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RESEARCH ARTICLE

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Corporate strategy, board composition, and firm value

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Abstract

This study addressed a gap in the literature by investigating the link between corporate strategy and board composition and how it connects to firm value. Most studies have explored whether board structure predicts firm outcomes rather than the other way around even though firm strategy plays a significant role in structuring the board. The sample covered the period between 2013 and 2018 and included 20,677 firm-year observations, on which we executed country-industry-year fixed-effects regression analysis. We found that, first, cost leadership strategy was positively associated with board size, board independence, board gender diversity, and board tenure, whereas it was negatively associated with board skills. Second, differentiation strategy was positively associated with board size and board gender diversity. Third, the moderating effects revealed that while board size and board tenure negatively moderated between cost leadership and firm value, board skills positively moderated between cost leadership and firm value. On the other hand, while board size, board gender diversity, and board tenure positively moderated between differentiation and firm value, board skills negatively moderated between differentiation and firm value. The results were robust to an alternative firm value proxy and endogeneity concerns. These findings provide firms with the opportunity to better shape their board structure in line with their corporate strategies and shareholder expectations.

KEYWORDS

board composition, corporate strategy, cost leadership, differentiation, firm value

1 | INTRODUCTION

Although prior literature has largely focused on the association of board structure with firm outcomes, its association with corporate strategy has received limited attention. Early studies provided evidence that board composition impacts the ability of directors to make strategic decisions to improve firm performance. For example, Pfeffer (1972, 1973) showed that board size, board independence and board expertise determine the willingness of directors to pursue certain corporate strategies. Hermalin and Weisbach (1988) and Pearce and Zahra (1992) suggested that board composition is conditioned by the firm's external environment and corporate strategic choices. Baysinger and Hoskisson (1990) argued that board membership types determine the board's contribution to corporate strategy, while Chen et al. (2009) found that board attributes affect corporate diversification

decisions. Most studies have explored whether board structure predicts firm outcomes but have ignored the importance of firm strategy in shaping the structure of the board. Our study pursued this research avenue by testing the causal relationship between corporate strategy and board structure.

We performed our investigation based on Porter's (1980) framework, which describes a firm's strategic posture in terms of cost leadership and differentiation strategies. Cost leadership strategy emphasizes the offering of products and services at lower costs than those of peers for the purpose of gaining a sustainable competitive advantage (Agustia et al., 2020; Jermias, 2008; Kim & Huh, 2015). On the other hand, differentiation strategy stresses efforts to pursue value creation through innovative products, brand loyalty, and advertising intensity to achieve a competitive advantage (Agustia et al., 2020; Balsam et al., 2011). Porter's classification of corporate strategy has been empirically examined by many academic researchers (Banker et al., 2014; Chen et al., 2018; Hambrick, 1983; Yamakawa et al., 2011).

In this study, we employed the aforementioned types of strategies to explore the association between corporate strategy and board structure and how this association is linked to firm value. Toward this end, we posed three research questions:

> R1: Is cost leadership strategy associated with board structure?
> R2: Is differentiation strategy associated with board structure?
> R3: How is market value associated with the interaction of board structure and corporate strategy?

To address these questions, we used a sample of 20,677 observations covering nine sectors and 36 countries during the 2013–2018 period. We found that, first, cost leadership strategy was positively associated with board size, board independence, board gender diversity and board tenure, whereas it was negatively associated with board skills. Second, differentiation strategy was positively associated with board size and board gender diversity. Third, the moderating effects revealed that while board size and board tenure negatively moderated between cost leadership and firm value, board skills positively moderated between cost leadership and firm value. On the other hand, while board size, board gender diversity, and board tenure positively moderated between differentiation and firm value, board skills negatively moderated between differentiation and firm value. We performed multiple robustness checks and addressed endogeneity concerns using entropy balance, propensity score matching (PSM), and the two-stage least squares (2SLS) method. Based on the findings, we provide practical implications for firms and shareholders and suggest directions for future research.

We contribute to the existing literature in several ways. First, unlike most prior studies that have focused on the association of board structure with firm performance (Hillman & Dalziel, 2003; Laing & Weir, 1999; O'connell & Cramer, 2010; Vafeas & Theodorou, 1998; Zhou et al., 2018), we concentrated on the association between corporate strategy and board structure. While the findings of previous studies are important for understanding how firms should design their board structure to obtain the desired firm outcomes, our investigation aimed to help firms shape their board structure commensurate with their corporate strategy. Doing so could help firms remain competitive in the market and better mobilize their resources. Hence, we focused on the causality running from corporate strategy to board structure because the former requires the long-term deployment of firm resources, such as building asset structure and human resources. Corporate strategy is not frequently nor easily changeable in line with changing board structure. It is also highly likely that firms recruit directors in congruence with their strategies. On the contrary, directors are subject to change/rotation once every several years, which disrupts their influence on corporate strategy. Second, we examined the moderating roles of board characteristics on the relationship between corporate strategy (i.e., cost leadership and differentiation) and firm value. Hence, we explored whether shareholders appreciate the fact that board structure is aligned with corporate strategy. This investigation was also directed at assisting firms in learning whether their mapping of corporate strategy and board structure is appreciated by shareholders. Additionally, the investigation was aimed at helping firms determine whether shareholders expect a different relationship pattern between corporate strategy and board structure. Integrating the firm value dimension was of critical importance to the study as shareholders are the main stakeholders who provide the essential capital for firm survival and growth.

The next section outlines the research questions. Section 3 outlines the research methodology. In section 4, we report the empirical results, while in section 5, we discuss the results and draw some conclusions. Lastly, in section 6, we provide the implications of our research and lay out future research directions.

2 | BOARD STRUCTURE AND FIRM STRATEGY

To answer the three research questions outlined in the previous section, we discuss our theoretical framework

and review the relevant literature below under three subsections aimed at elaborating each research question. We formulated research questions instead of developing hypotheses due to the existence of six board characteristics (i.e., board size, board independence, board gender diversity, board cultural diversity, board tenure and board skills), two firm strategy proxies (i.e., cost leadership and differentiation), and a firm value proxy, all of which would have inflated the number of hypotheses, thereby creating unwieldy complexity.

2.1 | Board structure and cost leadership

Cost leadership requires maintaining the lowest costs of operations in an industry to achieve a competitive advantage (Agustia et al., 2020). Cost leaders focus on asset utilization, controlling discretionary expenses, and enhancing employee productivity (Hambrick, 1983). Cost leadership is likely to be aligned with tight monitoring for cost control and asset efficiency.

According to agency theory, shareholders give authority to managers to perform services and engage in strategic decision-making on their behalf (Jensen & Meckling, 1976). However, managers can be self-interested and motivated to pursue their own goals, which can conflict with shareholders' interests (Chen et al., 2009). This could lead to agency problems that necessitate tighter monitoring and control. The composition of the board emphasizes the control system and can affect the strategic choices made by companies (Baysinger & Hoskisson, 1990). Outside directors limit managers' opportunistic activities by reducing the resources available for discretionary spending (Jermias, 2008). The governance literature proposes, based on agency theory, that greater board independence is associated with lower levels of diversification strategies that may not result in the maximization of shareholders' wealth (Baysinger & Hoskisson, 1990; Chen et al., 2009).

Outside directors allow firms to observe environmental changes as they maintain the flow of interactions between the firm and its stakeholders and undertake the essential control of resources for companies' businesses (Pearce & Zahra, 1992). They contribute diverse knowledge, experience, and independent thinking (Bathala & Rao, 1995), each of which allows them to contribute to management teams with respect to stakeholder demand (Galletta et al., 2022). Management can consider a broader range of resolutions and debate various points of view when the board is equipped with diverse skills, knowledge, and backgrounds (Galletta et al., 2022). In contrast, inside directors have greater access to information, which may enable them to better evaluate critical decisions made by firms (Baysinger & Hoskisson, 1990), thereby exercising powers for effective strategic decision-making and resource use. The cost leadership strategy is likely to be aligned with the monitoring function of the board. Companies that follow the cost leadership strategy have managerial competence and expertise to better control explicit costs (Chen et al., 2018). Independent directors allow firms to have access to timely information on environmental changes (Pearce & Zahra, 1992) and provide both judicial and advisory assertions of managerial plans (Chen et al., 2009). Cost leaders might appoint a greater number of directors to the board since a larger pool of directors has greater ability to access and process a higher volume of information, leading to more effective monitoring (Datta et al., 2020). Moreover, cost leaders recruit more female directors on their boards to benefit from their monitoring and advising capacity to enhance firm profitability via better cost controlling (Brahma et al., 2021; Sattar et al., 2021). Furthermore, independent and tenured boards are well equipped with traditional techniques of cost control and operational efficiency and can assist firms in controlling costs and refraining from incurring too many discretionary expenses. Consequently, we address the first research question:

> **R1.** Is cost leadership strategy associated with board structure?

2.2 | Board structure and differentiation strategy

Differentiation strategy emphasizes value creation by offering unique and distinctive products and services to achieve sustainable competitive advantage (Agustia et al., 2020; Kim & Huh, 2015). Innovative strategies require the allocation of firms' resources and heavy investment in research and development activities to increase innovative capabilities (Agustia et al., 2020; Jermias, 2008). Resource dependency theory explains that a firm employing a differentiation strategy must link itself with the external environment to seek resources for innovation from suppliers (Jajja et al., 2017; Pearce & Zahra, 1992). Board composition reflects resource exchanges between firms and the external environment that permit firms to secure resources to maximize performance and outperform their competitors (Chen et al., 2009).

In addition, the board's range of skills and capabilities is a valuable resource for enhancing strategic decision-making (Pearce & Zahra, 1992). The background and expertise of board members affect their engagement in innovative strategies (Chen et al., 2009; Ravasi & Zattoni, 2006). Skilled directors are more equipped with specific sector skills that are likely to be crucial for

followers of the differentiation strategy. Outside directors can provide planning skills and knowledge of different technologies entailed by differentiation strategies (Pearce & Zahra, 1992). Moreover, larger boards are likely to include directors with diverse educational backgrounds and industrial experiences and who can acquire novel resources (Agustia et al., 2020; Yamakawa et al., 2011). In addition, differentiators tend to enlarge their board capital to foster their innovativeness and competitiveness since larger boards have greater skills and information processing capacity than their smaller counterparts (Alfraih, 2017; Seo, 2017). Besides, female directors stimulate the innovation capability of differentiators and have deeper market and customer information (Ali et al., 2021; Bauweraerts et al., 2022). Therefore, differentiation could be more aligned with the advising function of the board and may necessitate greater board skills and diversity to develop unique products and services. Consequently, we address the second research question:

> **R2.** Is differentiation strategy associated with board structure?

2.3 | Firm value, corporate strategy, and board structure

The extant literature provides some empirical evidence that corporate strategy can positively influence firm performance (Amoako-Gyampah & Acquaah, 2008; Aulakh et al., 2000; Balsam et al., 2011; Kuzey et al., 2022; Li & Li, 2008; Spanos et al., 2004). According to Porter's (1980) generic strategy framework, firms can achieve positive outcomes by adopting corporate strategies based on a cost leadership or differentiation strategy. Firms adopting a cost leadership strategy aim to achieve profitability based on cost savings and by offering customers products or services at lower prices (Banker et al., 2014; Chen et al., 2018; Li & Li, 2008). On the other hand, a differentiation strategy aims to create brand loyalty by offering distinctive products, thus enabling the firm to command premium prices that surpass the costs associated with the strategy (Li & Li, 2008; Panwar et al., 2016).

Board composition becomes significant as it affects directors' aptitude to provide strategic direction and performance (Baysinger & Hoskisson, 1990; Pearce & Zahra, 1992). Moreover, board structure can determine directors' capacity to exercise monitoring and control over managerial behaviour to protect shareholders' interests (Kesner & Johnson, 1990; Pearce & Zahra, 1992). Managers influence corporate performance by deciding and implementing corporate strategies (Balsam et al., 2011) whereby board structure can influence the quality of managers' decisions (Pearce & Zahra, 1992). It is likely that when firm performance is affected by corporate strategic choices, this effect could be subject to board structure. Assessing the nexus between corporate strategy, board structure, and market value will highlight whether shareholders are satisfied with and approve of the board configuration and whether firms should revise the board configuration accordingly. As financial capital providers, shareholders are interested in the selection of firm strategy and in designing upper-level decision-making bodies as well as their congruence. Consequently, whether board structure aligned with corporate strategy is appreciated by shareholders is a question that must be investigated. We thus addressed the third research question:

> **R3.** How is market value associated with the interaction of board structure and corporate strategy?

3 | RESEARCH METHODOLOGY

3.1 | Variables

We selected several board characteristics representing both the monitoring and advising ability of the corporate governance structure. While board size (BSIZE) has been an indicator of board efficiency in prior studies (Yermack, 1996), board independence (BINDEP), board gender diversity (BGEND), board cultural diversity (BCULD), board tenure (BTENUR) and board skills (BSKILLS) have been the subject of prior studies on the monitoring and advising abilities of boards. Although BSIZE, BINDEP and BGEND are intensively used board characteristics, BCULD, BTENUR and BSKILLS have been rarely used until recently (Al-Mamun & Seamer, 2021; Arayssi et al., 2019; Katmon et al., 2019; Livnat et al., 2021). As they capture different facets of board monitoring, we employed these characteristics and associated them with corporate strategy.

Furthermore, following Chen et al. (2018), Uyar et al. (2022), and Yamakawa et al. (2011), we defined corporate strategies as follows:

$$\begin{aligned}\text{Cost leadership(CLEAD)} = -(&\text{Capital intensity} \\ &+ \text{Cost efficiency} \\ &+ \text{Capital expenditure}),\end{aligned} \tag{1}$$

where capital intensity is total assets over total sales, cost efficiency is the cost of goods sold over total sales, and

capital expenditure is capital expenditures over total sales. We multiplied the sum of three metrics of cost leadership by (−) in line with prior studies (Chen et al., 2018; Yamakawa et al., 2011) to reverse the signs of values from (+) to (−) since the higher the focus on cost leadership, the smaller the value. After multiplying by (−), the higher the ratio, the greater the cost leadership strategy orientation. This change also made the cost leadership strategy scale consistent with differentiation strategy as shown below (i.e., the higher the value and the more differentiation-oriented the strategy).

$$\text{Differentiation (DIFFER)} = \text{S\&A expenses} + \text{R\&D intensity}, \quad (2)$$

such that S&A expenses are S&A expenses over total sales and R&D intensity is R&D expenditures over total sales. Higher CLEAD and DIFFER values imply a greater commitment to CLEAD and DIFFER strategies, respectively.

In addition, firm value was measured by Tobin's Q (TQ) and industry-adjusted Tobin's Q (TQ-adj); while we employed TQ in the baseline analysis, we adopted TQ-adj in the robustness tests. TQ is market capitalization plus the book value of debt over total assets (Upadhyay et al., 2014), TQ-adj is the company's TQ and the median TQ minus the median TQ of the firms in the same sector in the same year (Sheikh, 2018; Ting, 2021).

Finally, we controlled for several firm and country characteristics due to their relevance in estimating board characteristics and firm value. First, we controlled for CEO duality (CDUAL), after which we controlled for several firm financial characteristics, such as firm size (FSIZE), asset tangibility (TANG), research and development intensity (RD), firm leverage (LVR), firm liquidity (CURR) and firm ownership structure (FREEF). Furthermore, we controlled for the institutional environment by public governance strength, market regulation power, law system, and economic development. While voice and accountability (VOACC) and regulatory quality (REGQ) control public governance quality, regulations of securities exchanges (REGSE) and protection of minority shareholders' interests (PROMIN) control market regulations (Al-Mamun & Seamer, 2021; Hermalin & Weisbach, 1988; Pearce & Zahra, 1992; Uyar et al., 2022). Furthermore, while the law system of countries is measured by a binary variable considering the common law and code law orientation (LAW), economic development is measured by the natural logarithm of gross domestic product per capita (GDP). While firm-level financial and board-related data were collected from Thomson Reuters Eikon, VOACC and REGQ data were collected from the World Bank (2021), REGSE and PROMIN data were collected from the World Economic Forum (WEF, 2021), LAW data were collected from La Porta et al. (1998), and GDP data were retrieved from the World Development Indicators (2023).

We do not give details concerning the definitions of the variables in this section as they are presented in Table 1.

3.2 | Sample

The initial study sample included nine sectors, excluding financials, based on the TRBC[1] Economic sector classification in the Thomson Reuters Eikon database. The research sample consisted of observations from 2013 since the cost of sales data was available from that year onward, and we capped the observations in 2018 since that was the latest year for which REGSE and PROMIN data were available. After we collected the raw data, we used various data-screening processes before testing the research hypotheses (Hair et al., 2019). The cleaned sample was subject to initial univariate analysis. Initial draft results showed that some of the variables had large variability around mean values with extreme values at the tails. Thus, we winsorized eight research variables.[2] We used a cut-off value of 1%. The extreme values at 1% of the two tails were replaced by the winsorized counterpart values (Cox, 2006). Next, we checked the multivariate outliers. Toward this end, we employed the minimum covariance determinant method (Verardi & Dehon, 2010). Based on the results of the multivariate outlier detection, we removed 19 observations.

In the following phase, we examined the missing values. The summary statistics of the missing value analysis demonstrated that the ratios of the missing values were relatively low except for CLEAD.[3] In the final data-screening phase, we imputed the variables, including BTENUR, BSKILLS, DIFFER and TANG, since the ratios of the missing values were significantly low. However, to eliminate the risk of biases in the analytical results, we did not impute CLEAD since the ratio of the missing values was very large.

Consequently, the sample formation and distribution were as follows. First, the initial sample included 59,201 observations. After excluding some observations,[4] the final sample included 20,677 records (Table 2, Panel A). In terms of the sector-level distributions, the ratios of the sample ranged between 2.84% (telecommunications services) and 20.68% (Industrials)[5] (Table 2, Panel B). Regarding the years, the ratios ranged between 12.08% in 2013 and 22.36% in 2018 with an increasing trend per year (Table 2, Panel B). Finally, the country-level sample distribution results (Table A1 in the appendix section) revealed that there were 36 countries with 5250 unique firms and 20,677 data points.

TABLE 1 Variables.

Variables	Description
BSIZE	Number of directors on corporate boards.
BINDEP	Proportion of non-executive directors on corporate boards.
BGEND	Proportion of female directors on boards.
BCULD	Board cultural diversity reflects percentage of directors having a cultural background different than that at the corporate headquarter's location.
BTENUR	Average number of years each director serves on the board.
BSKILLS	Percentage of directors having a strong financial background or an industry-specific background.
TQ	Market capitalization plus total liabilities over total assets.
TQ-adj	Industry-adjusted firm value, which reflects the difference between the firm's TQ and the median TQ of the firms in the same sector in the same year.
CLEAD	Cost leadership strategy as calculated in Equation (1) based on the sum 'Cost efficiency + Capital expenditure + Capital intensity' multiplied by (−1).
DIFFER	Differentiation strategy as calculated in Equation (2) based on the sum 'S&A expenses + R&D intensity'.
CDUAL	CEO duality that takes 1 if board chair is CEO at the same time, and 0 otherwise.
FSIZE	Total assets' natural logarithm.
TANG	Property plant and equipment over total assets.
RD	Research and development expenditure over total assets.
LVR	Total debt over total assets.
CURR	Total current assets over total current liabilities.
FREEF	Free float percentage of shares.
VOACC	Perceptions of a country's citizens regarding participating in selecting their government, having freedom of expression, and the existence of free media and freedom of association. Scale of measurement was from −2.5 to 2.5.
REGQ	Perceptions of a country's citizens regarding the ability of the government to formulate and implement sound regulations and policies that allow private sector development. Scale of measurement was from −2.5 to 2.5.
REGSE	To what extent do regulations ensure financial market stability? [1 = not at all; 7 = to a great extent].
PROMIN	To what extent the legal system protects minority shareholders' interests? [1 = not protected at all; 7 = fully protected].
LAW	The law system of countries denoted by a binary variable that takes 1 if the law system is common law, and 0 if it is code law.
GDP	The natural logarithm of gross domestic product per capita.

Note: This table defines the variables. All variables are defined in Table 1.

3.3 | Empirical models

The formulated research models are discussed in this section. The research models incorporated linear associations and moderating effects. We incorporated country and year fixed-effects (FE) regression models to reduce the risk of potential time-invariant endogeneity threats (Corderi & Lin, 2011; Rjiba et al., 2020; Schons & Steinmeier, 2016).

3.3.1 | Linear associations

The proposed research models incorporating the linear associations are formulated in equation (3) below:

$$\begin{aligned}(\text{Board characteristics})_{i,t,c} = {} & \beta_0 + \beta_1(\text{Cost leadership})_{i,t-1,c} \\ & + \beta_2(\text{Differentiation})_{i,t-1,c} \\ & + \beta_3(\text{Controls})_{i,t-1,c} \\ & + \beta_4 \sum (\text{Country})_c \\ & + \beta_5 \sum (\text{Industry})_i \\ & + \beta_6 \sum (\text{Year})_t + \varepsilon_{t,i,c}.\end{aligned} \tag{3}$$

The dependent variable was board characteristics proxied by BSIZE,[6] BINDEP, BGEND, BCULD, BTENUR and BSKILLS. The variables of interest were the one-year lag of cost leadership (CLEAD) and differentiation (DIFFER).[7] The control variables were the one-year lag of BSIZE, CDUAL, FSIZE, TANG, RD, LVR, CURR, FREEF, VOACC, REGQ, REGSE, PROMIN, LAW and GDP.

TABLE 2 Sample distribution.

Panel A			
Initial sample			59,201
(-) observations before 2013			21,294
(-) Financial sectors			8775
(-) Countries with less than 10 firms			319
(-) Non-available observations of REGSE, PROMIN and LAW			8117
(-) Significant outliers			19
Final sample			20,677
Panel B			
Variable	**Category**	**Freq.**	**Percent**
Sector	Basic materials	2682	12.97
	Consumer cyclicals	3934	19.03
	Consumer non-cyclicals	1874	9.06
	Energy	1782	8.62
	Healthcare	2161	10.45
	Industrials	4277	20.68
	Technology	2280	11.03
	Telecommunications services	587	2.84
	Utilities	1100	5.32
	Total	20,677	100.00
Year	2013	2497	12.08
	2014	2626	12.70
	2015	3079	14.89
	2016	3709	17.94
	2017	4143	20.04
	2018	4623	22.36
	Total	20,677	100.00

Note: This table presents the sample distribution. All variables are defined in Table 1.

3.3.2 | Moderating effects

The second group of proposed research models incorporated moderating effects. In this regard, we formulated the moderating roles of board characteristics in the relationship between corporate strategy (i.e., cost leadership and differentiation) and firm value in Equations (4) and (5).

$$\begin{aligned}(\text{Firm value})_{i,t,c} = {} & \beta_0 + \beta_1(\text{cost leadership})_{i,t,c} \\ & + \beta_2(\text{board characteristics})_{i,t,c} \\ & + \beta_3(\text{Cost leadership}^{*}\text{board characteristics})_{i,t,c+}\ \beta_4(\text{controls})_{i,t,c} \\ & + \beta_5\sum(\text{country})_c + \beta_6\sum(\text{industry})_i + \beta_7\sum(\text{year})_t + \varepsilon_{i,t,c}.\end{aligned} \tag{4}$$

$$\begin{aligned}(\text{Firm value})_{i,t,c} = {} & \beta_0 + \beta_1(\text{differentiation})_{i,t,c} \\ & + \beta_2(\text{board characteristics})_{i,t,c} \\ & + \beta_3(\text{differentiation}^{*}\text{board characteristics})_{i,t,c} \\ & + \beta_4(\text{controls})_{i,t,c} + \beta_5\sum(\text{country})_c \\ & + \beta_6\sum(\text{industry})_i + \beta_7\sum(\text{Year})_t + \varepsilon_{i,t,c}.\end{aligned} \tag{5}$$

Concerning moderating effects, the dependent variable was the firm value measured by TQ.[8] In addition, the variables of interest were cost leadership (CLEAD) and differentiation (DIFFER). The moderating variables were board characteristics measured by BSIZE, BINDEP, BGEND, BCULD, BTENUR and BSKILLS. Finally, the control variables were the same as in the previous equations.

To control for the threat of heteroscedasticity (Wooldridge, 2020), we reported standard errors based on the robust variance estimator. The reported standard errors were clustered by firm to generate correct standard errors since the observations may have had correlations at the firm level. The standard errors were corrected by clustering at the firm level to control the within-firm correlation in the residuals (Petersen, 2009).

4 | EMPIRICAL FINDINGS

4.1 | Summary of univariate statistics

The summary statistics of the research variables are reported in Table 3. In terms of board characteristics, the average values of BSIZE, BINDEP, BGEND, BCULD, BTENUR and BSKILLS were 9.76, 74.29, 15.53, 9.08, 50.82 and 53.07, respectively. Also, regarding the variables of interest, the average values of corporate strategies, including CLEAD and differentiation DIFFER, were −3.04 and 0.77, respectively. Finally, regarding the firm value predictors, the mean values of TQ and TQ-adj were 2.06 and 0.47, respectively.

TABLE 3 Descriptive statistics.

Variable	Obs	Mean	Std. dev.	Min	Max
BSIZE	20,677	9.76	3.23	4.00	21.00
BINDEP	20,677	74.29	19.95	0.00	100.00
BGEND	20,677	15.53	12.85	0.00	100.00
BCULD	20,677	9.08	20.09	0.00	100.00
BTENUR	20,677	50.82	28.34	0.02	99.95
BSKILLS	20,677	53.07	22.44	0.00	100.00
TQ	20,677	2.06	1.60	0.62	9.36
TQ-adj	20,677	0.47	1.50	−1.25	7.53
CLEAD	16,268	−3.04	3.05	−15.11	−1.07
DIFFER	20,677	0.77	2.71	0.00	18.55
CDUAL	20,677	0.38	0.48	0.00	1.00
FSIZE	20,677	21.91	1.70	10.65	27.21
TANG	20,677	0.29	0.24	0.00	0.92
RD	20,677	0.02	0.05	0.00	0.27
LVR	20,677	0.25	0.19	0.00	0.83
CURR	20,677	2.17	2.11	0.25	12.90
FREEF	20,677	78.27	23.97	0.00	100.00
VOACC	20,677	1.05	0.43	−1.05	1.74
REGQ	20,677	1.38	0.56	−0.91	2.26
REGSE	20,677	5.30	0.55	3.02	6.56
PROMIN	20,677	5.05	0.51	3.25	6.22
LAW	20,677	0.66	0.47	0.00	1.00
GDP	20,677	10.56	0.77	7.27	11.54

Note: This table presents the descriptive statistics. All variables are defined in Table 1.

4.2 | Correlation and multicollinearity

We checked the bivariate linear correlations among the research variables pairwise. The results of Pearson's correlation coefficients are reported in Table 4 and were based on the current time (t). According to the obtained results, CLEAD had a significant negative linear correlation with BSIZE and BINDEP, while it had a significant positive linear correlation with BGEND and BTENUR. On the other hand, DIFFER had a significantly negative correlation with BSIZE, BGEND, BCULD and BTENUR, whereas it had a significantly positive correlation with BSKILLS and firm values (TQ and TQ-adj).

4.2.1 | Multicollinearity

We examined the threat of multicollinearity among the independent variables of the proposed models. Toward this end, we calculated the values of variance inflation factors (VIFs). The results are reported in Table A2 (see the Appendix). The maximum value of the VIFs was 3.82, while the minimum value was 1.15. Thus, the VIF values were significantly less than the suggested threshold value of 10 (Hair et al., 2019; Kennedy, 2008; Neter et al., 1996). Thus, there was no threat of multicollinearity among the independent variables.

4.3 | Baseline

We investigated the initial baseline research models within two groups: linear and moderating associations.

4.3.1 | Linear relationships

The research models were subject to country, industry and year FE regression analysis. The one-year lag of CLEAD and DIFFER was incorporated as the variable of interest simultaneously with the one-year lag of the control variables in the models, whereas the board characteristics (BSIZE, BINDEP, BGEND, BCULD, BTENUR and BSKILLS) were incorporated as the dependent variables in the analysis (Table 5). The results revealed that CLEAD(t-1) had a significantly positive association with BSIZE, BINDEP, BGEND and BTENUR and a significantly negative association with BSKILLS. Moreover, the results showed that DIFFER(t-1) had a significantly positive association with only BSIZE and BGEND.

4.3.2 | Moderating effects

We examined the moderating effects of board characteristics on the relationship between CLEAD and DIFFER with firm value proxied by TQ.

First, we investigated the moderating effects of board characteristics on the relationship between cost leadership and firm value. According to the reported results, the product terms, including CLEAD*BSIZE and CLEAD*BTENUR, had a significant and negative relationship with TQ, while the product term, CLEAD*BSKILLS, had a significant and positive relationship with TQ (Table 6).

Second, we examined the moderating effects of board characteristics on the relationship between differentiation and firm value. The results revealed that the coefficients of the product terms, including DIFFER*BSIZE, DIFFER*BGEND, and DIFFER*BTENUR, had a significantly positive relationship with TQ, while DIFFER*BSKILLS had a significantly negative relationship with TQ (Table 7).

TABLE 4 Correlation analysis.

	Variable	1	2	3	4	5	6	7	8	9	10	11	12
1	BSIZE	1											
2	BINDEP	−0.048*	1										
3	BGEND	0.071*	0.357*	1									
4	BCULD	0.088*	0.184*	0.164*	1								
5	BTENUR	0.007	−0.064*	−0.036*	0.006	1							
6	BSKILLS	−0.156*	−0.402*	−0.176*	−0.098*	0.034*	1						
7	TQ	−0.167*	0.071*	0.044*	−0.057*	0.026*	0.033*	1					
8	TQ-adj	−0.146*	0.075*	0.037*	−0.041*	0.022*	0.017*	0.969*	1				
9	CLEAD	−0.032*	−0.028*	0.054*	−0.004	0.091*	−0.01	0.006	0.004	1			
10	DIFFER	−0.081*	0.002	−0.056*	−0.054*	−0.052*	0.030*	0.161*	0.142*	−0.668*	1		
11	CDUAL	0.058*	0.065*	0.001	−0.051*	0.147*	0.078*	0.054*	0.044*	0.045*	−0.037*	1	
12	FSIZE	0.548*	0.007	0.108*	0.188*	0.014*	−0.141*	−0.350*	−0.320*	−0.050*	−0.204*	0.106*	1
13	TANG	0.024*	−0.005	−0.113*	0.038*	−0.036*	−0.004	−0.243*	−0.146*	−0.116*	−0.011	−0.051*	0.091*
14	RD	−0.163*	0.031*	−0.033*	−0.064*	−0.089*	0.125*	0.375*	0.273*	−0.126*	0.263*	0.024*	−0.315*
15	LVR	0.151*	0.120*	0.054*	0.026*	−0.088*	−0.077*	−0.148*	−0.118*	−0.023*	−0.105*	0.062*	0.277*
16	CURR	−0.222*	−0.049*	−0.134*	−0.072*	−0.009	0.146*	0.199*	0.150*	−0.177*	0.227*	−0.020*	−0.365*
17	FREEF	−0.066*	0.047*	0.110*	−0.028*	0.002	0.178*	0.021*	−0.002	0.122*	−0.086*	0.117*	0.017*
18	VOACC	−0.194*	0.117*	0.231*	0.172*	−0.015*	0.060*	0.001	−0.003	0.109*	−0.047*	−0.007	−0.107*
19	REGQ	−0.248*	0.062*	0.144*	0.094*	−0.011	0.171*	0.009	−0.008	0.175*	−0.136*	−0.022*	−0.143*
20	REGSE	−0.184*	−0.056*	0.126*	0.097*	0.002	0.210*	−0.003	−0.007	0.077*	−0.031*	−0.114*	−0.204*
21	PROMIN	−0.154*	−0.060*	0.161*	0.047*	−0.009	0.283*	0.028*	0.018*	0.110*	−0.071*	−0.060*	−0.165*
22	LAW	−0.263*	0.260*	0.093*	−0.134*	−0.011	0.269*	0.153*	0.142*	−0.118*	0.115*	0.116*	−0.262*
23	GDP	−0.183*	0.070*	0.124*	0.033*	−0.018*	0.170*	0.020*	−0.008	0.263*	−0.202*	0.120*	−0.076*
	Variable	13	14	15	16	17	18	19	20	21	22	23	
13	TANG	1											
14	RD	−0.249*	1										
15	LVR	0.158*	−0.179*	1									
16	CURR	−0.164*	0.363*	−0.337*	1								
17	FREEF	−0.102*	0.132*	0.022*	0.039*	1							
18	VOACC	−0.023*	0.085*	−0.072*	0.042*	0.370*	1						
19	REGQ	−0.035*	0.118*	−0.068*	0.090*	0.330*	0.668*	1					

(Continues)

TABLE 4 (Continued)

	Variable	1	2	3	4	5	6	7	8	9	10	11	12
20	REGSE	0.019*	0.039*	−0.085*	0.080*	0.166*	0.277*	0.499*	1				
21	PROMIN	−0.022*	0.081*	−0.064*	0.075*	0.290*	0.338*	0.532*	0.848*	1			
22	LAW	0.022*	0.118*	0.046*	0.105*	0.290*	0.048*	0.287*	0.284*	0.403*	1		
23	GDP	−0.107*	0.178*	−0.030*	0.107*	0.443*	0.675*	0.864*	0.274*	0.359*	0.190*	1	

Note: This table presents the correlation analysis. All variables are defined in Table 1.
*$p < 0.05$.

4.4 | Robustness

The robustness of the initial analysis results was checked by performing multiple analyses. We employed alternative dependent variables for the linear and moderating models and addressed endogeneity concerns using the 2SLS method, and ultimately generating alternative subsamples.

4.4.1 | Alternative dependent variable—Moderating models

First, we incorporated an alternative dependent variable in the analysis of the moderation effects of board characteristics. Hence, TQ-adj was used in the models as an alternative proxy for measuring firm value, as firm value might be affected by sectoral characteristics. The results were fully compatible with the initial baseline results of the moderating analysis (Table 8, Panels A and B).

4.4.2 | Endogeneity tests

We performed an analysis to address endogeneity concerns by utilizing the 2SLS method. *We* applied instrumental variable regression analysis with the 2SLS approach, which can mitigate any potential endogeneity concerns and omitted variable issues (Angrist & Krueger, 2001). This approach can reduce possible correlations between the error term and the independent variables (Wooldridge, 2020). Two instrumental variables were incorporated into the 2SLS regression analysis: (i) the 2-year lag of cost leadership and differentiation, and (ii) the industry average of cost leadership and differentiation, excluding the focal firms (Murcia et al., 2021). The results of the first and second stage analyses, Wu–Hausman test of endogeneity, overidentifying restriction test and weak instrument test are reported in Table 9. The results were fully compatible with the baseline analysis results, in which the significance of cost leadership and differentiation did not change.

4.4.3 | Alternative sample—Excluding US and Japan

We generated an alternative sample by excluding the US and Japan, which constituted a large percentage in the research sample, and hence might have distorted the results. We re-examined the linear models using the alternative sample (Table 10). The results revealed that CLEAD(t-1) had a significantly positive relationship with

TABLE 5 The association between corporate strategy and board composition.

Independent variables	(1) BSIZE	(2) BINDEP	(3) BGEND	(4) BCULD	(5) BTENUR	(6) BSKILLS
CLEAD(t-1)	0.032*** (3.56)	0.16*** (3.76)	0.31*** (8.17)	−0.020 (−0.33)	0.66*** (6.33)	−0.19*** (−2.70)
DIFFER(t-1)	0.040*** (3.59)	0.063 (1.19)	0.21*** (4.61)	−0.024 (−0.32)	−0.14 (−1.12)	−0.062 (−0.73)
BSIZE(t-1)		0.22*** (5.90)	0.18*** (5.49)	0.15*** (2.76)	0.48*** (5.37)	−0.48*** (−8.14)
CDUAL(t-1)	−0.083** (−2.00)	0.27 (1.36)	−0.21 (−1.19)	−0.89*** (−3.07)	9.62*** (20.08)	1.93*** (6.06)
FSIZE(t-1)	0.88*** (60.37)	1.37*** (17.83)	1.23*** (18.25)	2.52*** (22.53)	−0.32* (−1.71)	−0.89*** (−7.24)
TANG(t-1)	−0.11 (−1.10)	−1.45*** (−2.97)	−1.82*** (−4.26)	−1.12 (−1.58)	1.29 (1.10)	0.52 (0.66)
RD(t-1)	2.72*** (5.70)	−4.71** (−2.06)	−0.68 (−0.34)	11.8*** (3.56)	−57.7*** (−10.44)	25.2*** (6.87)
LVR(t-1)	−0.015 (−0.14)	1.09** (2.02)	−2.77*** (−5.87)	−0.98 (−1.25)	−14.1*** (−10.87)	0.45 (0.52)
CURR(t-1)	−0.046*** (−3.86)	−0.17*** (−2.99)	−0.32*** (−6.46)	0.12 (1.50)	0.77*** (5.68)	0.33*** (3.69)
FREEF(t-1)	−0.0018* (−1.72)	0.015*** (3.10)	0.056*** (12.95)	0.0045 (0.63)	0.024** (2.06)	−0.0054 (−0.69)
VOACC(t-1)	−0.37* (−1.68)	−4.34*** (−4.17)	2.92*** (3.20)	6.57*** (4.33)	1.86 (0.74)	1.35 (0.81)
REGQ(t-1)	0.21 (1.00)	−1.29 (−1.29)	−1.96** (−2.25)	17.2*** (11.86)	4.42* (1.84)	3.52** (2.21)
REGSE(t-1)	−0.25** (−2.11)	2.14*** (3.73)	−1.25** (−2.50)	−3.35*** (−4.01)	−1.14 (−0.82)	−3.20*** (−3.48)
PROMIN(t-1)	0.52*** (3.27)	−1.72** (−2.25)	3.08*** (4.62)	1.62 (1.46)	−0.73 (−0.40)	4.07*** (3.34)
LAW(t-1)	−0.99*** (−4.49)	−6.09*** (−5.78)	−2.99*** (−3.24)	−9.96*** (−6.49)	2.48 (0.98)	8.32*** (4.93)
GDP(t-1)	−0.32 (−1.61)	3.64*** (3.79)	−1.66** (−1.98)	−10.0*** (−7.17)	−9.80*** (−4.22)	0.75 (0.49)
Constant	−8.97*** (−2.85)	37.9** (2.51)	−24.6* (−1.86)	61.6*** (2.80)	213.6*** (5.86)	21.2 (0.88)
Country, industry, and year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	16,267	16,267	16,267	16,267	16,267	16,267
Adj. R^2	0.443	0.685	0.444	0.364	0.071	0.350
F-stat.	203.35***	544.50***	200.73***	144.25***	20.10***	135.88***

Note: This table presents the association between corporate strategy and board composition. All variables are defined in Table 1. *t* statistics in parentheses.
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

TABLE 6 Moderating effect of board composition between cost leadership and firm value.

Independent variables	(1) TQ	(2) TQ	(3) TQ	(4) TQ	(5) TQ	(6) TQ
CLEAD	0.092*** (8.58)	0.022 (1.22)	0.039*** (6.65)	0.037*** (8.34)	0.064*** (9.47)	−0.011 (−1.21)
BSIZE	0.00048 (0.09)	0.017*** (3.92)	0.016*** (3.69)	0.018*** (4.18)	0.019*** (4.37)	0.017*** (4.02)
CLEAD*BSIZE	−0.0057*** (−5.65)					
BINDEP		0.0057*** (4.94)				
CLEAD*BINDEP		0.00017 (0.75)				
BGEND			0.0094*** (6.96)			
CLEAD*BGEND			−0.00038 (−1.31)			
BCULD				0.0018** (2.18)		
CLEAD* BCULD				−0.000074 (−0.41)		
BTENUR					0.00016 (0.31)	
CLEAD*BTENUR					−0.00066*** (−5.51)	
BSKILLS						0.00085 (1.16)
CLEAD*BSKILLS						0.00088*** (5.67)
CDUAL	0.14*** (5.99)	0.14*** (6.12)	0.14*** (6.17)	0.14*** (6.16)	0.13*** (5.31)	0.14*** (6.12)
FSIZE	−0.25*** (−28.19)	−0.26*** (−28.63)	−0.26*** (−29.35)	−0.26*** (−28.25)	−0.25*** (−28.26)	−0.25*** (−28.34)
TANG	−0.22*** (−3.80)	−0.22*** (−3.90)	−0.21*** (−3.62)	−0.23*** (−4.00)	−0.23*** (−4.03)	−0.22*** (−3.92)
RD	6.47*** (24.47)	6.42*** (24.32)	6.41*** (24.34)	6.38*** (24.12)	6.63*** (24.99)	6.54*** (24.70)
LVR	−0.43*** (−6.74)	−0.44*** (−7.02)	−0.41*** (−6.50)	−0.44*** (−6.90)	−0.42*** (−6.58)	−0.44*** (−6.90)
CURR	0.037*** (5.57)	0.034*** (5.18)	0.036*** (5.47)	0.033*** (4.94)	0.033*** (5.02)	0.036*** (5.46)
FREEF	−0.0010* (−1.74)	−0.0010* (−1.76)	−0.0015*** (−2.58)	−0.00094 (−1.63)	−0.0012** (−2.12)	−0.00091 (−1.58)
VOACC	0.51*** (4.15)	0.53*** (4.33)	0.46*** (3.76)	0.49*** (3.99)	0.48*** (3.95)	0.51*** (4.20)
REGQ	−0.14 (−1.17)	−0.14 (−1.19)	−0.11 (−0.90)	−0.17 (−1.46)	−0.16 (−1.34)	−0.13 (−1.15)
REGSE	0.19*** (2.76)	0.18*** (2.62)	0.20*** (3.04)	0.20*** (2.92)	0.19*** (2.84)	0.19*** (2.82)
PROMIN	−0.21** (−2.38)	−0.20** (−2.24)	−0.24*** (−2.70)	−0.22** (−2.45)	−0.21** (−2.37)	−0.21** (−2.33)
LAW	−0.25** (−2.00)	−0.21* (−1.71)	−0.22* (−1.78)	−0.22* (−1.81)	−0.26** (−2.13)	−0.24* (−1.90)
GDP	−0.31*** (−2.74)	−0.34*** (−2.97)	−0.30*** (−2.63)	−0.30*** (−2.62)	−0.28** (−2.44)	−0.31*** (−2.78)
Constant	9.18*** (7.73)	8.96*** (7.53)	9.31*** (7.85)	8.99*** (7.57)	8.67*** (7.30)	8.94*** (7.52)
Country, industry, and year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	16,268	16,268	16,268	16,268	16,268	16,268
Adj. R^2	0.312	0.312	0.315	0.311	0.313	0.312
F-stat.	116.15***	114.39***	115.93***	113.89***	115.06***	114.62***

Note: This table presents the moderating effect of board composition between cost leadership and firm value. All variables are defined in Table 1. *t* statistics in parentheses.
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

TABLE 7 Moderating effect of board composition between differentiation and firm value.

Independent variables	(1) TQ	(2) TQ	(3) TQ	(4) TQ	(5) TQ	(6) TQ
DIFFER	−0.024** (−2.37)	−0.0041 (−0.21)	−0.0029 (−0.55)	0.0041 (0.95)	−0.028*** (−4.17)	0.055*** (5.50)
BSIZE	0.021*** (5.28)	0.022*** (5.63)	0.021*** (5.28)	0.023*** (5.72)	0.023*** (5.89)	0.022*** (5.59)
DIFFER*BSIZE	0.0034*** (2.98)					
BINDEP		0.0026*** (3.11)				
DIFFER*BINDEP		0.00010 (0.41)				
BGEND			0.0096*** (9.90)			
DIFFER*BGEND			0.00060* (1.85)			
BCULD				0.0027*** (4.68)		
DIFFER*BCULD				−0.00014 (−0.43)		
BTENUR					0.0011*** (3.20)	
DIFFER*BTENUR					0.00075*** (6.19)	
BSKILLS						−0.0013** (−2.54)
DIFFER*BSKILLS						−0.00091*** (−5.66)
CDUAL	0.13*** (5.96)	0.13*** (6.02)	0.13*** (6.07)	0.13*** (6.02)	0.12*** (5.21)	0.13*** (6.10)
FSIZE	−0.28*** (−35.47)	−0.28*** (−35.52)	−0.29*** (−36.65)	−0.29*** (−35.68)	−0.28*** (−35.43)	−0.28*** (−35.59)
TANG	−0.46*** (−9.26)	−0.46*** (−9.27)	−0.42*** (−8.61)	−0.45*** (−9.22)	−0.46*** (−9.24)	−0.45*** (−9.19)
RD	6.15*** (24.98)	6.11*** (24.86)	6.16*** (25.12)	6.07*** (24.69)	6.30*** (25.55)	6.24*** (25.34)
LVR	−0.25*** (−4.36)	−0.25*** (−4.40)	−0.23*** (−4.12)	−0.25*** (−4.39)	−0.23*** (−4.01)	−0.25*** (−4.39)
CURR	−0.0049 (−0.92)	−0.0057 (−1.06)	−0.0022 (−0.41)	−0.0067 (−1.25)	−0.0045 (−0.84)	−0.0041 (−0.77)
FREEF	−0.0011** (−2.20)	−0.0011** (−2.24)	−0.0015*** (−2.98)	−0.0011** (−2.16)	−0.0013** (−2.49)	−0.0011** (−2.17)
VOACC	0.43*** (3.98)	0.43*** (4.05)	0.39*** (3.61)	0.41*** (3.80)	0.41*** (3.82)	0.43*** (4.00)
REGQ	−0.021 (−0.20)	−0.022 (−0.21)	0.0067 (0.06)	−0.059 (−0.55)	−0.024 (−0.22)	−0.024 (−0.22)
REGSE	0.11* (1.80)	0.11* (1.82)	0.12** (2.14)	0.12** (2.02)	0.10* (1.77)	0.11* (1.85)
PROMIN	−0.19** (−2.40)	−0.19** (−2.38)	−0.21*** (−2.73)	−0.20** (−2.52)	−0.19** (−2.35)	−0.18** (−2.33)
LAW	−0.42*** (−3.58)	−0.40*** (−3.41)	−0.40*** (−3.38)	−0.39*** (−3.34)	−0.43*** (−3.63)	−0.41*** (−3.47)
GDP	−0.27*** (−2.60)	−0.28*** (−2.68)	−0.26** (−2.46)	−0.25** (−2.43)	−0.25** (−2.42)	−0.26** (−2.49)
Constant	9.51*** (8.91)	9.42*** (8.82)	9.70*** (9.11)	9.44*** (8.84)	9.26*** (8.67)	9.39*** (8.80)
Country, industry, and year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	20,677	20,677	20,677	20,677	20,677	20,677
Adj. R^2	0.295	0.295	0.299	0.296	0.297	0.296
F-stat.	136.27***	134.22***	136.59***	134.46***	135.36***	135.05***

Note: This table presents the moderating effect of board composition between differentiation and firm value. All variables are defined in Table 1. *t* statistics in parentheses.
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

TABLE 8 Moderation analysis with alternative dependent variable.

Robustness checks						
Panel A: Moderation effects (variable of interest: CLEAD)						
Independent variables	**(1) TQ-adj**	**(2) TQ-adj**	**(3) TQ-adj**	**(4) TQ-adj**	**(5) TQ-adj**	**(6) TQ-adj**
CLEAD	0.092*** (8.59)	0.022 (1.22)	0.039*** (6.55)	0.037*** (8.32)	0.064*** (9.50)	−0.012 (−1.31)
BSIZE	0.000038 (0.01)	0.017*** (3.82)	0.016*** (3.60)	0.018*** (4.08)	0.019*** (4.27)	0.017*** (3.92)
CLEAD*BSIZE	−0.0057*** (−5.66)					
BINDEP		0.0058*** (4.98)				
CLEAD*BINDEP		0.00017 (0.76)				
BGEND			0.0094*** (6.95)			
CLEAD*BGEND			−0.00034 (−1.16)			
BCULD				0.0018** (2.10)		
CLEAD*BCULD				−0.000065 (−0.36)		
BTENUR					0.00018 (0.34)	
CLEAD*BTENUR					−0.00066*** (−5.54)	
BSKILLS						0.00086 (1.17)
CLEAD*BSKILLS						0.00090*** (5.78)
Controls	Included	Included	Included	Included	Included	Included
Country, industry, and year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	16,268	16,268	16,268	16,268	16,268	16,268
Adj. R^2	0.211	0.211	0.214	0.210	0.212	0.211
F-stat.	68.86***	67.83***	69.11***	67.37***	68.43***	68.06***
Panel B: Moderation effects (variable of interest: DIFFER)						
Independent variables	**(1) TQ-adj**	**(2) TQ-adj**	**(3) TQ-adj**	**(4) TQ-adj**	**(5) TQ-adj**	**(6) TQ-adj**
DIFFER	−0.025** (−2.48)	−0.0017 (−0.09)	−0.0039 (−0.72)	0.0029 (0.67)	−0.030*** (−4.45)	0.057*** (5.67)
BSIZE	0.021*** (5.15)	0.022*** (5.49)	0.020*** (5.15)	0.022*** (5.59)	0.023*** (5.76)	0.022*** (5.45)
DIFFER*BSIZE	0.0034*** (3.00)					
BINDEP		0.0027*** (3.19)				
DIFFER*BINDEP		0.000060 (0.23)				
BGEND			0.0096*** (9.85)			
DIFFER*BGEND			0.00060* (1.84)			
BCULD				0.0027*** (4.59)		
DIFFER*BCULD				−0.000061 (−0.18)		
BTENUR					0.0011*** (3.17)	
DIFFER*BTENUR					0.00077*** (6.36)	
BSKILLS						−0.0014*** (−2.59)
DIFFER*BSKILLS						−0.00096*** (−5.95)
Controls	Included	Included	Included	Included	Included	Included
Country, industry, and year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	20,677	20,677	20,677	20,677	20,677	20,677
Adj. R^2	0.198	0.198	0.202	0.198	0.200	0.199
F-stat.	80.56***	79.36***	81.42***	79.56***	80.40***	80.17***

Note: Panel A presents the moderating effect of board composition between cost leadership and firm value with alternative dependent variable namely TQ-adj. All variables are defined in Table 1. *t* statistics in parentheses. *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$. Panel B presents the moderating effect of board composition between differentiation and firm value with alternative dependent variable namely TQ-adj. All variables are defined in Table 1. *t* statistics in parentheses. *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

TABLE 9 Two-stage least squares (2SLS) regression analysis: the association between corporate strategy and board composition.

Panel A: First and second stages of BSIZE, BINDEP and BGEND									
Independent variables	**(1) CLEAD(t-1) 1st stage**	**(2) DIFFER(t-1) 1st stage**	**(3) BSIZE 2nd stage**	**(4) CLEAD(t-1) 1st stage**	**(5) DIFFER(t-1) 1st stage**	**(6) BINDEP 2nd stage**	**(7) CLEAD(t-1) 1st stage**	**(8) DIFFER(t-1) 1st stage**	**(9) BGEND 2nd stage**
CLEAD(t-1)			0.041*** (3.18)			0.20*** (3.33)			0.40*** (7.44)
DIFFER(t-1)			0.065*** (3.74)			0.069 (0.83)			0.25*** (3.40)
CLEAD(t-2)	0.84*** (138.49)	−0.030*** (−5.36)		0.84*** (138.45)	−0.030*** (−5.37)		0.84*** (138.45)	−0.030*** (−5.37)	
DIFFER(t-2)	0.010 (1.36)	0.71*** (105.25)		0.0100 (1.35)	0.71*** (105.20)		0.0100 (1.35)	0.71*** (105.20)	
CLEAD-Ave	0.048 (0.35)	0.058 (0.46)		0.048 (0.36)	0.059 (0.46)		0.048 (0.36)	0.059 (0.46)	
DIFFER-Ave	−0.085 (−0.49)	0.066 (0.41)		−0.085 (−0.49)	0.066 (0.41)		−0.085 (−0.49)	0.066 (0.41)	
Controls	Included	Included	Included	Included	Included	Included	Included	Included	Included
Country, industry, and year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
WUH			4.76*			4.66*			10.83**
OVERID			0.11			2.45			0.04
WEAKIN			7051.94			7050.87			7050.87
N	11,987	12,456	11,987	11,987	12,456	11,987	11,987	12,456	11,987
Adj. R^2	0.805	0.726	0.439	0.805	0.726	0.695	0.805	0.726	0.468
F-stat.	775.02***	508.07***		763.07***	500.38***		763.07***	500.38***	
χ^2-stat.			9477.90***			27,578.28***			10,675.33***
Panel B: First and second stages of BCULD, BTENUR and BSKILLS (Cont.)									
Independent variables	**(10) CLEAD(t-1) 1st stage**	**(11) DIFFER(t-1) 1st stage**	**(12) BCULD 2nd stage**	**(13) CLEAD(t-1) 1st stage**	**(14) DIFFER(t-1) 1st stage**	**(15) BTENUR 2nd stage**	**(16) CLEAD(t-1) 1st stage**	**(17) DIFFER(t-1) 1st stage**	**(18) BSKILLS 2nd stage**
CLEAD(t-1)			−0.033 (−0.36)			0.68*** (4.65)			−0.35*** (−3.55)
DIFFER(t-1)			−0.042 (−0.34)			−0.14 (−0.69)			−0.11 (−0.80)
CLEAD(t-2)	0.84*** (138.45)	−0.030*** (−5.37)		0.84*** (138.45)	−0.030*** (−5.37)		0.84*** (138.45)	−0.030*** (−5.37)	
DIFFER(t-2)	0.0100 (1.35)	0.71*** (105.20)		0.0100 (1.35)	0.71*** (105.20)		0.0100 (1.35)	0.71*** (105.20)	
CLEAD-Ave	0.048 (0.36)	0.059 (0.46)		0.048 (0.36)	0.059 (0.46)		0.048 (0.36)	0.059 (0.46)	
DIFFER-Ave	−0.085 (−0.49)	0.066 (0.41)		−0.085 (−0.49)	0.066 (0.41)		−0.085 (−0.49)	0.066 (0.41)	
Controls	Included	Included	Included	Included	Included	Included	Included	Included	Included
Country, industry, and year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
WUH			4.09*			4.88*			6.02**
OVERID			1.83			1.22			2.34

(Continues)

TABLE 9 (Continued)

Panel B: First and second stages of BCULD, BTENUR and BSKILLS (Cont.)

Independent variables	(10) CLEAD(t-1) 1st stage	(11) DIFFER(t-1) 1st stage	(12) BCULD 2nd stage	(13) CLEAD(t-1) 1st stage	(14) DIFFER(t-1) 1st stage	(15) BTENUR 2nd stage	(16) CLEAD(t-1) 1st stage	(17) DIFFER(t-1) 1st stage	(18) BSKILLS 2nd stage
WEAKIN			7050.87			7050.87			7050.87
N	11,987	12,456	11,987	11,987	12,456	11,987	11,987	12,456	11,987
Adj. R^2	0.805	0.726	0.386	0.805	0.726	0.065	0.805	0.726	0.364
F-stat.	763.07***	500.38***		763.07***	500.38***		763.07***	500.38***	
χ^2-stat.			7644.39***			904.22***			6961.26***

Note: This table presents the association between corporate strategy and board composition by using 2SLS. All variables are defined in Table 1. *t* statistics in parentheses.

Abbreviations: Instrumental variables: The two-year lag of CLEAD and DIFFER; Industry average of CLEAD and DIFFER excluding focal firms; OVERID: Overidentifying restriction test (Sargan); WEAKIN: Weak instrument test (F-value); WUH: Wu–Hausman test of endogeneity.

$^*p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.

BINDEP, BGEND and BTENUR, while DIFFER(t-1) had a significantly positive relationship with BGEND. Hence, the results largely overlapped with the baseline findings.

Similarly, the moderating models were re-run using the new sub-sample. The results were mainly compatible with the initial baseline results of the moderating analysis with some exceptions[9] (Tables 11 and 12).

4.4.4 | Alternative dependent variables—Linear models

We also incorporated alternative dependent variables for the linear models. First, we proposed five alternative dependent variables for board gender diversity,[10] which were binary categorical variables, in line with prior studies that tested "critical mass theory" (Ahmed & Atif, 2021; Brahma et al., 2021; Sarhan et al., 2019). We included these five binary alternative dependent variables in the linear models and employed country, industry, and year FE logistic regression analysis (Table 13). The results revealed that CLEAD(t-1) had a significantly positive association with all of the dependent variables (NFEMD0, NFEMD2, NFEMD3 and NFEMD3M) except NFEMD1, with which it had a significantly negative association. Also, DIFFER(t-1) had a significant and negative association with NFEMD1, whereas it had a significant and positive relationship with NFEMD3 and NFEMD3M. Thus, the results of this critical mass test for female directors were in line with the baseline findings.

Second, we incorporated another four alternative binary dependent variables[11] for BSIZE in line with Arora (2020). Similarly, we used country, industry, and year FE logistic regression analysis and re-ran the baseline linear models (Table 14). The results revealed that CLEAD(t-1) had a significantly negative relationship with BSIZE1 and a significantly positive relationship with BSIZE2 and BSIZE3. Finally, DIFFER(t-1) had a significantly negative association with BSIZE1, whereas it had a significantly positive association with BSIZE2. This additional analysis highlighted that the ideal board size for both cost leaders and differentiators ranges between 8 and 12 members.

4.4.5 | Lagged moderating, testing, and control variables

Finally, we re-ran the baseline research models with moderating effects by incorporating the one-year lag of the testing variables of interest, moderating variables,

TABLE 10 Alternative sample excluding US and Japan.

Independent variables	(1) BSIZE	(2) BINDEP	(3) BGEND	(4) BCULD	(5) BTENUR	(6) BSKILLS
CLEAD(t-1)	0.015 (1.25)	0.18*** (3.49)	0.18*** (3.80)	−0.040 (−0.39)	0.59*** (4.68)	−0.055 (−0.67)
DIFFER(t-1)	0.015 (1.03)	0.056 (0.87)	0.14** (2.49)	0.029 (0.23)	0.16 (1.05)	−0.014 (−0.14)
Controls	Included	Included	Included	Included	Included	Included
Country, industry, and year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	7792	7792	7792	7792	7792	7792
Adj. R^2	0.512	0.457	0.502	0.315	0.064	0.384
F-stat.	135.06***	106.65***	127.60***	58.91***	9.54***	79.24***
F-stat.	203.35***	544.50***	200.73***	144.25***	20.10***	135.88***

Note: This table presents the association between corporate strategy and board composition by excluding the US and Japan from the sample. All variables are defined in Table 1. *t* statistics in parentheses.
Note: *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

TABLE 11 Alternative sample excluding US and Japan.

Independent variables	(1) TQ	(2) TQ	(3) TQ	(4) TQ	(5) TQ	(6) TQ
CLEAD	0.043*** (3.51)	0.039* (1.88)	0.019*** (2.63)	0.0071 (1.28)	0.035*** (4.04)	−0.033*** (−3.12)
BSIZE	0.0065 (0.94)	0.017*** (3.03)	0.016*** (2.87)	0.018*** (3.20)	0.020*** (3.54)	0.018*** (3.27)
CLEAD*BSIZE	−0.0033*** (−3.01)					
BINDEP		0.0020 (1.24)				
CLEAD*BINDEP		−0.00040 (−1.50)				
BGEND			0.0089*** (5.01)			
CLEAD*BGEND			−0.00070** (−2.08)			
BCULD				0.0036*** (4.14)		
CLEAD*BCULD				0.00017 (0.94)		
BTENUR					0.00095 (1.33)	
CLEAD*BTENUR					−0.00054*** (−3.84)	
BSKILLS						0.0022** (2.14)
CLEAD*BSKILLS						0.00089*** (4.53)
Controls	Included	Included	Included	Included	Included	Included
Country, industry, and year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	7792	7792	7792	7792	7792	7792
Adj. R^2	0.305	0.305	0.310	0.306	0.308	0.306
F-stat.	56.24***	55.37***	56.68***	55.65***	56.15***	55.62***

Note: This table presents the moderating effect of board composition between cost leadership and firm value (Table 6) by excluding the US and Japan from the sample. All variables are defined in Table 1. *t* statistics in parentheses.
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

and the control variables (Tables 15 and 16). The results were mainly compatible with the initial moderation analysis results except that the coefficient of the product term DIFFER(t-1)*BGEND(t-1) became non-significant in the robustness check and DIFFER(t-1)*BINDEP(t-1) became significantly positive.

5 | DISCUSSION AND CONCLUSION

This study addressed a gap in the literature by investigating the link between corporate strategy and board composition and how it connects to firm value. Prior studies

TABLE 12 Alternative sample excluding US and Japan.

Independent variables	(1) TQ	(2) TQ	(3) TQ	(4) TQ	(5) TQ	(6) TQ
DIFFER	0.0011 (0.10)	−0.015 (−0.74)	0.0096 (1.57)	0.024*** (4.69)	−0.0059 (−0.71)	0.044*** (3.93)
BSIZE	0.023*** (4.51)	0.024*** (4.78)	0.022*** (4.47)	0.024*** (4.75)	0.025*** (5.07)	0.024*** (4.75)
DIFFER*BSIZE	0.0024** (2.07)					
BINDEP		0.00084 (0.74)				
DIFFER*BINDEP		0.00050* (1.81)				
BGEND			0.010*** (8.18)			
DIFFER*BGEND			0.0011*** (2.90)			
BCULD				0.0034*** (5.50)		
DIFFER*BCULD				−0.00060* (−1.81)		
BTENUR					0.0013*** (2.76)	
DIFFER*BTENUR					0.00055*** (4.04)	
BSKILLS						−0.00094 (−1.31)
DIFFER*BSKILLS						−0.00042** (−2.25)
Controls	Included	Included	Included	Included	Included	Included
Country, industry, and year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	11,020	11,020	11,020	11,020	11,020	11,020
Adj. R^2	0.272	0.272	0.277	0.273	0.273	0.272
F-stat.	67.27***	66.21***	68.18***	66.77***	66.82***	66.30***

Note: This table presents the moderating effect of board composition between differentiation and firm value (Table 7) by excluding the US and Japan from the sample. All variables are defined in Table 1. *t* statistics in parentheses.
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

TABLE 13 Alternative dependent variables (critical mass).

Independent variables	(1) NFEMD0	(2) NFEMD1	(3) NFEMD2	(4) NFEMD3	(5) NFEMD3M
CLEAD(t-1)	0.051*** (4.26)	−0.042*** (−4.71)	0.034*** (3.48)	0.053*** (4.16)	0.078*** (6.24)
DIFFER(t-1)	0.018 (1.29)	−0.052*** (−4.97)	0.018 (1.55)	0.048*** (2.83)	0.069*** (4.26)
Controls	Included	Included	Included	Included	Included
Country, industry, and year FE	Yes	Yes	Yes	Yes	Yes
N	16,127	16,160	16,266	15,563	16,098
Pseudo R^2	0.317	0.090	0.081	0.119	0.349
χ^2-stat.	5130.29***	1754.70***	1498.15***	1578.89***	6428.37***

Note: This table presents the association between corporate strategy and board composition based on critical mass of female directors. All variables are defined in Table 1. *t* statistics in parentheses.
Abbreviations: NFEMD0, A dummy variable equaling one if the firm has at least one female director on the board, and zero otherwise; NFEMD1, A dummy variable equaling one if the firm has one woman director on the board, and zero otherwise; NFEMD2, A dummy variable equaling one if the firm has two women directors on the board, and zero otherwise; NFEMD3, A dummy variable equaling one if the firm has three women directors on the board, and zero otherwise; NFEMD3M, A dummy variable equaling one if the firm has three or more women directors on the board, and zero otherwise.
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

mostly focused on board composition and firm performance, rarely emphasizing corporate strategy. Also, most previous studies focused on the association of board composition with financial and non-financial reporting quality, and hence its association with corporate strategy was relatively neglected. Besides, most studies have explored whether board structure predicts firm outcomes rather than the other way around even though firm strategy plays a significant role in structuring the board.

We found that, first, cost leadership strategy was positively associated with board size, board independence, board gender diversity and board tenure, whereas it was

TABLE 14 Alternative dependent variables (board size slices).

Independent variables	(1) BSIZE1	(2) BSIZE2	(3) BSIZE3	(4) BSIZE4
CLEAD(t-1)	−0.065*** (−5.51)	0.056*** (6.64)	0.021* (1.73)	0.033 (1.20)
DIFFER(t-1)	−0.049*** (−3.51)	0.025** (2.46)	−0.0095 (−0.61)	0.043 (1.24)
Controls	Included	Included	Included	Included
Country, industry, and year FE	Yes	Yes	Yes	Yes
N	16,079	16,266	16,031	12,193
Pseudo R^2	0.253	0.078	0.223	0.428
χ^2-stat.	4197.50***	1681.96***	2956.73***	1633.65***

Note: This table presents the association between corporate strategy and board composition (Table 5) based on board size slices. All variables are defined in Table 1. *t* statistics in parentheses.
Abbreviations: BSIZE1, a dummy variable equaling one if the board size ranges between 3 and 7 members, and zero otherwise; BSIZE2, a dummy variable equaling one if the board size ranges between 8 and 12 members, and zero otherwise; BSIZE3, a dummy variable equaling one if the board size ranges between 13 and 17 members, and zero otherwise; BSIZE4, a dummy variable equaling one if the board size is 18 or more members, and zero otherwise.
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

TABLE 15 Lagged moderating analysis.

Independent variables	(1) TQ	(2) TQ	(3) TQ	(4) TQ	(5) TQ	(6) TQ
CLEAD(t-1)	0.11*** (10.23)	0.055*** (3.02)	0.043*** (7.14)	0.042*** (9.42)	0.070*** (10.37)	−0.016* (−1.77)
BSIZE(t-1)	−0.0063 (−1.15)	0.015*** (3.41)	0.014*** (3.27)	0.016*** (3.72)	0.017*** (3.93)	0.016*** (3.58)
CLEAD(t-1)*BSIZE(t-1)	−0.0072*** (−7.13)					
BINDEP(t-1)		0.0058*** (4.93)				
CLEAD(t-1)*BINDEP(t-1)		−0.00022 (−0.93)				
BGEND(t-1)			0.0089*** (6.52)			
CLEAD(t-1)*BGEND(t-1)			−0.00037 (−1.26)			
BCULD(t-1)				0.00089 (1.04)		
CLEAD(t-1)*BCULD(t-1)				−0.00028 (−1.53)		
BTENUR(t-1)					0.00057 (1.08)	
CLEAD(t-1)*BTENUR(t-1)					−0.00074*** (−6.15)	
BSKILLS(t-1)						0.0014* (1.86)
CLEAD(t-1)*BSKILLS(t-1)						0.0010*** (6.66)
Controls	Included	Included	Included	Included	Included	Included
Country, industry, and year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	16,267	16,267	16,267	16,267	16,267	16,267
Adj. R^2	0.300	0.300	0.301	0.298	0.302	0.300
F-stat.	108.16***	106.52***	107.37***	105.64***	107.44***	106.61***

Note: This table presents the moderating effect of board composition between cost leadership and firm value with lagged model. All variables are defined in Table 1. *t* statistics in parentheses.
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

negatively associated with board skills. Thus, cost leaders might appoint more directors to their boards since larger boards have a greater ability to access and process greater volumes of information, leading to more effective monitoring (Datta et al., 2020). Furthermore, cost leaders recruit a greater number of female directors on their boards to strengthen board monitoring and advising ability, which is attributable to the capacity of female directors to enhance firm profitability via better cost controlling (Brahma et al., 2021; Sattar et al., 2021). Moreover, cost leaders reinforce their boards with more tenured directors as tenured directors ensure firm stability with their enhanced monitoring performance and experience (Livnat et al., 2021). Second, differentiation

TABLE 16 Lagged moderating analysis.

Independent variables	(1) TQ	(2) TQ	(3) TQ	(4) TQ	(5) TQ	(6) TQ
DIFFER(t-1)	−0.042*** (−4.50)	−0.058*** (−3.22)	−0.0049 (−0.98)	−0.0011 (−0.28)	−0.039*** (−6.37)	0.049*** (5.14)
BSIZE(t-1)	0.018*** (5.05)	0.020*** (5.54)	0.019*** (5.27)	0.021*** (5.78)	0.022*** (6.00)	0.021*** (5.69)
DIFFER(t-1)*BSIZE(t-1)	0.0049*** (4.69)					
BINDEP(t-1)		0.0037*** (4.80)				
DIFFER(t-1)*BINDEP(t-1)		0.00075*** (3.19)				
BGEND(t-1)			0.010*** (11.31)			
DIFFER(t-1)*BGEND(t-1)			0.00025 (0.82)			
BCULD(t-1)				0.0023*** (4.39)		
DIFFER(t-1)*BCULD(t-1)				−0.00024 (−0.89)		
BTENUR(t-1)					0.0019*** (5.79)	
DIFFER(t-1)*BTENUR(t-1)					0.00090*** (7.96)	
BSKILLS(t-1)						−0.00093* (−1.92)
DIFFER(t-1)*BSKILLS(t-1)						−0.00089*** (−5.88)
Controls	Included	Included	Included	Included	Included	Included
Country, industry, and year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	18,454	18,454	18,454	18,454	18,454	18,454
Adj. R^2	0.277	0.278	0.281	0.277	0.280	0.278
F-stat.	136.95***	135.34***	137.42***	134.82***	137.14***	135.40***

Note: This table presents the moderating effect of board composition between differentiation and firm value with lagged model. All variables are defined in Table 1. *t* statistics in parentheses.
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

strategy was positively associated with board size and board gender diversity. Differentiators enlarge the size of their board to enrich board capital for the purpose of fostering their innovativeness and competitiveness. This confirms that larger boards have greater skills, knowledge, experience, and information processing capacity than their smaller counterparts (Alfraih, 2017; Seo, 2017). Furthermore, the rationale behind accommodating more female directors on boards is that female directors stimulate innovation and have more in-depth knowledge of customers and markets compared to their male counterparts (Ali et al., 2021; Bauweraerts et al., 2022). Third, the moderating effects revealed that while board size and board tenure negatively moderated between cost leadership and firm value, board skills positively moderated between cost leadership and firm value. On the other hand, while board size, board gender diversity and board tenure positively moderated between differentiation and firm value, board skills negatively moderated between differentiation and firm value. Given that these two moderating effects occurred in almost opposite directions, the shareholders of cost leaders and differentiators have different perspectives on board structure to which the managers of each strategy should pay attention. Overall, our findings advance the existing literature, which has thus far mostly focused on how the composition of the board affects the strategic choices of companies (Baysinger & Hoskisson, 1990) and firm outcomes (Pucheta-Martínez & Gallego-Álvarez, 2020), by investigating the causality from strategic choice to board composition. In the following section, we suggest implications for direct associations and moderating effects.

6 | IMPLICATIONS, LIMITATIONS, AND FUTURE RESEARCH

We found that both agency and resource dependency theories are insightful for the mapping of corporate strategy and board structure. While agency theory predominantly aligns with the monitoring ability of directors, resource dependency theory aligns more with the advising ability of boards. Hence, the significant positive association of board independence and board tenure with cost

leadership but not differentiation confirmed that cost leaders require stronger monitoring ability to reduce agency conflicts. On the other hand, although the positive association of differentiation strategy with board gender diversity is in line with resource dependency theory, its neutral association with board skills contradicts this theory. This is because skilled directors, in line with resource dependency theory, provide advisory services with their sector expertise (Kreuzer & Priberny, 2022). The lack of a significant association of differentiation strategy with board skills is quite surprising and conflicts with resource dependency theory. This is because the nature of differentiation is to blend skills and contrasting perspectives, which could be facilitated by the expertise and diverse backgrounds of directors. Finally, both cost leaders and differentiators have larger boards, confirming resource dependency theory since larger boards enable access to wider networking opportunities and are the source of greater advising and counselling (Dalton & Dalton, 2005).

The findings suggest several practical implications for firms and shareholders. They provide an opportunity for firms to better shape their board structures in line with corporate strategies and shareholder expectations. It is evident that cost leaders must strengthen their board with more independent, female, and tenured directors. Worldwide, as independent directors are increasingly considered to be an indispensable monitoring mechanism, a certain number/ratio of independent directors has been incorporated as a requirement in recent corporate governance codes. Given that cost leadership necessitates tighter monitoring for cost control and asset efficiency, cost leaders might highly benefit from the existence of independent directors on boards, who are almost unanimously observed to be an indispensable internal monitoring mechanism. Furthermore, cost leaders' appointment of female directors to the board confirms that these directors enhance board advising and monitoring efficacy (Belaounia et al., 2020). On the other hand, the positive association of cost leaders with board tenure but negative association with board skills implies that cost leaders need more experienced directors, but not expert directors. This could be because, while tenured directors are well equipped with traditional techniques of cost control and management and operational efficiency, skilled directors are more equipped with specific sector skills, which appear to be not essential for proponents of cost leadership strategy. Moreover, contrasting findings between direct relationships and moderating effects for cost leaders imply a mismatch between strategy–board connection and shareholder expectations. For example, contrary to the positive relationship between cost leadership and board size in the direct associations, shareholders of cost leaders are opposed to large boards, which could be considered by the proponents of cost leaders as downsizing their boards to make them more efficient in monitoring functions. Likewise, while shareholders of cost leaders find the existence of tenured directors on boards to be non-value-relevant, they do find the existence of expert directors to be value-relevant, contrary to direct associations. These contrasting results suggest that cost leaders assess and revise their board structures considering the strategy-board-firm value nexus we highlighted in this work.

On the other hand, concerning differentiation strategy, firms can design their board structure considering the empirical findings. The only significant findings in this regard are that differentiators have larger boards and more female directors on boards. This implies that larger boards may have a greater blend of different perspectives and rich social capital for fostering firms' innovative ability and that female directors are more open to innovation and are more customer- and market-focused. However, the insignificant association of other board characteristics with differentiation is surprising and implies that differentiators do not have a precise policy in shaping board structure in line with their corporate strategy. Thus, they are advised to shape their board structure in a way that could better reflect corporate strategy. That said, moderating effects provide some guidance for differentiators, which implies that they can deploy their board structure with a higher number of tenured directors and a smaller number of skilled directors. Thus, similar to the cost leaders, we also observed a mismatch between strategy-board connection and shareholder expectation among differentiators. Overall, our findings may help both cost leaders and differentiators better shape their board structures considering the strategy-board-firm value nexus we outlined in the present work.

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CONFLICT OF INTEREST STATEMENT

The authors declare that there is no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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ENDNOTES

[1] The Thomson Reuters Business Classification.

[2] BSIZE, TQ, TQ-adj, CLEAD, TANG, RD, LVR and CURR were winsorized by replacing the extreme values at both ends.

[3] The distribution of the missing values was BTENUR (2.45%), BSKILLS (1.01%), CLEAD (22.83%), DIFFER (0.17%) and TANG (0.27%).

[4] Namely, 21,294 records before 2013, 8775 records of financial sectors, 319 records of countries with fewer than 10 firms, 8117 records of non-available observations from REGSE, PROMIN and LAW, and 19 observations of significant multivariate outliers were excluded from the initial sample.

[5] According to the sector-level sample distributions, 20.68% of the observations were from Industrials, 19.03% were from Consumer Cyclicals, 12.97% were from Basic Materials, 11.03% were from Technology, 10.45% were from Healthcare, 9.06% were from consumer non-cyclicals, 8.62% were from Energy, 5.32% were from Utilities, and 2.84% were from Telecommunications Services.

[6] BSIZE was used as both a dependent variable and a control variable. It was used as a control variable when it was not a dependent variable or vice versa.

[7] We preferred the lag model rather than the contemporaneous model to reinforce the causality.

[8] TQ-adj was used as the alternative dependent variable for firm value in the robustness tests.

[9] The coefficients of CLEAD*BGEND and DIFFER*BCULD became significantly negative, while the coefficient of DIFFER*BINDEP became significantly positive, in the robustness checks.

[10] NFEMD0: A dummy variable equaling 1 if the firm had at least 1 female director on the board, and 0 otherwise. NFEMD1: A dummy variable equaling 1 if the firm had 1 female director on the board, and 0 otherwise.NFEMD2: A dummy variable equaling 1 if the firm had 2 female directors on the board, and 0 otherwise.NFEMD3: A dummy variable equaling 1 if the firm had 3 female directors on the board, and 0 otherwise.NFEMD3M: A dummy variable equaling 1 if the firm had 3 or more women directors on the board, and 0 otherwise.

[11] BSIZE1: A dummy variable equaling 1 if the board size ranged between 3 and 7 members, and 0 otherwise. BSIZE2: A dummy variable equaling 1 if the board size ranged between 8 and 12 members, and 0 otherwise. BSIZE3: A dummy variable equaling 1 if the board size ranged between 13 and 17 members, and 0 otherwise. BSIZE4: A dummy variable equaling 1 if the board size included 18 or more members, and 0 otherwise.

REFERENCES

Agustia, D., Muhammad, N. P. A., & Permatasari, Y. (2020). Earnings management, business strategy, and bankruptcy risk: Evidence from Indonesia. *Heliyon*, *6*(2), e03317.

Ahmed, A., & Atif, M. (2021). Board gender composition and debt financing. *International Journal of Finance & Economics*, *26*(2), 3075–3092.

Alfraih, M. M. (2017). Choosing an external auditor: Does the composition of boards of directors matter? *International Journal of Law and Management*, *59*(3), 394–412.

Ali, F., Wang, M., Jebran, K., & Ali, S. T. (2021). Board diversity and firm efficiency: Evidence from China. *Corporate Governance: The International Journal of Business in Society*, *21*(4), 587–607.

Al-Mamun, A., & Seamer, M. (2021). Board of director attributes and CSR engagement in emerging economy firms: Evidence from across Asia. *Emerging Markets Review*, *46*, 100749.

Amoako-Gyampah, K., & Acquaah, M. (2008). Manufacturing strategy, competitive strategy and firm performance: An empirical study in a developing economy environment. *International Journal of Production Economics*, *111*(2), 575–592.

Angrist, J. D., & Krueger, A. B. (2001). Instrumental variables and the search for identification: From supply and demand to natural experiments. *Journal of Economic Perspectives*, *15*(4), 69–85.

Arayssi, M., Jizi, M., & Tabaja, H. H. (2019). The impact of board composition on the level of ESG disclosures in GCC countries. *Sustainability Accounting, Management and Policy Journal*, *11*(1), 137–161.

Arora, A. (2020). Empirical evidence on optimal board size for Indian listed companies. *International Journal of Corporate Governance*, *11*(3–4), 341–353.

Aulakh, P. S., Kotabe, M., & Teegen, H. (2000). Export strategies and performance of firms from emerging economies: Evidence from Brazil, Chile, and Mexico. *Academy of Management Journal*, *43*(3), 342–361.

Balsam, S., Fernando, G. D., & Tripathy, A. (2011). The impact of firm strategy on performance measures used in executive compensation. *Journal of Business Research*, *64*(2), 187–193.

Banker, R. D., Mashruwala, R., & Tripathy, A. (2014). Does a differentiation strategy lead to more sustainable financial performance than a cost leadership strategy? *Management Decision*, *52*(5), 872–896.

Bathala, C. T., & Rao, R. P. (1995). The determinants of board composition: An agency theory perspective. *Managerial and Decision Economics*, *16*(1), 59–69.

Bauweraerts, J., Rondi, E., Rovelli, P., De Massis, A., & Sciascia, S. (2022). Are family female directors catalysts of innovation in family small and medium enterprises? *Strategic Entrepreneurship Journal*, *16*(2), 314–354.

Baysinger, B., & Hoskisson, R. E. (1990). The composition of boards of directors and strategic control: Effects on corporate strategy. *Academy of Management Review*, *15*(1), 72–87.

Belaounia, S., Tao, R., & Zhao, H. (2020). Gender equality's impact on female directors' efficacy: A multi-country study. *International Business Review*, *29*(5), 101737.

Brahma, S., Nwafor, C., & Boateng, A. (2021). Board gender diversity and firm performance: The UK evidence. *International Journal of Finance & Economics*, *26*(4), 5704–5719.

Chen, C. J., Guo, R. S., Hsiao, Y. C., & Chen, K. L. (2018). How business strategy in non-financial firms moderates the curvilinear effects of corporate social responsibility and irresponsibility on corporate financial performance. *Journal of Business Research*, *92*, 154–167.

Chen, R., Dyball, M. C., & Wright, S. (2009). The link between board composition and corporate diversification in Australian corporations. *Corporate Governance: An International Review*, *17*(2), 208–223.

Corderi, D., & Lin, C. Y. C. (2011). Measuring the social rate of return to R&D in coal, petroleum and nuclear manufacturing:

A study of the OECD countries. *Energy Policy*, *39*(5), 2780–2785.

Cox, N. (2006). *WINSOR: Stata module to Winsorize a variable*. Statistical software components S361402, Boston College Department of Economics.

Dalton, C. M., & Dalton, D. R. (2005). Boards of directors: Utilizing empirical evidence in developing practical prescriptions. *British Journal of Management*, *16*, S91–S97.

Datta, D. K., Basuil, D. A., & Agarwal, A. (2020). Effects of board characteristics on post-acquisition performance: A study of cross-border acquisitions by firms in the manufacturing sector. *International Business Review*, *29*(3), 101674.

Galletta, S., Mazzù, S., Naciti, V., & Vermiglio, C. (2022). Gender diversity and sustainability performance in the banking industry. *Corporate Social Responsibility and Environmental Management*, *29*(1), 161–174.

Hair, J. F., Jr., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate Data Analysis*. Cengage Learning.

Hambrick, D. C. (1983). High profit strategies in mature capital goods industries: A contingency approach. *Academy of Management Journal*, *26*(4), 687–707.

Hermalin, B. E., & Weisbach, M. S. (1988). The determinants of board composition. *The Rand Journal of Economics*, *19*(4), 589–606.

Hillman, A. J., & Dalziel, T. (2003). Boards of directors and firm performance: Integrating agency and resource dependence perspectives. *Academy of Management Review*, *28*(3), 383–396.

Jajja, M. S. S., Kannan, V. R., Brah, S. A., & Hassan, S. Z. (2017). Linkages between firm innovation strategy, suppliers, product innovation, and business performance: Insights from resource dependence theory. *International Journal of Operations & Production Management*, *37*(8), 1054–1075.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305–360.

Jermias, J. (2008). The relative influence of competitive intensity and business strategy on the relationship between financial leverage and performance. *The British Accounting Review*, *40*(1), 71–86.

Katmon, N., Mohamad, Z. Z., Norwani, N. M., & Farooque, O. A. (2019). Comprehensive board diversity and quality of corporate social responsibility disclosure: Evidence from an emerging market. *Journal of Business Ethics*, *157*(2), 447–481.

Kennedy, P. (2008). *A guide to econometrics* (6th ed.). Blackwell Publishing.

Kesner, I. F., & Johnson, R. B. (1990). An investigation of the relationship between board composition and stockholder suits. *Strategic Management Journal*, *11*(4), 327–336.

Kim, G., & Huh, M. G. (2015). Exploration and organizational longevity: The moderating role of strategy and environment. *Asia Pacific Journal of Management*, *32*(2), 389–414.

Kreuzer, C., & Priberny, C. (2022). To green or not to green: The influence of board characteristics on carbon emissions. *Finance Research Letters*, *49*, 103077.

Kuzey, C., Fritz, M. M., Uyar, A., & Karaman, A. S. (2022). Board gender diversity, CSR strategy, and eco-friendly initiatives in the transportation and logistics sector. *International Journal of Production Economics*, *247*, 108436.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1998). Law and finance. *Journal of Political Economy*, *106*(6), 1113–1155.

Laing, D., & Weir, C. M. (1999). Governance structures, size and corporate performance in UK firms. *Management Decision*, *37*(5), 457–464.

Li, C. B., & Li, J. J. (2008). Achieving superior financial performance in China: Differentiation, cost leadership, or both? *Journal of International Marketing*, *16*(3), 1–22.

Livnat, J., Smith, G., Suslava, K., & Tarlie, M. (2021). Board tenure and firm performance. *Global Finance Journal*, *47*, 100535.

Murcia, M. J., Panwar, R., & Tarzijan, J. (2021). Socially responsible firms outsource less. *Business & Society*, *60*(6), 1507–1545.

Neter, J., Kutner, M. H., Nachtsheim, C. J., & Wasserman, W. (1996). *Applied linear statistical models* (4th ed.). McGraw-Hill.

O'connell, V., & Cramer, N. (2010). The relationship between firm performance and board characteristics in Ireland. *European Management Journal*, *28*(5), 387–399.

Panwar, R., Nybakk, E., Hansen, E., & Pinkse, J. (2016). The effect of small firms' competitive strategies on their community and environmental engagement. *Journal of Cleaner Production*, *129*, 578–585.

Pearce, J. A., & Zahra, S. A. (1992). Board composition from a strategic contingency perspective. *Journal of Management Studies*, *29*(4), 411–438.

Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *The Review of Financial Studies*, *22*(1), 435–480.

Pfeffer, J. (1972). Size and composition of corporate boards of directors: The organization and its environment. *Administrative Science Quarterly*, *17*, 218–228.

Pfeffer, J. (1973). Size, composition, and function of hospital boards of directors: A study of organization-environment linkage. *Administrative Science Quarterly*, *18*, 349–364.

Porter, M. E. (1980). *Competitive strategy*. Free Press.

Pucheta-Martínez, M. C., & Gallego-Álvarez, I. (2020). Do board characteristics drive firm performance? An international perspective. *Review of Managerial Science*, *14*(6), 1251–1297.

Ravasi, D., & Zattoni, A. (2006). Exploring the political side of board involvement in strategy: A study of mixed-ownership institutions. *Journal of Management Studies*, *43*(8), 1671–1702.

Rjiba, H., Jahmane, A., & Abid, I. (2020). Corporate social responsibility and firm value: Guiding through economic policy uncertainty. *Finance Research Letters*, *35*, 101553.

Sarhan, A. A., Ntim, C. G., & Al-Najjar, B. (2019). Board diversity, corporate governance, corporate performance, and executive pay. *International Journal of Finance & Economics*, *24*(2), 761–786.

Sattar, M., Biswas, P. K., & Roberts, H. (2021). Private firm performance: Do women directors matter? *Meditari Accountancy Research*, 1–33. doi:10.1108/MEDAR-03-2021-1233

Schons, L., & Steinmeier, M. (2016). Walk the talk? How symbolic and substantive CSR actions affect firm performance depending on stakeholder proximity. *Corporate Social Responsibility and Environmental Management*, *23*(6), 358–372.

Seo, J. (2017). Board effectiveness and CEO pay: Board information processing capacity, monitoring complexity, and CEO pay-for-performance sensitivity. *Human Resource Management*, *56*(3), 373–388.

Sheikh, S. (2018). CEO power, product market competition and firm value. *Research in International Business and Finance*, *46*, 373–386.

Spanos, Y. E., Zaralis, G., & Lioukas, S. (2004). Strategy and industry effects on profitability: Evidence from Greece. *Strategic Management Journal*, *25*(2), 139–165.

Ting, P. H. (2021). Do large firms just talk corporate social responsibility? The evidence from CSR report disclosure. *Finance Research Letters*, *38*, 101476.

Upadhyay, A. D., Bhargava, R., & Faircloth, S. D. (2014). Board structure and role of monitoring committees. *Journal of Business Research*, *67*(7), 1486–1492.

Uyar, A., Koseoglu, M. A., Kuzey, C., & Karaman, A. S. (2022). Does firm strategy influence corporate social responsibility and firm performance? Evidence from the tourism industry. *Tourism Economics*, 1–30. https://doi.org/10.1177/13548166221102806

Vafeas, N., & Theodorou, E. (1998). The relationship between board structure and firm performance in the UK. *The British Accounting Review*, *30*(4), 383–407.

Verardi, V., & Dehon, C. (2010). Multivariate outlier detection in Stata. *The Stata Journal*, *10*(2), 259–266.

WEF. (2021). Global Competitiveness Index 2017–2018. https://reports.weforum.org/global-competitiveness-index-2017-2018/competitiveness-rankings/

Wooldridge, J. M. (2020). *Introductory econometrics: A modern approach* (7th ed.). Cengage.

World Bank. (2021). The Worldwide Governance Indicators (WGI). http://info.worldbank.org/governance/wgi/

World Development Indicators. (2023). World Development Indicators. https://databank.worldbank.org/source/world-development-indicators

Yamakawa, Y., Yang, H., & Lin, Z. J. (2011). Exploration versus exploitation in alliance portfolio: Performance implications of organizational, strategic, and environmental fit. *Research Policy*, *40*(2), 287–296.

Yermack, D. (1996). Higher market valuation of companies with a small board of directors. *Journal of Financial Economics*, *40*(2), 185–211.

Zhou, H., Owusu-Ansah, S., & Maggina, A. (2018). Board of directors, audit committee, and firm performance: Evidence from Greece. *Journal of International Accounting, Auditing and Taxation*, *31*, 20–36.

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APPENDIX A

TABLE A1 Country-level sampling distribution.

	Country	Unique firms	Percent	Data points	Percent
1	Argentina	46	0.88	66	0.32
2	Australia	308	5.87	1523	7.37
3	Austria	23	0.44	68	0.33
4	Belgium	37	0.70	130	0.63
5	Brazil	78	1.49	368	1.78
6	Canada	245	4.67	1232	5.96
7	Chile	33	0.63	139	0.67
8	Colombia	15	0.29	48	0.23
9	Denmark	37	0.70	144	0.70
10	Finland	32	0.61	149	0.72
11	France	137	2.61	514	2.49
12	Germany	152	2.90	541	2.62
13	Greece	17	0.32	56	0.27
14	Hong Kong	187	3.56	441	2.13
15	India	112	2.13	443	2.14
16	Indonesia	33	0.63	172	0.83
17	Italy	71	1.35	202	0.98
18	Japan	375	7.14	2117	10.24
19	Korea; Republic (S. Korea)	117	2.23	572	2.77
20	Malaysia	49	0.93	246	1.19
21	Mexico	38	0.72	169	0.82
22	Netherlands	45	0.86	166	0.80
23	New Zealand	42	0.80	175	0.85
24	Norway	54	1.03	127	0.61
25	Peru	26	0.50	61	0.30
26	Philippines	16	0.30	93	0.45
27	Portugal	15	0.29	53	0.26
28	Singapore	32	0.61	177	0.86
29	South Africa	89	1.70	491	2.37
30	Spain	56	1.07	205	0.99
31	Sweden	110	2.10	305	1.48
32	Switzerland	98	1.87	306	1.48
33	Thailand	33	0.63	156	0.75
34	Turkey	43	0.82	106	0.51
35	United Kingdom	312	5.94	1376	6.65
36	United States of America	2137	40.70	7540	36.47
	Total	5250	100.00	20,677	100.00

Note: This table presents the sample distribution across countries.

TABLE A2 Multicollinearity analysis.

Variable	VIF	Variable	VIF
REGQ(t-1)	3.81	REGQ(t-1)	3.82
GDP(t-1)	2.39	GDP(t-1)	2.40
PROMIN(t-1)	2.68	PROMIN(t-1)	2.70
REGSE(t-1)	2.25	REGSE(t-1)	2.26
VOACC(t-1)	2.20	VOACC(t-1)	2.22
DIFFER(t-1)	2.13	DIFFER(t-1)	2.13
CLEAD(t-1)	2.09	CLEAD(t-1)	2.10
LAW(t-1)	1.64	FSIZE(t-1)	1.80
FREEF(t-1)	1.57	LAW(t-1)	1.66
FSIZE(t-1)	1.45	FREEF(t-1)	1.57
CURR(t-1)	1.43	BSIZE(t-1)	1.45
RD(t-1)	1.43	CURR(t-1)	1.43
LVR(t-1)	1.22	RD(t-1)	1.43
TANG(t-1)	1.16	LVR(t-1)	1.22
CDUAL(t-1)	1.15	TANG(t-1)	1.16
		CDUAL(t-1)	1.15
Mean VIF	1.91	Mean VIF	1.91

Note: This table presents the VIF (Variance Inflation Factor) values of the models. All variables are defined in Table 1.