

# Steering the helm of sustainability: the role of sustainability committees and female directors

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## Abstract

**Purpose** – The purpose of this study is to investigate the role of sustainability committees (SCs) and CEO attributes (i.e. tenure, age, shareholdings and duality) in driving SDG disclosure breadth among Malaysian publicly listed firms. Furthermore, this study examines the moderate role of female board directors between SCs and CEO attributes to influence corporate SDG outcomes.

**Design/methodology/approach** – This study uses a panel data set of 1,958 firm-year observations from Malaysian listed firms (2018–2021). Sustainability data were hand-collected from sustainability reports, while financial and governance data were extracted from annual reports and Capital IQ. Fixed-effects regression with robust standard errors and system GMM estimation were applied to address endogeneity and ensure robustness of results.

**Findings** – The results of this study indicate that the presence of SCs significantly enhances the SDG disclosure breadth among Malaysian listed firms. Furthermore, the female director has a direct positive impact on increasing the SDG disclosure breadth.

**Originality/value** – This study is original in three ways. First, this study offers the first large-sample evidence (1,958 firm-years, 2018–2021) on how SCs shape firms' SDG disclosure breadth in Malaysia's emerging-market setting. Second, this paper uniquely tests the moderating role of board gender diversity, showing that SC amplifies the contribution of female directors to SDG outcomes. Third, this study triangulates fixed-effects estimates with system GMM to address endogeneity, using hand-collected SDG measures from sustainability reports. Collectively, this study identifies governance mechanisms that advance SDG performance and informs Malaysian governance reforms and investor stewardship.

**Keywords** Sustainability development goals, Sustainability committees, Board gender diversity, Corporate governance, Malaysian listing firms

**Paper type** Research paper



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## Introduction

The inception of 17 Sustainable Development Goals (SDGs) by the United Nations has since motivated countries and the corporate world to work toward the ongoing social, environmental and economic problems worldwide. Sustainability is now a vital aspect of all corporations worldwide. Research on corporate sustainability and strategy in implementing sustainability has propagated significantly (Rahi *et al.*, 2024; Ahmad *et al.*, 2024; Nguyen and Kanbach, 2024). Studies on sustainability and reporting have continued to proliferate even within Southeast Asia (Pranugrahaning *et al.*, 2023; Jan *et al.*, 2023; Susilowati *et al.*, 2022; Mohd Hanafiah *et al.*, 2022; Matahir *et al.*, 2022; Buniamin *et al.*, 2020; Wan and Abdullah, 2021; Hamad *et al.*, 2022; Bundhamcharoen *et al.*, 2017).

Moreover, sustainability continues to gain momentum globally. Malaysian public-listed companies are no exception to playing the role of driving the country's sustainability agenda. From the early days of voluntary CSR disclosures to the sustainability frameworks now in place, Malaysia has made progress in embedding sustainability into its corporate structures and business practices. Bursa Malaysia (Malaysia stock exchange), through its revised Malaysian Code on Corporate Governance 2021 and Sustainability Framework, has played a fundamental role in promoting transparency and accountability in corporate sustainability practices. In October 2015, Bursa Malaysia launched the Sustainability Framework 1 to help public-listed companies with their sustainability-related disclosures. This Sustainability Framework comprised amendments to the listing requirements and a Sustainable Reporting Guide. Specifically, the updated Listing Requirement of Bursa Malaysia requires Malaysian listed companies to share information about their governance structures and the committees responsible for managing corporate sustainability issues.

Notably, existing scarce literature has shed light on the pivotal role of sustainability committees (SCs) in advancing sustainability initiatives and enhancing corporate reporting transparency (Zampone *et al.*, 2024; Li *et al.*, 2022; Tran *et al.*, 2020; Orazalin, 2019; Burke *et al.*, 2019; Baraibar-Diez and Odriozola, 2019). Despite the potential of past studies and efforts of the governing bodies in driving sustainable practices, the SCs continue to be undervalued in many organizations. Particularly for the case of the Asia-Pacific region, Professor Mak from the National University of Singapore observed that only 22% of sampled Malaysian companies have established SC or equivalents, reflecting an apparent lack of emphasis on their role (Mak, 2023). Two common types of sustainability governance structure were observed by Professor Mak among the examined Malaysia, Australia and Singapore listing firms. It is either the entire board overseeing the corporate sustainability matters without any particular SC formed or multiple committees tasked with that responsibility. High-profile decisions of a global banking and financial services leader, such as HSBC's recent removal of its sustainability chief officer from its executive committees, further highlight concerns about corporate SDG commitments.

Sustainability reporting and initiatives in Malaysia remain in their infancy. According to the recent Bursa Malaysia Sustainability Disclosure Review released in 2022, the average compliance level for the top 100 companies by market capitalization is 98%, showing a high level of compliance with sustainability reporting. The average compliance for smaller-cap listing companies is between 83% and 91%, indicating challenges faced by smaller companies in maintaining their sustainability reporting compliance. Despite achieving high compliance levels among the larger market cap companies, the quality of reporting declined. The reported average quality score of 4 is 58% for the top 100 companies and 36%–48% for the small-cap companies. This could imply that while companies tried to meet the disclosure compliance requirements, the depth and clarity of disclosures, including governance structures and material sustainability issues, have suffered or not evolved as expected.

At this juncture, there were only a handful of studies on SDGs in Malaysia emphasizing awareness and disclosure of SDGs in specific industries and sectors. For example, [Susilowati et al. \(2022\)](#) found that the extent of corporate governance disclosure in Malaysian and Indonesian Fintech firms is generally low, and this may delay the achievement of SDG No. 16 (Peace, Justice and Strong Institution). Moreover, a study on the local governments and SDGs has shown that the Malaysian Government has initiated and intensified its effort and desire to achieve SDGs ([Karim, 2021](#)). [Karim \(2021\)](#) documented that the sustainable development concept has been embraced and included in many of the policy and governance frameworks in the local government operations. Additionally, research on the knowledge and behavior of university students in Malaysia and the UK has suggested that Malaysian students are more aware of the SDGs' contents and scope compared to their UK counterparts ([Zhou et al., 2022](#)). Therefore, our study fills the gap by assessing the SC, gender diversity and CEO attributes together and how they may influence SDG disclosure (achievements) in Malaysian public listed firms.

This inconsistency highlights the need for a deeper examination of corporate mechanisms, such as SCs, in the disclosure and achievement of the SDGs. This study investigates the impact of SCs on SDG attainment among Malaysian public-listed companies, offering the following contributions. First, to the best of the authors' knowledge, this research represents a novel inquiry into the interplay between SCs and sustainability achievements in the context of Malaysian public-listed companies. Second, this study offers an update on the gender diversity reforms that promote corporate sustainability practices. Importantly, this study extends this by examining the interaction effect between the proportion of female directors on the board and the presence of a SC offering new insights into how board diversity and formal sustainability structures may jointly enhance SDG outcomes. Third, this study offers a novel contribution to the emerging literature on SDGs in Malaysia, where this area of research remains at an early stage. It also contributes to broader discussions on social, environmental and ethical governance practices in the context of an emerging economy. Fourth, by exploring these relationships, this study aims to provide policy-relevant insights into the effectiveness of recent governance reforms in promoting corporate social responsibility and sustainable practices among Malaysian listed firms.

The remainder of this paper is structured as follows. The next section reviews the literature on key factors affecting SDG disclosure, including SC, CEO characteristics and female directors, followed by the development of hypotheses. The research methodology is then outlined, with subsequent sections discussing the descriptive statistics and empirical results. Finally, the conclusion synthesizes the findings and highlights policy implications.

## Literature review

### *Sustainability committees and SDG disclosure*

Research on the influence of SCs in SDG disclosure (achievement) remains scarce. Recent research sheds light on the role of SCs in enhancing corporate sustainability disclosure and reporting. The establishment of a corporate social responsibility (CSR) or SC as a board sub-committee indicates that the company takes an active approach to promoting sustainability practices that meet the stakeholders' expectations ([Emma and Jennifer, 2021](#); [Zamponi et al., 2022](#)). SCs possess specific skills and competencies that can help the companies undertake socially responsible behaviors and assume a proactive commitment toward sustainability issues ([Martínez-Ferrero et al., 2021](#)). [García-Sánchez et al. \(2022\)](#) found that the CSR committee positively influences the integration of SDG indicators into non-financial information systems, guaranteeing the accuracy and credibility of disclosed information. The presence of a SC enables the companies to gain the trust of local

stakeholders (Helfaya and Moussa, 2017). Zamponi *et al.* (2022) found that the presence of a SC mediates the relationship between board gender diversity and SDG disclosure.

Despite their importance, the establishment of SC in Malaysia remains low. Establishing an SC may signal a company's willingness to incorporate SDG activities into its business for a longer-term sustainable practice. Moreover, SC may also serve as a link in promoting dialogue between corporations and various stakeholders via relevant disclosures (Hamad *et al.*, 2024). However, according to a report from Mak (2023) that examines companies in Malaysia, Singapore and Australia, only 25% of them have formed relevant SCs. This highlights a pressing need to understand the influence of SC in promoting corporate SDG activities growth. This also reveals the need for policymakers to enforce and integrate SC into corporate governance structures. Based on these observations, the following hypothesis is proposed:

- H1. The presence of sustainability committees is positively associated with SDG disclosure.

#### *CEO attributes and SDG disclosure*

The rationale for selecting CEO characteristics stems from the notion that these attributes may have an influence toward disclosure (achieving) SDG goals. Past studies on Malaysian public listed firms suggest that CEO characteristics are not associated with internal audit findings, contradicting the assumption that powerful CEO undermine the independence of the board (Alzeban, 2021). On the other hand, Chandren *et al.* (2021) find that board chairman's tenure is associated with poor operating performance. Similarly, Lok *et al.* (2024) argue that CEO duality is negatively associated with digital transformation and automation in Malaysian listed firms. Moreover, Malaysian Code on Corporate Governance highlight the importance on a strong and effective board, suggesting that the roles of the CEO and Chairman are separated to prevent excessive authority placed on a single board member, encouraging check and balances within the board.

The role of the Chief Executive Officer (CEO) is imperative as they play an important role in the process of balancing and addressing the objectives of different stakeholder groups (Hambrick and Mason, 1984). CEO, as the company's most powerful internal actor, is deemed to play a pivotal role in enhancing SDG practices and corporate disclosure. Nevertheless, some studies suggested the negative impact of CEO influence on CSR practices, corporate sustainable development and disclosures. Sheikh (2019) noticed that CEO power is negatively associated with CSR. Muttakin *et al.* (2018) and Rashid *et al.* (2020) also reported that CEO power is negatively associated with CSR disclosures among Bangladeshi companies because powerful CEOs prefer to devote time and effort to profit-making activities and are not interested in disclosing CSR information. In the context of the USA, Harper and Sun (2019) and Chu *et al.* (2023) found that firms with more powerful CEOs engage in less CSR activities. They argued powerful CEOs become less responsive to the needs of stakeholders, and they are more likely to take actions to maximize their interests such as maintaining or even increasing their power at the expense of stakeholders. Garcia-Sanchez *et al.* (2021) revealed that powerful CEOs oppose the disclosure of integrated information. One of the reasons for a CEO's reticence to the disclosure is that the key information relating to the strategy, business model, value creation processes, prospects, risks and opportunities could be exploited by competitors (Garcia-Sanchez *et al.*, 2021).

On the other hand, some studies highlight the positive aspects of CEO influence in sustainability practices. Li *et al.* (2018) reported that higher CEO power enhances the ESG disclosure effect on firm value, indicating that stakeholders associate ESG disclosure from

firms with higher CEO power with greater commitment to ESG practice in the context of the UK. Similarly, [Sannino et al. \(2020\)](#) revealed that CEO age and tenure positively influence the sustainable development model of Fintech firms. Overall, these studies demonstrated that CEOs could play a constructive role in achieving *SDG disclosure*:

- H2a.* CEO attribute such as CEO tenure is positively associated with *SDG disclosure*.
- H2b.* CEO attribute such as CEO age is negatively associated with *SDG disclosure*.
- H2c.* CEO attributes such as CEO shareholdings are negatively associated with *SDG disclosure*.
- H2d.* CEO attribute such as CEO duality is associated with *SDG disclosure*.

#### *Female directors and *SDG achievement**

The revised MCCG 2021 recommended that all boards should comprise at least 30% female directors ([Bursa Malaysia, 2023](#)). Past studies evidenced that female directors are more concerned about societal and environmental issues ([Rosati and Faria, 2019](#); [Zampone et al., 2022](#)). [Ramstetter and Habersack \(2020\)](#) found out that female directors act more pro-environmentally than male directors. They are more likely to advocate the use of renewable energy ([Atif et al., 2021](#)) and enhance climate mitigation strategies to reduce total greenhouse gas emissions intensity ([Nuber and Velte, 2021](#)). Furthermore, [Arayssi et al. \(2016\)](#) unveiled that the participation of female directors on corporate boards significantly increases the value of sustainability-related investments, contending that female directors promote social agenda in the boardroom. In the Malaysian context, [Zahid et al. \(2020\)](#) found a positive influence of female directors on workplace and social, environmental and economic issues.

Despite some past studies reporting that gender diversity does not have any significant impacts on ESG or *SDG disclosure* ([Manita et al., 2018](#); [Pizzi et al., 2022](#)), [Rosati and Faria \(2019\)](#), by investigating the companies from the GRI database and the Orbis database, noticed that early adoption of *SDG reporting* is associated with a higher proportion of female directors on board. In the same vein, [Zampone et al. \(2022\)](#), by examining companies from the Forbes Global list, reported that board gender diversity positively influences *SDG disclosure*. They advocated the ability of female directors to meet stakeholder information needs. Based on findings of the past, this study expects that the Malaysian public listed companies with more female directors are likely to incorporate more *SDG* into the board's discussions and strategy setting. Based on that, we formulate the following hypotheses:

- H3.* Board female directors are positively associated with *SDG disclosure*.
- H4.* Board female directors positively moderate the relationship between the sustainability committee and *SDG disclosure*.
- H5a.* Board female directors positively moderate the relationship between CEO attributes such as CEO tenure and *SDG disclosure*.
- H5b.* Board female directors positively moderate the relationship between CEO attributes such as CEO age and *SDG disclosure*.
- H5c.* Board female directors positively moderate the relationship between CEO attributes such as CEO shareholdings and *SDG disclosure*.

H5d. Board female directors positively moderate the relationship between CEO attributes such as CEO duality and SDG disclosure.

## Research methodology

### Sample selection and data

Consistent with prior research, financial firms are excluded because of the imposed regulatory requirements. The final usable sample comprises 1,958 firm-year observations for the period 2018–2021. The sample data commenced since 2018 because it is the first year in which publicly listed firms in Malaysia commenced their sustainability reporting and 2021 is the most recent data that can be collected at this juncture. The variables are obtained from different sources of data. For financial data, the data are downloaded from Capital IQ. To collect information about the number of SDGs that are achieved for the year, the data are hand collected from the sustainability report of publicly listed firms in Bursa Malaysia. Other corporate governance variables, including information about SCs, female directors on board, the CEOs and others, are hand-collected from the annual report of publicly listed firms in Bursa Malaysia.

### Statistical test and models

Fixed effects model (FEM) with cluster-robust standard errors regression is performed to examine the relationship between SC, CEO attributes, female directors and SDG. The following is the FEM regression model for this study:

$$SDG_{it} = \beta_0 + \beta_1 SC_{it} + \beta_2 CEO_{it} [ControlVariables] + IND\_FE + YEAR\_FE + \varepsilon_{it} \quad (1)$$

where  $SDG_{it}$ ,  $SDG\_TOTAL\_it$  is the breadth of SDG disclosure, measured as the number of distinct SDGs disclosed (1–17). The independent variable and control variables definitions are detailed in Table 1, whereas  $IND\_FE$  and  $YEAR\_FE$  denote the industry and year indicator variables respectively. Based on the hypotheses mentioned earlier, the research model presented in Figure 1.

### Measurement of variables

SDG disclosure breadth ( $SDG\_TOTAL\_it$ ) is measured as the total number of distinct Sustainable Development Goals (out of 17) that firm  $i$  reports on in its sustainability report in year  $t$ . This measure captures the breadth of SDG disclosure, that is, the range of SDGs that the firm claims to address, rather than the depth or quality of reporting on each goal. For interpretability, we also construct a rescaled version of this variable,  $SDG\_Perc$ , by dividing  $SDG\_Total$  by 17 so that the measure ranges between 0 and 1. However,  $SDG\_Perc$  is a linear transformation of  $SDG\_Total$  and thus represents the same construct, SDG disclosure breadth, on a different scale. Re-estimating the models with  $SDG\_Perc$  yields numerically equivalent patterns of statistical significance and the same substantive conclusions. To avoid redundancy, we therefore report results only for  $SDG\_Total$  in the main tables and treat  $SDG\_Perc$  purely as a rescaling for descriptive purposes rather than as an alternative proxy. According to the SCs (SCit) measured using a dummy variable of 1 if the SC is present and 0 otherwise, following prior literature (Zampono *et al.*, 2024; Lopez-Arceiz and del Rio, 2022; Li *et al.*, 2022). Our approach is consistent with recent SDGs reporting studies that operationalize SDGs disclosure using the number of goals disclosed (or closely related count measures) as an indicator of disclosure breadth (Galeazzo *et al.*, 2024; Zampono and Guidi, 2024; Gutiérrez-Ponce and Wibowo, 2023). We emphasize that, unlike Hummel and Szekely (2022), who

**Table 1.** Variable measurement

Variable	Abbreviation	Measurement criterion	Source
<i>Dependent variable</i> SDG disclosure breadth (SDG_TOTAL)	SDG <sub>it</sub>	Total number of distinct SDGs disclosed by firm <i>i</i> at time <i>t</i> (1–17)	Annual report
<i>Independent variable</i> Sustainability committee	SC <sub>it</sub>	A dummy variable scored 1 if the firm has a sustainability/CSR committee; 0 otherwise	Annual report
CEO tenure	CEO_TENURE <sub>it</sub>	The total number of years a person serves as a CEO in a firm	Annual report
CEO Age	CEO_AGE <sub>it</sub>	Natural logarithm of a CEO age in years	Annual Report
CEO shareholdings	CEO_SHARE <sub>it</sub>	The total number of shares owned by a CEO divided by the firm's total number of outstanding shares	Annual Report
CEO duality	CEO_DUAL <sub>it</sub>	CEO duality is measured using a dummy variable equal to 1 if the CEO is also the chairman of board and 0 otherwise	Annual Report
<i>Moderator variable</i> Female director	FD <sub>it</sub>	Proportion of female directors on the board	Annual report
<i>Control variable</i> Board size	BOARD <sub>it</sub>	Total number of board members	Capital IQ
Firm size	LNTA <sub>it</sub>	Natural logarithm of firm's total assets	Capital IQ
Debt (leverage)	LNDEBT <sub>it</sub>	Natural logarithm total debt of firm <i>i</i> at time <i>t</i>	Capital IQ
Market capitalization	LNMCAP <sub>it</sub>	Natural logarithm of market capitalization of firm <i>i</i> at time <i>t</i>	Capital IQ
Return of Equity	ROE <sub>it</sub>	Ratio of total net income before tax to the total of equity of firm <i>i</i> at time <i>t</i>	Capital IQ
Return on asset	ROA <sub>it</sub>	The ratio of total net income to the total assets of firm <i>i</i> at time <i>t</i>	Capital IQ

**Source(s):** Authors' design

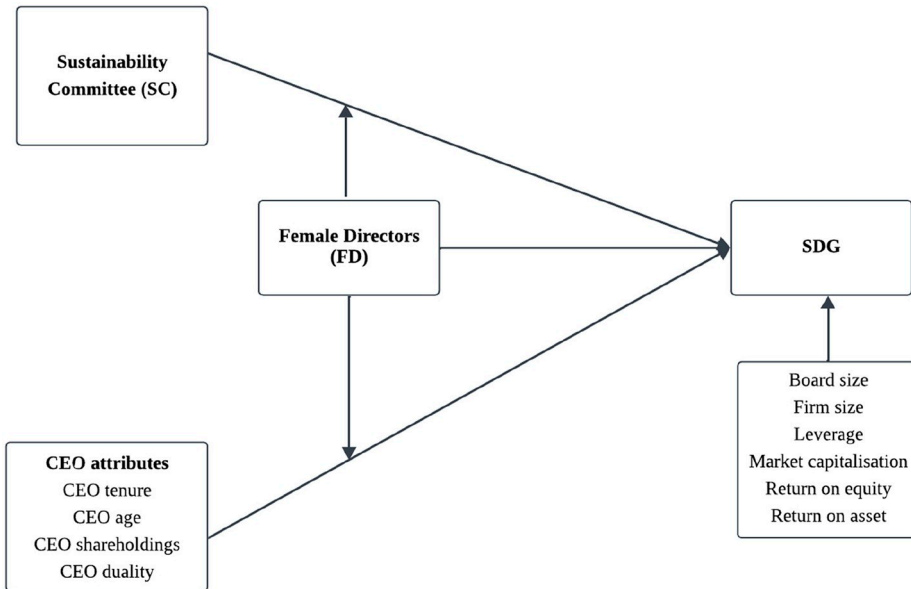


Figure 1. Research model

construct a detailed, 11-item quality index of SDG reporting and a textual measure of implicit SDG topic prevalence, our dependent variable does not capture the quality, materiality or performance-related depth of SDG reporting. It should, therefore, be interpreted as a disclosure-based proxy for firms' SDG engagement, focusing on the breadth dimension only. Information about the presence of the SC was obtained from the annual report of the examined listing firms. Moreover, we refer to the existing literature (Liu *et al.*, 2018) in measuring various CEO attributes. CEO tenure (CEO\_TENUREit) is measured as the total number of years an individual has assumed the role as a CEO in a firm (Lewellyn and Muller-Kahle, 2012). A natural logarithm is applied to the age of the CEO (CEO\_AGEit) (Haider *et al.*, 2020a). CEO shareholdings (CEO\_SHAREit) are measured as the total number of shares owned by the CEO divided by the firm's total number of outstanding shares (Lilienfeld-Toal and Ruenzi, 2014). Finally, CEO duality (CEO\_DUALit) is measured using a dummy variable that is equal to 1 if the CEO is also the chairman of the board and 0 otherwise (Boyd, 1995). Female directors were measured using a continuous measure (FDit). The continuous measure is the proportion of the total number of female directors to the total number of directors on the board (Brahma *et al.*, 2021; Wasizzaman and Wan Mohammad, 2020).

Consistent with prior literature, we have included other firm-level control variables (i.e. board size, firm size, leverage and profitability) because they have an influence on sustainability/CSR reporting (Orazalin, 2019; Zampone *et al.*, 2024). Ho *et al.* (2024) argue that larger board have better representation of diverse stakeholders and are more inclined to have higher sustainability reporting. Larger firms are more predisposed to scrutiny from stakeholders and, hence, have a tendency to have higher SDG disclosures (Luo and Tang, 2021). On the other hand, highly leveraged firms are less likely to pursue carbon reduction initiatives because of financial constraints (Luo and Tang, 2021). Finally, we control for profitability (RoA) because profitable firms tend to be associated with better CSR disclosures (Malik and Kashiramka, 2024).

Therefore, board size ( $BOD_{it}$ ), firm size ( $LNTA_{it}$ ), debt ( $LNDEBT_{it}$ ), market capitalization ( $LNMCAP_{it}$ ), return on equity ( $ROE_{it}$ ) or return on asset ( $ROA_{it}$ ) is included in this paper.

**Results and discussions**

*Descriptive statistics*

The main variables that are involved in the study are all summarized in the descriptive statistics table. It helps in assessing the features of the data set and the average of all the variables. Below are the main features of each variable as per the definitions provided. The average firm in the sample has a total of approximately 7.88 members on the SDG committee, and the average value of the sample lies between 1 and 17 members with a standard deviation of 3.08. This means that there is some range in the memberships of these committees from firm to firm. In the sample, a CEO has a tenure of approximately 10.92 years, and the average range is 0–48 years. This means some CEOs are very new to the position, while some have been there for lots of years as shown by the standard deviation of 9.37, which in this case means there is a great amount of difference. Descriptive statistics for all variables used in the analysis are reported in [Table 2](#).

*CEO\_Age*: According to the current sample, the average age of a CEO is about 57.3 years old. While the average age is 57.3 years old, some CEOs are as old as 89 years and as young as 28 years, suggesting a variety of age demographics among the CEOs in the sample.

*Ownership and Financial Variables CEO\_Share*: The mean CEO shareholding is 20.83%, but this variable has a very large standard deviation of 22.34 and a maximum value of 84.99%. Such wide disparity indicates that some CEOs hold only a small portion of their firm’s stock, while others own a significant percentage.

*F\_Director*: With the average of 1.31 female directors and a stock of 0–8 female directors, the data suggests that the representation of female directors is low relative to the sample, and there are many firms that employ no female directors at all.

*Total\_asset*: Around 836.7 million (in the units of the data) is the average total assets for the firms in the sample. The enormous standard deviation of 2,821.45 along with the maximum value of over 45 billion, however, demonstrates a highly skewed distribution.

**Table 2.** Descriptive statistics

Variable	Obs.	Mean	SD	Min.	Max.
SDG_Total	2,096	7.883111	3.084054	1	17
S_Committee	2,096	0.5543893	0.4971516	0	1
CEO_Dual	2,096	0.0958969	0.2945201	0	1
CEO_Tenure	2,092	10.91922	9.372195	0	48
CEO_Age	2,087	57.30379	9.766924	28	89
CEO_Share	2,091	20.83154	22.338	0	84.99
F_Director	2,096	1.314408	1.070276	0	8
Total_asset	2,096	836.705	2821.452	6.72	45,146.1
Total_debt	2,096	269.3985	1150.121	0	19,497.6
Market_cap	2,096	674.3593	404.3235	1	1,441
Ln_Asset	2,096	5.151861	1.582565	1.905088	10.71766
Ln_Debt	1,967	3.125127	2.47853	-4.60517	9.878047
Ln_MarketCap	2,096	6.153956	1.185028	0	7.273093
ROE	2,096	636.8612	349.5841	1	1,274
ROA	2,096	553.5525	309.7886	1	1,135

**Source(s):** Authors’ analysis

The overall average is being increased by a small amount of very large firms. The majority of the firms have much lower asset bases.

*Total\_Debt*: The mean total debt value stands at 269.4m, a value that has high variability as signified by the high standard deviation (1150.12). The standard deviation, as well as the maximum value which is close to 20bn, indicates that this data set captures some firms that have very high levels of debt as well as firms that have the opposite.

*Market\_Cap*: The mean value of the market cap is 674.36m. Like the total debt value, the market cap also has a large standard deviation (404.32). This indicates that the data set captures firms of various sizes, as well as a few outliers extremely large firms that influence the data set.

*Ln\_Asset, Ln\_Debt and Ln\_MarketCap*: The application of natural logarithm to these variables assists in standardizing the extreme distributions in the set. For these, the mean value of *Ln\_Asset* is 5.15. This indicates that the median value for the total assets is  $e^{5.15} \approx 172.4$  million. This transformation logarithmically alters the data for the better, which also fits the regression analysis better by diminishing the effect that the extreme outliers have.

*ROE (Return on Equity)*: The mean ROE is entirely outside the standard realm of reason. The gross deviation from the average alongside the standard deviation, whose average is 636.86%, is fantom, as is the record maximum of 1274%, particularly when the average standard deviation rests on 349.58. It is probable that some of the returns are so disproportionately positive as to be unfeasible, or that the returns are unreliably expressed in percentage form, indicating that the data is erroneous.

*\*ROA (Return on Assets)*: The mean ROA is 553.55%. The underlying theme of fantastical anomalies banging on the confines of plausibility continues unabated, as does the presumption of an underlying data unit, or data structure, crisis, especially the Return on Assets which is typically smaller as a proportion comparatively unscaled in numerous proxies based referential estimators.

### *Findings and discussion*

While handling a panel data, researchers need to make critical decision on which model to use, whether pooled, fixed or random effects. Each model carries a unique set of assumptions about the underlying data. The pooled model treats all observations as separate and unique, independent of one another with no regard to the individual characteristics of each firm. The fixed effects model does consider the unobserved, time-invariant firm level heterogeneity, such as a firm's culture and location that may have some bearing on the response variable. It does so by essentially putting a unique intercept for each firm. The random effects model does incorporate the heterogeneity but assumes the unobserved effects that are firm specific are uncorrelated with the independent variables.

Such processes (with LM BP test and Chow Likelihood test dan Hausman test) where the fixed effects model was chosen as the preferred method, probably because of the outcomes of the Hausman test, is a common approach and quite robust. It does stand to reason, however, that the presence of autocorrelation and heteroskedasticity, which are classical assumption violations, are frequent problems with panel data. Autocorrelation is, in essence, where the errors of an observation are connected to the errors of past observations. This phenomenon has a number of implications, such as biased standard errors and inference loss. Heteroskedasticity runs the risk of making standard errors unreliable, as the variance of the error does not remain constant for every observation. To solve this issue, the model was elegantly restructured using the Panel-Corrected Standard Errors (PCSE) method. It is specifically devised to yield valid inference

outcomes even with the presence of standard assumption violations by providing reliable robust panels level standard errors with panel heteroskedasticity and contemporaneous correlation across panels. Thus, substantial and reliable inference is offered for interpretation by the PCSE model. Heteroskedasticity does not risk making standard errors unreliable, as the variance of the error does not remain constant for every observation. The dependent variable is *SDG\_Total*, which captures the number of total committee members SDG a firm has. The analysis seeks to determine the impact of a number of firm and board attributes, as well as the moderating impact of *F\_Director* (female directors), on the size of this committee:

- *S\_Committee*: This variable has a coefficient of 1.1168 and highly statistically significant effect at  $p < 0.01$ . Thus, there is strong evidence that firms with a SC disclose, on average, about 1.12 additional SDGs, that is, they exhibit greater SDG disclosure breadth. This is quite reasonable, as they are likely to be part of the same or transparent systems.
- *CEO\_Dual*: The value of the coefficient is  $-0.2351$ , and it lacks significance. Hence, it can be interpreted that “Having a dual role as a CEO and a chairman does not affect SDG disclosure breadth.”
- *CEO\_Tenure*: The value of the coefficient is  $-0.015$ , but it lacks prevalence. It can be determined that the tenure of a CEO does not affect SDG disclosure breadth.
- *CEO\_Age*: The value of the coefficient is  $-0.0064$  and lacks significance; therefore, it can be concluded that the age of the CEO does not greatly affect the size of the SDG committee.
- *CEO\_Share*: The value of the coefficient is  $-0.0139$  and lacks significance; therefore, there is no evidence supporting the claim. The SDG committee does not greatly increase because of the CEO share’s ownership.”

*Moderating variables:*

- *F\_Director*: The value of the coefficient is 0.3593 and lacks significance, so it can be concluded that the presence of female directors has a direct, significant impact on the size of the committee.
- *F\_Director* × *S\_Committee* (#): The interaction term is not significant. It can be concluded that there is no evidence to support the claim: The size of the SDG committee does not significantly increase with the rise in female directors, irrespective of the number of people on the SC.
- The interaction between female directors and CEO duality is not statistically significant ( $\beta = 0.2314$ ), indicating that CEO duality does not moderate the relationship between female directors and the number of SDG committee members
- *F\_Director* × *CEO\_Tenure* (#), *f\_director* × *ceo\_age* (#) and *f\_director* × *ceo\_share* (#): All of these interaction terms are not statistically significant, meaning that female directors do not moderate the effects of CEO tenure, age or ownership on SDG disclosure breadth.

*Control variable:*

- *Board*: Within the predicted model, the total number of board members has a positive and significant effect on committee size, with the board size’s coefficient

predicted to be 0.089. This is reasonable as large boards contain more members to participate on other committees.

- *Ln\_Asset*: Coefficient 0.4754 is highly significant ( $p < 0.01$ ). This indicates that if the total assets of a firm are increased by 1%, then the number of members on the SDG committee is increased proportionately and significantly. Bigger more sophisticated firms have a greater need of large committees to help run and manage their sustainability activities.
- *Ln\_Debt and Ln\_MarketCap*: The positive coefficients observed for both these control variables do reinforce the notion that firm debt and market capitalization do not have a significant effect on the size of the SDG committee.
- *ROA and ROE*: The financials do not determine the size of the SDG committee, as the values of these metrics do not hold considerable value. The committee SDG value size is not cared for as the faction and SDG value are on ROE and ROA.

Table 3 showed the positive association between SCs and SDG disclosure (achievement) aligns with previous studies (Zampone *et al.*, 2022; García-Sánchez *et al.*, 2022). This finding emphasizes the importance of establishing SC to promote SDG adoption and disclosure within the Malaysian context. SCs play a critical role in integrating sustainability into corporate strategies and operations (Martínez-Ferrero *et al.*, 2021), thereby fostering transparent stakeholder dialogue and providing detailed information about corporate contributions to the SDG. These results suggest that Securities Commission Malaysia or Bursa Malaysia should consider recommending the establishment of SCs as a best practice among public-listed companies. The presence of SCs could bolster stakeholder confidence, particularly among investors who prioritize responsible investments. With the growth of responsible investment practices, there is a rising demand for high-quality sustainability disclosures to support informed decision-making (Bursa Malaysia, 2023).

Unexpectedly, CEO characteristics including tenure, age, shareholdings and duality did not significantly influence SDG reporting. These findings contradict prior research conducted in other contexts (Garcia-Sanchez *et al.*, 2021; Sannino *et al.*, 2020) and suggest that CEOs in Malaysian companies play a relatively passive role in SDG reporting. Haider *et al.* (2020b) noted that younger CEOs positively impact information quality, but this effect diminishes as they approach retirement age (65 years). Similarly, Chen *et al.* (2019) found that CSR performance is higher during a CEO's early tenure than in later stages. In Malaysia, approximately 25% of CEOs are aged 65 years or older, with the oldest reaching 85 years. Additionally, about 45% of companies retain CEOs with tenure exceeding 10 years. These trends may indicate that older and long-tenured CEOs prioritize other areas of company strategic directions and management (Zhou *et al.*, 2020), over SDG integration and reporting. Policymakers, such as the Securities Commission Malaysia, should consider introducing initiatives to encourage greater CEO involvement in SDG-related activities and reporting.

Female directors, likewise, show no significant impact on SDG reporting. This finding contrasts with most prior research indicating a positive association between female board representation and sustainability outcomes (Rosati and Faria, 2019; Zampone *et al.*, 2022; Martínez *et al.*, 2019; Jizi, 2017; Kiefner *et al.*, 2022). The results suggest that female directors in Malaysian public-listed companies may face tokenism, limiting their influence on SDG integration. With female directors constituting only 17% of board members on average, as shown in Table 1, minority opinions may be suppressed because of the perceived risks of expressing dissent (Glass and Cook, 2018). These findings highlight the need for

**Table 3.** Statistics inference

Variable	Pooled	Fixed	Random	PCSE
S_Committee	1.1168781***	0.52522475*	0.66910833***	1.1168781***
CEO_Dual	-0.23510575	-1.1074214*	-0.7614623*	-0.23510575
CEO_Tenure	0.01523852	0.0005528	0.00075836	0.01523852*
CEO_Age	0.00642227	0.03938435*	0.02984857*	0.00642227
CEO_Share	-0.01397628**	-0.00468971	-0.00798954	-0.01397628***
F_Director	0.35931386	0.66499415	0.59440156	0.35931386
C. S_Committee#				
C.F_Director	-0.02935604	0.15868933	0.12506995	-0.02935604
C.CEO_Dual#				
C.F_Director	0.23144406	0.5423696*	0.45531154*	0.23144406*
C. CEO_Tenure#				
C.F_Director	-0.00364686	0.00375675	0.00236629	-0.00364686
C.CEO_Age#				
C.F_Director	-0.00228765	-0.01258204	-0.01012313	-0.00228765
C.CEO_Share#				
C.F_Director	-0.00231045	0.00140875	-0.00003084	-0.00231045
Board	0.06089622	-0.00587411	0.01365515	0.06089622***
Ln_Asset	0.47547522***	1.2473583***	0.68886651***	0.47547522***
Ln_Debt	-0.01737098	-0.09766952	-0.06982589	-0.01737098
Ln_MarketCap	0.16083271**	-0.01416849	0.00370213	0.16083271*
ROE	-0.00007718	0.00007032	0.00006148	-0.00007718
ROA	0.00009043	-0.00007004	-0.0000236	0.00009043
_Cons	3.014734***	-0.72107199	2.3504132**	3.014734***
N	1,958	1,958	1,958	1,958
R <sup>2</sup>	0.17197808	0.05536256		0.17197808
R <sup>2</sup> _A	0.16472222	-0.28916002		
R <sup>2</sup> _O		0.14062932	0.15754733	
F	23.70195	4.9436904		
P		1.623e-10	1.964e-28	0
Chi <sup>2</sup>			175.81671	35,801.895

**Note(s):** Legend: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

**Source(s):** Authors' analysis

policymakers to reassess the role of female directors on the board and possible mandates to ensure that their involvement goes beyond fulfilling gender diversity quotas.

However, [Table 3](#) reported otherwise. Particularly, the involvement of female directors does not moderate the association between SC on the board and SDG disclosure. This novel discovery strengthens the existing literature. It demonstrates that the presence of female directors can amplify but does not influence the effect of minority SCs on SDG disclosure. The weak positive relationship observed may be because of the limited representation of certain members on the board, which dilutes their power of voice and influence. This suggests that in contexts where female directors' representation is minimal, SC does not play a moderating role in amplifying SDG disclosure. Results indicate that the presence of female directors does not have a significant direct effect on the size of the sustainability (SDG) committee. The coefficient (0.3593) is positive but statistically insignificant, suggesting that, while female directors are present on boards, their presence alone does not automatically translate into broader SDG disclosure reporting across a larger set of goals. This finding

highlights an important nuance: gender diversity on boards may not manifest in structural committee changes, at least not in terms of size. Prior studies have noted that women on boards often enhance oversight and monitoring functions (Adams and Ferreira, 2008), yet such effects may relate more to the quality of governance rather than the number of committee members.

Similarly, the interaction between female directors and SC size (F\_Director × S\_Committee) was not significant. This suggests that increasing the number of female directors does not alter the relationship between board composition and the scale of SDG committees. The lack of moderation effect could imply that structural changes to sustainability governance are influenced more by broader institutional, regulatory or cultural contexts than by gender representation alone. This finding aligns with research emphasizing that female directors' impact can be context-dependent and not universally evident across all governance outcomes (Chatterjee et al., 2022).

The analysis further revealed that the interaction between female directors and CEO duality (F\_Director × CEO\_dual) is not statistically significant. In other words, CEO duality does not condition or alter the effect of female directors on number of SDG committee members. This result mirrors findings from other emerging market contexts, such as Pakistan, where female directors positively influence sustainability performance, but CEO duality does not significantly moderate that relationship (Zia et al., 2022). It may be the case that the concentration of power in a dual CEO/Chair role limits board members' influence over committee structure, thereby constraining the potential impact of female directors.

In addition, the interaction effects between female directors and CEO characteristics such as tenure, age and shareholding were also insignificant. These results imply that female directors do not moderate the influence of CEO experience or ownership on number of SDG committee members. The null findings suggest that while female directors may affect other aspects of governance, their presence does not appear to alter how CEO attributes shape committee structures. This resonates with broader literature indicating that the effects of gender diversity are often nuanced, conditional on institutional settings and sometimes undetectable in purely structural measures such as committee size.

Taken together, these findings contribute to the ongoing debate about the role of gender diversity in corporate governance. They provide evidence that the influence of female directors may be more qualitative than quantitative, shaping oversight, monitoring and sustainability practices without necessarily expanding committee structures. The results also align with scholarship that cautions against assuming uniform positive impacts of board gender diversity across all governance outcomes, emphasizing instead the importance of context, thresholds and complementary governance mechanisms (Adams and Ferreira, 2008; Chatterjee et al., 2022). However, regarding the practical contributions: For Malaysian listed firms, establishing and empowering board-level SCs is a high-leverage action because SC presence is positively associated with SDG achievement. As CEO tenure, age, shareholdings and duality are not significant drivers of SDG reporting here, companies should institutionalize SDG KPIs, assurance and cross-functional processes at the board/committee level rather than depend on CEO traits. Female representation shows no direct or moderating effect and averages approximately 17%, pointing to risks of tokenism; boards should ensure female directors hold substantive sustainability oversight roles and reach critical mass. The results offer a Malaysia-wide benchmark (1,958 firm-years, 2018–2024) to prioritize governance investments that most credibly improve SDG outcomes. Furthermore, regarding theoretical contributions, this study advances corporate governance–sustainability scholarship by delivering one of the first large-sample, Malaysia-focused tests linking SCs to SDG achievement and by empirically confirming this positive association. It adjudicates the

role of CEO attributes as contextually null for SDG reporting, refining mixed prior evidence on executive characteristics and sustainability performance. It also tests and rejects the theorized moderation of female directors on the SC–SDG link in this setting, sharpening boundary conditions for board gender effects. Methodologically, it contributes by operationalizing SDG achievement with both count and percentage measures from disclosures and by using industry/year fixed effects with PCSE corrections to bolster causal interpretation in panel data.

### Conclusions

This paper provides one of the first large-sample, Malaysia-focused tests of how board-level SCs relate to firms' SDG disclosure. Using 1,958 firm-year observations and fixed-effects estimation with robustness checks (PCSE and GMM), you document a positive, statistically significant association between the presence of an SC and the number of SDGs achieved (or disclosed), while most CEO attributes (tenure, age, shareholdings and duality) show limited or no consistent effects across specifications. This study also scrutinizes the role of board gender diversity and interaction terms, finding limited moderation overall, thereby refining expectations about when diversity translates into measurable SDG outcomes in an emerging-market governance setting. Collectively, the work advances the Malaysian SDG literature, extends corporate governance sustainability evidence for emerging markets and clarifies which levers (formal SC structures) appear most consequential for SDG performance.

Moreover, this study has several implications; first, practical implications boards should establish or strengthen SCs, as our estimates show SC presence is positively associated with firms' SDG disclosure and helps integrate sustainability into strategy and stakeholder dialogue. Given CEO tenure, age, shareholdings and duality were not significant predictors, firms should embed SDG KPIs and assurance routines in board processes rather than rely on CEO discretion. Elevate the substantive roles of female directors in sustainability oversight to avoid tokenism female board representation showed no direct or moderating effects and averages approximately 17%, limiting influence. Finally, emphasize report quality (materiality, metrics and targets), not just compliance, where gaps persist.

Second is social implications: Stronger SC governance can raise the credibility and accuracy of SDG information systems and build trust with local stakeholders, improving transparency around firms' real contributions to national SDG priorities. Closing the current "high compliance, low quality" gap especially among smaller caps would give investors, communities and NGOs decision-useful data to monitor environmental and social outcomes. Because SCs (rather than CEO traits) explain SDG disclosure (achievement) in our setting, progress need not hinge on leadership turnover; it can be institutionalized through board structures and sustained stakeholder dialogue.

Third is policymaker and regulatory implications: Bursa Malaysia's listing rules already require disclosure of sustainability governance structures and MCCG 2021 strengthens board oversight expectations; however, only approximately 25% of firms have formed SCs, revealing ample headroom. Given our evidence, regulators could recommend (or phase in a comply-or-explain) establishment of SCs and issue guidance on committee mandate, expertise and SDG KPI assurance to lift disclosure quality, not just compliance. They might also promote CEO engagement (training, incentive alignment), as CEO attributes are otherwise not driving SDG outcomes and ensure gender reforms move beyond numeric targets to meaningful participation in sustainability oversight.

This study has limitations, primarily that SDG "achievement" disclosure is defined by the counts and percentages of SDGs reported in sustainability reports; this quantity-based metric may be affected by disclosure practices and may not adequately reflect outcome quality or

materiality. In other words, our dependent variable captures disclosure breadth rather than the depth or substantive quality of reporting on each SDG. It differs from quality-weighted indices such as Hummel and Szekely's (2022) SDG\_QUAL, which also consider targets, indicators and performance outcomes. In addition, this study is about SDG disclosure behavior, not measured real-world impact, and that "achievement" is used in a disclosure-proxied sense. Second, while fixed effects and GMM address parts of the endogeneity problem, residual concerns (e.g. time-varying omitted factors and policy shocks) cannot be entirely ruled out. Third, several variables (e.g. SC measured as a presence dummy; female directors as a proportion) do not capture committee/board process quality (expertise, meeting cadence, independence and agenda control). Fourth, findings reflect Malaysian listed firms in the late-2010s to early-2020s regulatory context; generalizability to other markets or periods with different enforcement intensity or investor bases should be made with caution. Finally, some financial controls exhibit extreme dispersion in descriptive statistics, indicating potential scaling or data-quality noise that future work could further sanitize or winsorize.

Future research directions are being explored. First, construct quality-weighted SDG indices that incorporate materiality, targets and outcome verification (assurance, third-party indicators). Second, test threshold and non-linear effects for gender diversity (e.g. 30%+ critical mass) and explore pathways (audit committee coordination, risk management integration). Third, exploit quasi-experiments (e.g. MCCG 2021 or listing-rule shocks) with DiD/IV designs to strengthen causal inference. Finally, link SC-driven SDG progress to downstream outcomes (costs of capital, innovation and resilience) using multi-year lags. Cross-country ASEAN panels and mixed-methods case studies could also contextualize how institutional pressures and stakeholder activism condition the SC on SDG relationship.

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