hence, it is hypothesised that:
H1: Board gender diversity has a positive relationship with CSP among listed firms in Malaysia.

Board independence and CSP

Board independence is crucial in shaping CSP by ensuring objective oversight and governance. Independent

directors, free from undue influence, would prioritise ethical considerations and stakeholder interests, thereby promote sustainable practices and enhancing the company's social and environmental impact (Nazir Gardazi et al., 2023). This, in turn, promotes sustainable practices and improves the company's social and environmental impact. This autonomy promotes openness, responsibility, and strategic decision-making that aligns with long-term sustainability objectives.

Ntim and Soobaroyen (2013) conducted a study focusing on a sample of South African firms, revealing that board independence positively impacts corporate financial performance and CSP. Their findings highlight the significant role of independent boards in enhancing financial outcomes while simultaneously promoting responsible business practices and providing societal contributions.

In the same vein, Mallin and Michelon (2011) studied the 100 Best US Corporate Citizens from 2005 to 2007 to investigate the relationship between board reputation and corporate social performance. Mallin and Michelon (2011) also found that the proportion of independent directors was positively associated with CSP. Hence, it is hypothesised that:
H2: Board independence has a positive relationship with CSP among listed firms in Malaysia.

Board Independence, Board Gender Diversity and CSP
Furthermore, board diversity would also enhance governance practices (Velte, 2017). The presence of women on boards is associated with improved governance practices (Nielsen & Huse, 2010). Women are often seen as more risk-averse and ethical (Wong et. al., 2024), which can lead to more prudent and transparent decision-making. Specifically, Wong et al. (2024) found that the existence of female directors in the firms strengthens the positive effect between ESG and firm performance among Gulf countries. In a similar vein, Makhija et. al. (2024) found a positive moderating effect of female directors between ESG and a firm's economic value added among emerging economy countries. However, a contradictory finding was found by Wan Mohamad et. al (2023) on the moderating effect of women directors and competitive advantages on ESG disclosure using Malaysian data.

In order to protect the interests of stakeholders, firms must cultivate a sustainable competitive advantage in the face of fast environmental changes. This involves effectively distributing resources, optimising financial gains, and promoting social welfare in order to succeed in competitive markets (Newman et al., 2020). To achieve these objectives, it is necessary to have good sustainability management, which depends on strong internal corporate governance systems (Zaman et al., 2022). These mechanisms include the corporate board, ownership concentration, capital and incentive structures, and public reporting and disclosure processes. They have a significant impact on how the organisation operates internally.

Importantly, CG mechanisms such as independent directors play a crucial role in safeguarding corporations against socially irresponsible actions, thereby reducing the likelihood of managers pursuing self-interest (Purbawangsa et al., 2020). Independent directors promote sustainability by prioritising long-term corporate development and demonstrating a stronger orientation towards stakeholder interests (Chintrakarn et al., 2020). Prior studies have found mixed findings on the moderating effect of gender diversity on ESG economic value added (Makhija et. al., 2024) and firm performance (Wong et al.,2024). However, the limited studies have looked at the moderating effect of board gender diversity and board independence and CSP. Hence, it is hypothesised that:
H3: Board gender diversity has a moderating effect between board independence and CSP among listed firms in Malaysia.

3. Methodology

Data and Sampling
This study focused on the Main and ACE markets of Public Listed Companies in Malaysia from 2019 – 2024 (6,168 firm-year observations). After excluding insufficient data on ESG, the final sample of this study comprises 936 firm-year observations. The fixed effect model was used to answer the research question using unbalanced panel data. A robust cluster firm has been used after rectifying the heteroscedasticity and serial correlation problem in the analysis. We gathered the ESG score, board gender, board independence, board size,

and financial data from the Eikon Datastream.

Data Measurement Procedures

The dependent variable of this study is corporate sustainability performance proxied by the total ESG score. Then, the independent variables are the board gender and board independence. Board gender is measured by the ratio of female directors to board size (Wasiuzzaman & Wan Mohammad, 2020). Then, board independence is measured by the number of independent directors and board size (Kamaludin et al., 2022). This study controls the board size as it could influence the findings. The board size is measured by the total number of directors in the boardroom (Younas et al., 2021; Gurol & Lagasio, 2023).

We also control the financial characteristics, as they may influence our results. This study controls for firm size, firm profitability, and solvency. The natural logarithm of total assets measures the firm's size. Firm profitability, proxied by Return on Assets (ROA), is measured by net income to total assets. Firm solvency is proxied by Debt Ratio (DR) and LOSS is measured by total debt over total assets and a dummy variable of 1 if the firms incurred a loss in the financial year and 0 otherwise.

Equation Model

Therefore, the basic and moderating regression models are as follows:

$$ESG_{it} = \beta_0 + \beta_1 BGEN_{it} + \beta_2 BIND_{it} + \beta_3 BSIZE_{it} + \beta_4 FSIZE_{it} + \beta_5 ROA_{it} + \beta_6 DR_{it} + \beta_7 LOSS_{it} + \varepsilon \quad (1)$$

$$ESG_{it} = \beta_0 + \beta_1 BGEN_{it} + \beta_2 BIND_{it} + \beta_3 GBEN*BIND + \beta_4 BSIZE_{it} + \beta_5 FSIZE_{it} + \beta_6 ROA_{it} + \beta_7 DR_{it} + \beta_8 LOSS_{it} + \varepsilon \quad (2)$$

Where ESG is the total score of environmental, social, and governance; BGEN is the ratio of female directors to board size; BIND is the ratio of board independence to board size; BSIZE is total directors in the boardroom; FSIZE is the natural algorithm of total assets; ROA is the ratio of net income over total assets; DR is the ratio of total liabilities to total assets; LOSS is a dummy variable of 1 if the firms incurred a loss in the financial year and 0 otherwise; ε is the error term; i and t denoting firm i at the end of year t.

4. Findings

Descriptive Statistics

Table 1 reports the descriptive statistics for all the variables. The results in Panel A of Table 1 indicate that the average ESG score is 43.63, with values ranging from 4.89 to 91.45. This indicates that the average ESG score among publicly listed firms in Malaysia is below average. The percentage of female directors (BGEN) in the boardroom has a mean value of 23.15, meaning it is below the MCCG 2021 target to have 30% female directors in the firms.

The control variable of BIND has a mean value of 50.26, ranging from 0.14 to 99.86, indicating that more than half of the directors are independent directors. For BSIZE variables, the mean value is 8 directors, ranging from 4 to a maximum of 17 directors in the firms. The mean for FSIZE (the natural logarithm of total assets) is 21.76, ranging from 17.83 to 27.66. ROA has a mean value of 0.04, with a minimum of -0.61 and a maximum of 0.80. For the variable DR, the mean values are 0.4, ranging from 0.009 to 1.31.

Panel B in Table 1 shows the dummy variable of LOSS. The sample size shows that only 18% of the firms reported a loss during the year's observations.

Table 1: Descriptive Results

Panel A	Min	Max	Mean	Median
ESG	4.89	91.45	43.63	41.64
BGEN(%)	0	66.67	23.15	22.22
BIND (%)	0.14	99.86	50.26	43.91
BSIZE	4	17	8.17	8
FSIZE(log)	17.83	27.66	21.76	21.47
ROA	-0.61	0.80	.04	0.03

DR	0.009	1.31	.48	0.46
Panel B	**Yes**	**No**	**Yes (%)**	**No (%)**
LOSS	171	766	18	82

Correlation Statistics

Table 2 reports a pairwise correlation analysis among the dependent and independent variables. The result shows that BGEN, BIND, BSIZE, FSIZE, ROA, and DR positively correlate with ESG. This provides an early signal that board gender, independence, and size can significantly improve ESG scores in the firms. Meanwhile, the strong financial position, such as firm size and return on assets, positively correlates with ESG score through the firm's investment and disclosure in ESG activities. However, as predicted, LOSS has a negative correlation with ESG.

The overall result shows that only FSIZE has a high correlation with ESG, with a value of 0.571. However, the results indicate no significant correlation between independent variables, and none represent any concern for multicollinearity[1] Issues in this study.

Table 2: Pairwise Correlations Results

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) ESG	1.000							
(2) BGEN	.332***	1.000						
(3) BIND	.264***	.104***	1.000					
(4) BSIZE	.362***	.069**	-.025	1.000				
(5) FSIZE	.571***	.195***	.166***	.425***	1.000			
(6) ROA	.086***	.106***	-.049	-.008	-.091***	1.000		
(7) LOSS	-.142***	-.114***	.010	-.064*	-.083**	-.557***	1.000	
(8) DR	.286***	.039	.131***	.147***	.530***	-.267***	.137***	1.000

Multiple Regression Analysis

Table 3 presents the multiple regression estimates of BGEN and BIND on ESG scores. For model 1, the coefficients for BGEN are positive and statistically significant at 1% on the ESG score. Our finding supports that the presence of female directors in the boardroom can improve corporate sustainability performance. This is due to the women having different personalities and views (Hillman et al., 2002) and being more sensitive regarding sustainability issues (Bear et al., 2010). Our findings are consistent with prior studies by Wasiuzzaman and Subramaniam (2023), which found that female directors generally positively impact environmental and social disclosure in a Malaysian setting. Our findings support the government initiative for firms to have a minimum of 30% women on the boardroom (MCCG 2021).

Our findings align with the upper echelons theory, suggesting that the participation of women in the boardroom brings diverse perspectives, which can enhance decision-making processes (Bannò et al., 2023). This diversity leads to more comprehensive discussions on CSP issues, ensuring that different viewpoints are considered, which can result in better CSP strategies and initiatives (Frankl & Roberts, 2018). Consequently, increasing the female representation on boards is not only a matter of equality but also provides a strategic advantage for the firm, specifically regarding CSP. Therefore, our findings support hypothesis 1 (H1) that women in the boardroom enhance CSP among listed firms.

The coefficient for BIND is positive and statistically significant at 1% on the ESG score. This indicates that the majority of independent directors in the firms can improve the governance pillar. Our findings support the government's initiative on the importance of having a majority of independent board members in the firms. Our findings also align with the upper echelons theory, where the board composition (directorship) influences its decisions and actions regarding social responsibility (Dunn & Sainty, 2009). Independent directors are

[1] Multicollinearity is likely to be a concern when pair-wise correlation between the two variables exceeds 0.80 (Hair, 2010).

crucial in overseeing and monitoring management, ensuring that executives are held accountable for their decisions and actions (Kallamu, 2016). Furthermore, independent directors frequently contribute broad expertise and an objective viewpoint to the board, free from the influence of the company's management (Li et al., 2012). This objectivity enables them to make decisions that are more balanced and aligned with long-term societal and environmental sustainability, which indirectly enhances CSP. Therefore, our findings support hypothesis 2 (H2) that board independence enhances CSP among listed firms.

Model 2 shows the moderating results. We found that BGEN strengthens the positive effect of BIND and ESG. This provides new insight that the composition of independent and female directors can boast ESG scores. Aligning with upper-echelon theory and having a strong internal corporate governance system is necessary for good sustainability management (Zaman et al., 2022). The presence of women on boards is associated with improved governance practices (Nielsen & Huse, 2010). Women are often seen as more risk-averse and ethical, which can lead to more prudent and transparent decision-making (Wong et. al., 2024). Meanwhile, independent directors promote sustainability by prioritising long-term corporate development and demonstrating a stronger orientation towards stakeholder interests (Chintrakarn et al., 2020). Therefore, our findings support hypothesis 3 (H3) that board gender diversity moderates the relationship between board independence and CSP among listed firms.

The control variable of BSIZE is insignificant for all dependent variables and indicates that a sufficient number of directors is a matter in the firms. Our findings support the MCCG initiative, which does not set the firm's minimum or maximum number of directors. The financial characteristics of FSIZE show a positive and statistically significant 1% on ESG. This proves that larger firms invest more in ESG and have higher ESG scores. Meanwhile, ROA, LOSS and DR show an insignificant relationship with ESG, indicating that the firm's profitability and solvency have no relationship with sustainability performance.

Table 3: Multiple Regression Results

Descriptive	Expected direction	Model 1		Model 2	
		Coefficient	t-value	Coefficient	t-value
Constants	+/-	-213.197	-3.33***	-203.091	-3.09***
BGEN	+	.202	4.37***	0.099	1.26
BIND	+	0.06	3.23***	0.012	0.40
BGEN*BIND	+/-		-	0.002	1.75*
BSIZE	+	0.368	1.27	0.309	1.05
FSIZE	+	11.298	3.75***	10.965	3.54***
ROA	+	-6.574	-1.35	-6.54	-1.31
LOSS	-	0.753	0.68	-0.747	0.68
DR	-	0.908	0.11	1.013	0.13
Adj. R2 (%)		18.6		19.1	
F-statistics		13.821***		12.48***	
n		936		936	

Additional Test

Our main finding shows that BGEN is significantly positive on ESG. Therefore, the results are robust to several tests examining the individual pillars, including the environmental (ENV) and social (SOC) pillars. The governance pillar is removed for the additional test, as the board composition is part of governance. Table 4 shows that the coefficients for BGEN are positive and statistically significant at 1% on the environment and social pillars. This indicates that our result holds the same conclusion even though the governance pillar had been removed from the analysis. This indicates that the presence of female directors in the firms significantly improves CSP. However, BIND shows an insignificant relationship between ENV and SOC pillars.

The control variables of BSIZE show a positive and significant relationship with SOC only and indicate that board size can improve social welfare in firms. The financial characteristics of FSIZE show a positive and statistically significant 1% on ENV and SOC. While ROA shows a negative and statistical significance at 5% on the ENV pillars only. LOSS and DR show an insignificant relationship with ENV and SOC.

Table 4: Additional Test

Descriptive	Expected direction	ENV		SOC	
		Coefficient	t-value	Coefficient	t-value
Constants	+/-	-237.492	3.10***	-181.309	-2.65***
BGEN	+	0.202	3.36***	0.175	3.44***
BIND	+	0.02	0.93	0.028	1.44
BSIZE	+	0.674	1.64	0.507	1.81*
FSIZE	+	11.914	3.33***	10.077	3.16***
ROA	+	-9.264	-2.18**	-4.366	-0.60
LOSS	-	0.157	0.13	0.313	0.26
DR	-	-0.037	-0.01	-1.235	-0.18
Adj. R2 (%)		11.5		11.1	
F-statistics		8.960***		5.955***	
n		936		936	

5. Conclusions and recommendations

This study examines the relationship between board gender diversity, board independence, and corporate sustainability performance (CSP), highlighting their significance in shaping corporate governance structures that drive sustainable business practices. The findings confirm that gender-diverse boards contribute positively to CSP by incorporating diverse perspectives, enhancing decision-making, and fostering innovation, leading to improved social and environmental outcomes. Likewise, board independence strengthens governance accountability, ensuring ethical oversight and minimising conflicts of interest. The study also finds that board independence moderates the relationship between gender diversity and CSP, reinforcing the positive impact of diversity by providing enhanced oversight and strategic alignment with sustainability objectives. These results emphasise the importance of promoting both gender diversity and independent oversight within corporate boards to foster ethical, transparent, and sustainability-driven decision-making.

As regulatory frameworks evolve and stakeholder expectations for corporate sustainability intensify, the role of governance structures in driving responsible business practices becomes more crucial. Firms that fail to adopt progressive governance strategies may face reputational risks, reduced investor confidence, and regulatory scrutiny. Gender-diverse boards contribute to ethical leadership by incorporating a broader range of perspectives, enhancing transparency, and strengthening long-term value creation. The moderating role of board independence ensures that gender diversity leads to tangible CSP improvements by fostering accountability and long-term strategic thinking. These findings reinforce the argument that corporate governance is not just about compliance but is integral to sustainable value creation in a competitive global economy. Businesses that integrate diversity and independence into their governance frameworks are better positioned to navigate sustainability challenges, enhance stakeholder trust, and achieve long-term business resilience.

This study makes important contributions to corporate governance literature by providing empirical insights into the combined effects of gender diversity and board independence on CSP. Unlike previous research that examines these factors separately, this study explores their interaction, offering new evidence on how independent boards amplify the benefits of gender diversity. By analysing recent data from Bursa Malaysia,

this research provides valuable insights into governance practices in an emerging market, contributing to discussions on regulatory policies and corporate responsibility in a developing economic context. Additionally, this study extends upper echelons theory by demonstrating that leadership characteristics—specifically gender diversity and independence—significantly influence corporate strategic decisions and sustainability outcomes. These insights are valuable for academics, regulators, and corporate decision-makers in shaping policies that enhance sustainable corporate governance.

Theoretical and Managerial Implications

From a theoretical perspective, this study extends upper echelons theory by emphasising the role of leadership composition in shaping corporate sustainability performance. The presence of gender-diverse boards ensures that multiple viewpoints are incorporated into decision-making, promoting ethical governance and long-term sustainability. Furthermore, the moderating effect of board independence supports the idea that oversight mechanisms play a critical role in ensuring that diversity translates into meaningful CSP improvements. These findings contribute to the growing literature exploring how corporate leadership structures influence sustainability outcomes.

From a managerial perspective, this study provides actionable insights for businesses aiming to enhance governance effectiveness. Firms should actively promote gender diversity to strengthen decision-making, sustainability reporting, and stakeholder engagement. Additionally, strengthening board independence ensures governance accountability, minimizes short-term profit-driven strategies, and enhances corporate transparency. Investors should consider board composition as a key determinant of corporate sustainability commitment, integrating gender diversity and board independence into their investment evaluation processes. Corporate leaders must recognise that fostering an inclusive governance culture not only aligns with sustainability objectives but also improves corporate reputation, investor trust, and long-term financial performance.

Recommendations for Practice

To enhance governance effectiveness and sustainability performance, firms should implement policies that actively promote gender diversity and board independence through inclusive recruitment strategies and fair representation in leadership positions. Leadership training programs should be established to strengthen the governance competencies of female executives and independent directors. Investors and policymakers should advocate for regulatory frameworks that encourage diversity and independent oversight to improve corporate transparency and ESG performance. Organisations should integrate sustainability metrics into corporate governance policies, linking executive incentives to CSP achievements. Strengthening ESG-focused board committees can further enhance sustainability oversight and decision-making. Additionally, firms should engage with stakeholders, including investors, regulators, and communities, to reinforce trust and demonstrate their commitment to responsible governance.

Research Limitations and Future Directions

Despite its contributions, this study has certain limitations. First, it focuses on firms listed in Bursa Malaysia, which may limit the generalizability of the findings to other markets with different regulatory frameworks and governance practices. Future research could expand the analysis to diverse economic and institutional contexts to compare how board diversity and independence influence CSP globally. Additionally, this study examines board composition as a primary determinant of CSP but does not account for other corporate governance factors, such as CEO leadership style, ownership structure, or industry-specific characteristics. Future studies could explore these variables to provide a more comprehensive understanding of the factors influencing corporate sustainability performance.

Further research could examine the long-term impact of board gender diversity and independence on CSP by conducting longitudinal studies to assess their sustained effects over time. Investigating the causal mechanisms through which board dynamics influence specific sustainability initiatives, such as carbon footprint reduction, ethical supply chain management, or corporate social responsibility programs, would provide deeper insights into governance's role in sustainability. Additionally, exploring the interaction between governance structures and regulatory policies across different cultural and economic settings could offer valuable comparative perspectives on how corporate boards adapt to evolving sustainability expectations. As global sustainability

concerns continue to shape corporate governance priorities, future research should examine innovative governance models that effectively integrate sustainability into corporate decision-making and strategy.

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