

# THE POWER OF BOARD SIZE AND GENDER DIVERSITY ON THE VALUE OF COMPANIES LISTED ON EMERGING MARKETS

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## Abstract

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The main aim of this empirical paper is to examine the impact of board size and gender diversity on the firm value of 354 non-financial firms listed on the Gulf Cooperation Council (GCC). The vital importance of this paper is to shed light on the presence of female directors on the boards of directors in the GCC. This empirical paper applied several estimation techniques such as ordinary least squares (OLS) and panel regression (fixed & random effect) on a dataset that is extracted from the Refinitiv Eikon platform for the period 2010-2022. This investigation controlled for firm age, firm size, profitability, and leverage in the model developed. The significant result of the Hausman test approved the results of the fixed effect model which reveals that gender diversity, firm size, profitability, leverage, and board size significantly positively impact the firm value, unlike the firm age which appeared to be statistically insignificant. The results imply that the larger the board size and the higher the presence of women on the boards of directors in the GCC region, the better the profitability. This indeed recommends the decision takers include more members especially women in the decision-making process.

**Keywords:** Firm Value, Fixed Effect, Gender Diversity, Board Size, Firm Size, Profitability, Leverage, Tobin's Q

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## 1. INTRODUCTION

Corporate governance is the framework used to direct and control businesses (The Committee on the Financial Aspects of Corporate Governance, 1992). There are three elements related to the corporate decision-making process which are of major concern to the corporate governance framework. The first element defines the authorization of an individual to

make specific financial or managerial decisions. Then, the second one focuses on whose interests should be prioritized when making a relevant decision. The last element discusses whether and to what extent context-specific factors such as social, economic, political, and legal institutions influence the decision-making process and the related conclusions (Mishra & Kapil, 2018).

Other definitions for corporate governance were observed in the literature. For instance, Rezaee (2009) stated that corporate governance helps the management represent the shareholders' interests in a very effective way. Moreover, the Organization for Economic Co-operation and Development (OECD) has formulated a definition for corporate governance that indicates the welfares of a firm's stakeholders. They pinpointed that corporate governance enables the company's management, shareholders, and board of directors to follow up on its objectives and whether those objectives are properly monitored and attained (OECD, 2004).

Corporate governance significantly impacts the economy since it helps firms function well by minimizing related investment risks and ensuring returns to investors that add value to the company (Khanh et al., 2020). Due to the fast development of the corporate governance literature and according to Nicholson and Kiel (2007), it is essential to explore further the importance of corporate governance in much more detail. In the research from Khanh et al. (2020), it is mentioned that corporate governance and firm value are significantly associated; however, such relation did not hold in the financial sectors. Hence, exploring this and providing further details are crucial as the concept of board characteristics linked to the firm value remains unanswered. Many researchers have investigated this issue, and mixed results have led to a challenge to study more in-depth how specific board characteristics, such as females on board, board size, etc., affect the firm value.

This empirical paper comes to fill in the gap raised by Nicholson and Kiel (2007) and Khanh et al. (2020) who have noted that there is no full connection between the board characteristics and the firm value. That being said, this study aims to examine the relation between board characteristics and the value of non-financial companies in the Gulf Cooperation Council (GCC), specifically, this empirical paper questions if board characteristics (board size and gender diversity) affect the value of companies listed on emerging markets. In addition, several researchers studying the impact of board characteristics on firm value have reached mixed results in various countries such as Saudia Arabia (Ghabayen, 2012), Kuwait (Al-Matari et al., 2012), Vietnam (Khanh et al., 2020), Malaysia (Johl et al., 2015), Tanzania (Assenga et al., 2018), Spain (Rodriguez-Fernandez et al., 2014) and so on. Therefore, it is tempting to further study the GCC market and analyze how board characteristics can impact the firm value. Furthermore, the significance of this study is that the empirical results will be a valuable tool for companies in the GCC to get further insights on how the board characteristics will impact their company along with other crucial factors such as performance and leverage metrics. Besides, this paper will try to fill in the research gap and enrich the literature found on other developed and developing markets by applying the ordinary least squares (OLS) and panel regressions (fixed and random effect techniques).

This paper is structured to include the literature review in Section 2 along with the theoretical background and previous research done. Section 3 aims to show the research methodology and model development. Section 4 reveals the results and

findings in addition to the analysis and interpretations. Finally, the conclusions and recommendations will appear in Section 5.

## 2. LITERATURE REVIEW

### 2.1. Theoretical background

#### 2.1.1. Agency theory

According to agency theory, the agent (manager), presumed to be individualistic, rational, and risk- and effort averse, is assigned management duties by the principal (shareholders), who prioritizes maximizing the company's value. As a result, the goals may be at odds with the principal's interests (Fama & Jensen, 1983). The organizational structures of businesses in fully developed nations can readily adapt to the concept of agency theory, specifically those companies with an organizational structure of distributed ownership and of Anglo-Saxon heritage where there is no longer a distinction between control and ownership. Per the theory, because executives are self-interested and opportunistic and have different goals and risk preferences, separation of control and ownership can lead to a conflict of interest between management and shareholders (Fama & Jensen, 1983). To overcome this conflict, Jensen and Meckling (1976) suggested having a suitable agreement between both parties. Moreover, Daily et al. (2003) stated that various additional problems might arise with the board when trying to provide the necessary monitoring. These problems involve the relevant size of the board, the independence level of the directors, and the role duality of the chairman. Moreover, Kyereboah-Coleman et al. (2007) suggested various ways to reduce the agency conflict such as having the majority of the board members being non-executives and assigning two different persons to act as the chief executive officer (CEO) and chairman of the board. Such actions are expected to boost the independence level of the board in an attempt to lower the conflict of interest existing between the principal and agent.

#### 2.1.2. Resource dependency theory

The resource dependency theory states that a company's limited resources prevent it from being self-sustaining. Hence, it has to develop relationships with the outside world in order to attract resources and survive (Pfeffer & Salancik, 2003). Consequently, this implies that the board composition plays a vital role in the maximization of the shareholders' wealth. Barroso et al. (2011) revealed that the firm's board is required to acquire resources, provide guidance and counseling, serve as an intermediary with various stakeholders, and develop relationships with external parties. In addition to being seen as a vital tool for connecting with the outside world, the board also enables the firm to attain a sustained competitive edge over its competitors (Barney et al., 2001). Besides financial resources, Hillman et al. (2000) pinpointed that external board directors are considered additional resources for the firm as they provide supplementary information and skills to the management. Similarly, the resource dependency

theory also shows the role of the outside director in building connections with the external environment to improve the firm's financial performance.

## 2.2. Previous studies

A study by Ghabayen (2012) managed to investigate the impact of board characteristics on the performance of non-financial firms from Saudi Arabia. He collected the data for 102 companies listed on the Saudi Stock Market and applied multiple regression analysis for the period starting from 2011 and concluded that the board size is irrelevant to the firm's performance. Consequently, the study also proved that board independence in Saudi Arabia is inversely related to firm performance.

Al-Matari et al. (2012) investigated the connection between board composition and business performance using the Kuwaiti publicly-listed non-financial firms. To accomplish the study, data were collected and resulted in a sample of 136 firms for the fiscal year 2009. Using multiple linear regression, the researchers succeeded to prove that board size, firm size, and board independence do not have any statistical significance on financial performance. Nevertheless, the findings pinpointed that leverage is negatively linked with performance.

Rodriguez-Fernandez et al. (2014) utilized a sample of 121 businesses from various sectors (consumer goods, financial and real estate services, basic materials...etc.) listed in the Madrid Stock Exchange. Their empirical paper investigated the impact of Spanish firms' board structures and their financial performance. They concluded that the number of annual board meetings and board are significantly associated with firm performance while the firm size appeared to be positively related to performance.

Mishra and Kapil (2018) investigated the impact of board characteristics on the value of Indian firms. The sample taken into consideration included 391 companies of CNX 500 listed on the National Stock Exchange based on five years of financial data (2010-2014). Using structural equation modeling (SEM), the authors proved that the board size and the number of board meetings affect the firm value significantly positively. Moreover, the study revealed that board independence affects the firm performance significantly.

Assenga et al. (2018) investigated the effect of board characteristics on the firm performance of Tanzanian firms. Using a mixed methodology, they utilized a balanced panel data regression and semi-structured interviews, respectively. The sample consisted of 12 essential stakeholders for the interviews and 80 observations extracted from the annual reports of the period 2006-2013. It was revealed that the board size is not significantly linked to the company's performance. On the contrary, this study also proved that CEO duality, firm size, and firm leverage are negatively connected with corporate performance. Besides, it was also evident that gender diversity within the board of directors has a positive influence on the firm's financial performance.

Another study by Pucheta-Martínez and Gallego-Álvarez (2020) utilized panel data of

34 countries representing six different geographic areas such as Africa, Asia, Oceania, Europe, Latin America, and North America. Their paper investigated if board characteristics have an impact on firm performance. A total number of 10,314 observations were used to empirically prove that board independence, board size, CEO duality, females on board, and number of board meetings are positively associated with business performance.

Khanh et al. (2020) gathered and used data from Vietnam's listed stock market firms with 2,937 observations between 2008 and 2018. Several regression approaches were applied to study the board characteristics' influence along with the firm's capital structure on the corporate value. The research outcomes reveal that the board's independence level, the size of the board, the size of the company, and the percentage of women on board positively influence the firm value. However, the number of board meetings per year appeared to negatively influence the firm value.

Kanakriyah (2021) applied the linear regression method and panel data to test the effect of board characteristics on an organization's performance. The sample included 85 listed Jordanian service and industrial firms listed on the Amman Stock Exchange consisting of 425 observations for the period 2015-2019. The results signified that board size, gender-diverse board, and number of board meetings do not have any significant impact on the Jordanian firms' performance while board independence and CEO duality appeared to have a positive relation.

Another study by Amedi and Mustafa (2020) involving Jordanian manufacturing firms studied the relation between the board characteristics and their performance. Using multiple regression and a dataset from 2016 to 2018, the hypotheses were formulated, tested, and resulted in a positive significant relation between the board independence, board diversity, and leverage with company performance, unlike the board size which showed an inverse relation with performance.

Research by Koji et al. (2020) involving 1,412 Japanese manufacturing firms explored the potential relation between corporate governance and firm performance. A sample of 7,055 observations extracted from the period 2014-2018 was utilized to confirm that both the board and firm size are positively impacting the firm performance. Moreover, the number of board meetings and the level of board independence did not show any significant relation with the firm's Tobin's Q.

Varghese and Sasidharan (2021) examined a sample of 1,032 listed Indian firms on the National Stock Exchange and 350 listed Chinese firms on the Shanghai Stock Exchange. The study analyzed the impact of board characteristics on firm value using the panel data method and time-fixed effects. The impact was empirically tested using a sample of 10,240 and 958 observations from Indian and Chinese firms respectively and the results stated that board size was negatively associated with firm value in China and not in India. Moreover, board independence appeared to be positively related to firm value in India and negatively related in China. As for the control variables, it was proven that the firm size is negatively associated with company

value in China, unlike India. Similarly, leverage appeared to negatively impact the share value in India and not in China.

A previous study by Sobhan (2021) examines the impact of the firm's board traits and its performance was conducted in Bangladesh using 20 financial institutions excluding banks. The research adopted the OLS regression and proved that the board size, females on boards, and firm size are positively impacting financial performance. Besides, the board independence, number of board meetings, and firm age did not show any significant impact on corporate performance.

Anas et al. (2022) tested gender diversity's impact on a firm value. The sample included over 39 S&P BSE SENSEX 50 listed non-financial companies with six years of data (2014-2020). Using panel regression, the results show that board meetings and gender diversity within the board had a negative impact on the company's value. Moreover, the authors determined that gender diversity moderates positively the relation between board size and firm value.

### 3. RESEARCH METHODOLOGY

#### 3.1. Study sample

The Refinitiv Eikon platform shows a total number of 538 non-financial firms listed on the GCC markets in 2023. The dataset was gathered from the financial statements available on the Refinitiv Eikon platform of the GCC firms for the period 2010-2022. The final sample consisted of 354 non-financial firms representing roughly 66% of the firms' total population distributed across the six GCC countries: United Arab Emirates, Qatar, Saudi Arabia, Oman, Bahrain, and Kuwait. This empirical study applied the OLS and panel regression to estimate the impact and based on the significant result of the Hausman test; the fixed effect results have been analyzed. All financial companies were excluded from the study due to their specific asset structures that are supported by high leverage ratios. Besides, some industry-specific metrics apply strictly to the financial industry and do not apply to others that were verified to impact the firm value. The model development discussed in the next section included several variables that have been highly recommended in the literature of their significant impact in controlling the relation between board characteristics and the firm value.

#### 3.2. Model development

##### 3.2.1. Dependent variable: Tobin's Q

Tobin's Q metric has been considered a firm value metric by various previous studies such as O'Connor (2012), Abdullah et al. (2016), Asante-Darko et al. (2018), and Anas et al. (2022). It was initially introduced and used by James Tobin in 1969 who developed its components and contributed to making it more popular. Tobin's Q ratio measures the market value of the firm relative to the replacement value of its assets. This metric is well-known from the value creation perspective as it combines both valuation and performance. If

Tobin's Q ratio is higher than one, it suggests that investing in assets will result in a reward for the investor higher than the amount initially invested. A high Tobin's Q implies that investors possess high expectations for the firm's future growth and profitability. But if Tobin's Q ratio is less than one, then the investment would not be considered that appealing for investors (Alghifari et al., 2013).

##### 3.2.2. Independent variables

###### Board size

Large boards are preferred from the standpoint of resource dependency since they may strengthen links between a company and its surroundings (Pfeffer & Salancik, 2003). The board size represents the total number of board directors. According to Epstein and Roy (2004), a board's ideal size should comprise both executive and non-executive directors. To run smoothly the business, efficiency in the board's structure is required. Ciftci et al. (2019) considered that larger boards are expected to improve the board diversity and independence level and thus, maximize firm value. Every country has its own culture and board size which differs tremendously from one to the other. According to Epstein and Roy (2004), a large firm should have a board composed of an average of sixteen directors. On the contrary, Zabri et al. (2016) argue stating that there is no optimal board size and it all depends on the effectiveness of the board composition. According to the resource dependency theory, a large board size can provide a company with more access to resources like knowledge and finance from the outside world.

Previous literature identified a significant association between the firm's board size and its firm value, for example, Aqabna et al. (2023), Gulzar et al. (2020), and Koji et al. (2020). These studies consider that larger boards affect positively the firm's financial performance and eventually the company value due to the right strategic decisions taken as a result thanks to the broad expertise of the directors (Van den Berghe & Levrau, 2004). Similarly, Hambrick et al. (2008) believe that large boards are able to recommend changes that boost business growth due to the competency of board members. Conversely, Bansal and Sharma (2016) observed that larger boards lead to continuous conflicts among the directors and this negatively affects the decision-making process. Several studies proved a significant negative relation between the size of the board and the firm value such as Salem et al. (2019) in the USA and Egypt, Eisenberg et al. (1998) investigated the Finnish market, Mak and Kusnadi (2005) examined Singapore and Malaysia, Naushad and Malik (2015) looked into Bangladesh, and Aljifri and Moustafa (2007) studied the Emirati market. Despite all the above significant relationships, Sueyoshi et al. (2010) investigated the Japanese market and concluded that the board size is irrelevant to the firm performance. Based on the mixed results obtained by various authors, we hypothesize:

*H1: There is a relation between the board size and the firm value.*

### *Gender diversity*

The agency theory suggests that women on board improve firm value by providing external connections with the outside environment. It is also claimed that women bring new ideas, minimize agency costs, and make tough decisions (Pfeffer & Salancik, 2003). Over the past years, female directors strived to educate themselves and acquire post-graduate studies; thus, they are better judged as sufficiently skilled in decision-making (Solimene et al., 2017). It is typical to see women playing a role in the board and making it more gender diverse. Having more females on the board helps to connect better with the firms in emerging markets where there are more women than men (Abdullah et al., 2016). According to Levi et al. (2014), women on board help in the maximization of shareholder value as a result of the efficiency in managing the corporate financial resources; thus, this enables the firm to save funds and allocate them to other capital projects that create more value.

The resource dependency theory considers that female directors can contribute to the resources of the firm through their connections and relationships. Based on Hillman et al. (2007), the additional resources are anticipated to enhance the firm's financial performance and this is mainly due to the type of contacts female directors have with the external environment. There were mixed results on how gender diversity on the board improves the company's value. For example, Assenga et al. (2018) and Abdullah et al. (2016) have found a positive relation. Conversely, several studies such as Anh and Khanh (2017) proved that there is an obverse relation between board gender diversity and financial performance. Even though several studies confirmed significant positive and negative relationships, few others (Masum & Khan, 2019; Rahman & Saima, 2018) suggest that such relationship is irrelevant. With reference to the various relationships available in the literature, we hypothesize:

*H2: There is a relation between the gender diversity and the firm value.*

### *3.2.3. Control variables*

#### *Firm age*

If the company is old and mature, it is assumed to be reliable and well-reputed in the market. Older companies attract more investors in the market as they have more information available than newly established businesses. Trust, reliability, and image increase with time, enhancing the value of a company. The age is calculated by the number of years from when the company was established until 2022 (Field et al., 2013). Previous studies (Mbate & Sutrisno, 2023; Anas et al., 2022) studied the association between company age with respect to firm value and obtained a significant positive relation between the two variables. Contrarywise, Kanakriyah (2021) and Koji et al. (2020) also used age as a control variable and concluded that it negatively impacts a company's value. Following the mixed results available in the literature, we hypothesize:

*H3: There is a positive relation between the firm age and the firm value.*

#### *Firm size*

The firm's size can be measured by the natural logarithm of the end-of-year firm's total assets (Khalaf, Awad, & Ahmed, 2023). Few researchers such as Pucheta-Martinez and Gallego-Alvarez (2020), Dang et al. (2019), and Cheng (2008) argue that larger firms tend to have higher firm values. This is because larger firms have more resources and are often more diversified, which can make them less vulnerable to economic fluctuations and other risks. Larger firms also often have more bargaining power in their dealings with suppliers, customers, and competitors, which can lead to higher profit margins and better financial performance; thus, increasing the firm value. According to Liow's (2010) previous studies, larger firms tend to abide by the risk management framework more than firms of smaller size. When a company is relatively more sizable, it is anticipated to be more profitable and can raise more capital thanks to the economies of scale (Mura, 2007). On the contrary, there are also other arguments to be made for the opposite relation between firm size and firm value and this has been supported by Coles et al. (2008) and Nguyen et al. (2016). Besides, Mule et al. (2015) found that the business size is irrelevant to the enterprise value at all. Given the above-mixed results, we hypothesize:

*H4: There is a relation between the firm size and the firm value.*

#### *Profitability*

Return on assets (ROA) is a proxy for a company's profitability by calculating the profit generated per dollar of assets (Khalaf, Awad, & Nassr, 2023; Buallay et al., 2020; Seissian et al., 2018). It is a widely used ratio that studies the efficiency of asset utilization. In general, a higher ROA indicates that a company is more profitable and efficient in using its assets to generate revenue (Khalaf & Alajlani, 2021). A high ROA signifies that a company is generating more profit from its assets, which can lead to higher earnings and ultimately, a higher stock price and market capitalization. Allayannis and Weston (2001) argued that highly profitable firms are usually in high demand in the market and this leads to an increase in their share price; this is because investors are more likely to invest in well-performing firms, as they offer a greater return on their investment (Uddin et al., 2021). Based on the above literature, we hypothesize:

*H5: There is a positive relation between the firm profitability and the firm value.*

#### *Leverage*

The leverage level of a firm can be measured in different ways. In this research, leverage is calculated by dividing the end-of-year total debts by the end-of-year total assets (Awad et al. 2022; Rubino et al., 2016; Soliman & Ragab, 2013). Past literature has identified mixed results between leverage and firm value. Several researchers such as Dang et al. (2019) argued that there is a negative

relation between leverage and firm performance. However, Jensen (1986) concluded that leverage affects the value of the company positively since excessive debt levels are expected to reduce agency costs. Besides, Aqabna et al. (2023) failed to identify a significant association between leverage and firm value. Given the diverse results available in the literature, we hypothesize:

*H6: There is a positive relation between the leverage position and the firm value.*

### 3.3. Econometric model

Prior researchers have mainly utilized the generalized method of moments (GMM) (Aqabna et al., 2023) or the OLS regression (Awad et al., 2022). Following Khalaf (2022a), Khalaf (2022b), and Anas et al. (2022), the below econometric model is developed to

empirically investigate the impact of board size and gender diversity on the firm value of GCC non-financial firms by applying the OLS and panel regression (fixed and random effect techniques) since our dataset combines both time series and cross-sectional observations. In addition, another highly recommendable method for future research is to apply mixed methodology by collecting the opinions of managers from emerging markets and checking if it confirms the regression results:

$$Tobin's\ Q_{t,i} = \beta_0 + \beta_1 BS_{t,i} + \beta_2 GD_{t,i} + \beta_3 FA_{t,i} + \beta_4 FS_{t,i} + \beta_5 ROA_{t,i} + \beta_6 LEV_{t,i} + \varepsilon_{t,i} \quad (1)$$

where,  $t$  is the year of study,  $i$  is the  $i$ -th firm selected, and  $\varepsilon$  is the error term.

**Table 1.** Description of variables

Variable	Abbreviation	Measurement	References
<b>Dependent variable</b>			
Firm value	Tobin's Q	(Market capitalization + Liquidating value of preferred stocks + book value of liabilities) divided by total assets	Chung and Pruitt (1994), Anas et al. (2022)
<b>Independent variables</b>			
Board size	BS	Total number of directors on the board	Aqabna et al. (2023)
Gender diversity	GD	Total number of female directors on the board	Rubino et al. (2016), Goel (2018)
<b>Control variables</b>			
Firm age	FA	Total number of years since the establishment	Field et al. (2013), Mbate and Sutrisno (2023)
Firm size	FS	Natural logarithm of end-of-year total assets	Khalaf, Awad, and Nassr (2023) Aqabna et al. (2023)
Profitability	ROA	Net income divided by average total assets	Buallay et al. (2020), Uddin et al. (2021)
Leverage	LEV	End-of-year total debts divided by end-of-year total assets	Awad et al. (2022), Khalaf, Awad, and Ahmed (2023)

Table 1 summarizes the variables included in the model, provides the measurements used when collected from the Refinitiv Eikon platform, and links the proxies to previous researchers who are in line with such inclusion of ratios.

## 4. RESULTS AND ANALYSIS

### 4.1. Descriptive analysis

Table 2 reveals the descriptive statistics of all the variables included in the model. The results

pinpoint that Tobin's Q in the GCC stock markets ranges between 0.654 and 3.497 with a mean of 1.645. The smallest and largest board in the study include 4 and 15 directors, respectively. The average size of corporate boards in the GCC is roughly 8. The average number of female directors is almost 2; however, few boards in the GCC do not include female directors while others include a maximum of 8. The average age of firms in the sample is 9.35 years with 2 years being the youngest and 49 the oldest.

**Table 2.** Descriptive statistics

Variable	Mean	Std. Dev.	Max.	Min.
Tobin's Q	1.645	0.349	3.497	0.654
Board size	8.265	2.965	15.00	4.00
Gender diversity	2.152	0.165	8.00	0.00
Firm age	9.350	3.254	49.00	2.00
Firm size	14.956	1.968	23.518	9.618
ROA	0.053	0.165	0.520	-0.450
Leverage	0.38	0.145	0.940	0.22

Moreover, the average size of GCC companies is 14.956 (natural logarithm of total assets) with a minimum and maximum size of 9.618 and 23.518, respectively. The average return on assets in the sample is 5.3% with a minimum of -45% and a maximum of 52%. Lastly, the firm's debts measured out of total assets range between 22% and 94%. The average leverage position of GCC firms is 38%.

### 4.2. Correlation and multicollinearity diagnostics

Based on the correlation results shown in Table 3, the findings show that board size is positively correlated (0.048;  $p$ -value  $< 0.05$ ) with Tobin's Q. This finding complies with Koji et al. (2020) and implies that additional directors on board will positively influence the firm value. The number of female directors is also positively correlated (0.0578;

p-value < 0.01) with Tobin's Q. This confirms the result of Pucheta-Martinez and Gallego-Alvarez (2020) and signifies that the presence of female directors on the board will positively impact the firm value. Besides, the age of the firm appeared to be positively correlated (0.027; p-value < 0.01) with the firm's Tobin's Q.

This result is in line with Anas et al. (2022) and this indicates that older firms create more value for their shareholders as opposed to younger firms. The results also show that the size of the firm is positively correlated (0.162; p-value < 0.01) with Tobin's Q. This confirms the results of Anas et al. (2022) and Dang et al. (2019) and implies that sizable firms have a higher corporate value.

Table 3. Correlation matrix

Variable	Tobin's Q	Board size	Gender diversity	Firm age	Firm size	ROA	Leverage
Tobin's Q	1.00						
Board size	0.048**	1.00					
Gender diversity	0.0578***	0.064***	1.00				
Firm age	0.027***	0.095	0.032	1.00			
Firm size	0.162***	0.025***	0.019**	0.096**	1.00		
ROA	0.079***	-0.165**	0.098	0.065***	0.011***	1.00	
Leverage	0.032**	-0.093	-0.152	0.132***	0.068***	-0.059***	1.00

Note: \*\*\*, \*\*, and \* show statistical significance at 1%, 5%, and 10%, respectively.

Similarly, the firm's return on assets is positively correlated (0.079; p-value < 0.01) to Tobin's Q. This supports the findings of Dang et al. (2019) and Alghifari et al. (2013) and suggests that firms with higher profitability and efficiency are of higher value. Lastly, the leverage ratio appeared to be positively correlated (0.032; p-value < 0.05) with the firm's Tobin's Q. Other studies by Anas et al. (2022) and Salem et al. (2019) have reached the same conclusion and this indicates that higher leverage leads to higher firm value. The explanatory variables in a regression model are subject to a multicollinearity problem when a variable is a linear combination of other explanatory variables. According to Weisberg (1985), multicollinearity problems can be diagnosed through the analyses of correlation factors in addition to the variance inflation factors (VIF). With reference to Table 3, it has been observed that there is no multicollinearity

problem since all correlation figures ranged between -0.165 and +0.162 (Brooks, 2008; Khalaf, Awad, & Ahmed, 2023).

#### 4.3. Regression results and discussions

This paper utilizes panel data regression to test its six hypotheses. Following the results of the Hausman test, the fixed effect model is favored over the random effect model due to its strong statistical significance ( $\chi^2 = 106.36$ ; p-value < 0.01). The F-statistic of the fixed effect model proves that the regression model is highly significant and all coefficients are different from zero (F-Stat = 97.86; p-value < 0.01). The model's adjusted R<sup>2</sup> identifies that 29.5% of the independent and control variables explain the variation in the dependent variable (Tobin's Q).

Table 4. Regression results

Variable	OLS	Random effect	Fixed effect	VIF	1/VIF
Board size	0.034	0.013*	0.034***	1.06	0.943
Gender diversity	0.015**	0.059***	0.062*	1.09	0.917
Firm age	0.816	0.916	0.371	1.02	0.980
Firm size	-0.078	0.026**	0.051**	1.10	0.909
ROA	1.264	0.596*	0.365***	1.01	0.990
Leverage	1.265**	0.159*	0.086**	1.04	0.961
Constant	0.244	0.561*	1.325***		
F-statistic/Wald $\chi^2$	97.51***	85.52***	97.86***		
Adjusted R <sup>2</sup>	0.128	0.135	0.295		
Hausman test ( $\chi^2$ )			106.36***		
p-value ( $\chi^2$ )			(0.000)		

Note: \*\*\*, \*\*, and \* show statistical significance at 1%, 5%, and 10%, respectively.

Table 4 presents also the VIF results of the regression model. It shows that the VIF values are close to 1 which clearly proves that multicollinearity should not be a concern (Neter et al., 1989). Furthermore, the average VIF for all variables is 1.05, indicating that there is no multicollinearity problem among the variables (Gujarati & Porter, 2009). This result was consistent with the previous results of Ciftci et al. (2019).

The results of the fixed effect model convey that board size is statistically and positively significant (p-value < 0.01) with the firm value. This fully supports our first hypothesis (H1) and indicates that more directors on boards share new

ideas and perspectives and contribute more of their experience and knowledge in an attempt to maximize the firm value. This is consistent with the findings of previous studies Aqabna et al. (2023), Anas et al. (2022), Koji et al. (2020), Ciftci et al. (2019), Pucheta-Martinez and Gallego-Alvarez (2020), Mishra and Kapil (2018), Johl et al. (2015), and Al-Matari et al. (2012). However, our results were not consistent with Salem et al. (2019) and Nguyen et al. (2016) who obtained a negative relation between the board size and firm value. Similarly, Varghese and Sasidharan (2019) showed that the sizable boards have a negative implication on the firm value only in China and not in India. A possible

explanation for this obverse relationship might be that corporate boards with excessive number of directors lead to complexities and conflicts in addition to time-consuming discussions resulting in agency costs and thus lowering the firm value.

The second hypothesis (*H2*) proposing a significant relation between gender diversity and firm value is statistically supported ( $p$ -value  $< 0.1$ ). The results conclude that female presence on the corporate board has a positive impact on the firm value. Besides, *H2* is also supported by the agency theory pinpointing that investors strongly believe that female directors boost control levels on boards and improve the company's reputation (Jurkus et al., 2011). Our results support the findings of Jayanti et al. (2023), Pucheta-Martinez and Gallego-Alvarez (2020), Salem et al. (2019), Assenga et al. (2018), and Abdullah et al. (2016) who found out that the female presence on boards impact positively the firm value. Conversely, other scholars, such as Brinette et al. (2023), Anas et al. (2022), and Ciftci et al. (2019), failed to identify a valid direct statistical relation between board gender diversity and firm value.

As for the third hypothesis (*H3*) which anticipates a positive relation between the firm age and value, the results reveal that there is no sufficient empirical evidence to support it ( $p$ -value  $> 0.1$ ). Our findings are refuted by other scholars (Jayanti et al., 2023; Kanakriyah, 2021; Koji et al., 2020) who proved a negative relation between the age of the firm and its value. This suggests that younger firms tend to maximize their corporate value. Nevertheless, a study by Anas et al. (2022) proved a significant positive

relation between the firm age and value signifying that older firms have a higher firm value. A possible explanation is older companies have resilience, sufficient market experience and presence to compete, sustain, and perform financially well.

The regression results supported the fourth hypothesis (*H4*) which expected a positive relation between the firm size and its corporate value ( $p$ -value  $< 0.05$ ). This is consistent with the findings of Brinette et al. (2023), Koji et al. (2020), Pucheta-Martinez and Gallego-Alvarez (2020), Buallay et al. (2020), Dang et al. (2019), and Nguyen et al. (2016) who confirmed a significant positive relation between both variables. This implies that big companies in terms of size influence positively their corporate value. On the contrary, several studies by Aqabna et al. (2023), Anas et al. (2022), Uddin et al. (2021), and Ciftci et al. (2019) revealed a significant negative relation between the size of the firm and its value. This negative result indicates that smaller firms and their resources can be easily managed; thus, increasing their firm value. Moreover, Uddin et al. (2021) considered that larger firms having a diversity of products and services might incur additional managerial costs and reduce their firm value. Anas et al. (2022) argue that firm value might be destroyed when the size of the firm exceeds its optimal threshold and enters into the diminishing returns to scale phase. Despite the significant positive and negative relationships obtained in prior studies, Jayanti et al. (2023) and Salem et al. (2019) failed to prove a significant relation between firm size and firm value.

**Table 5.** Summary of hypotheses results

<i>Hypothesis</i>	<i>Expected sign</i>	<i>Actual sign</i>	<i>Decision</i>
<i>H1: Boars size → Firm value</i>	(+/-)	(+)	Supported at 1%
<i>H2: Gender diversity → Firm value</i>	(+/-)	(+)	Supported at 10%
<i>H3: Firm age → Firm value</i>	(+)	(+)	Not supported
<i>H4: Firm size → Firm value</i>	(+/-)	(+)	Supported at 5%
<i>H5: Profitability → Firm value</i>	(+)	(+)	Supported at 1%
<i>H6: Leverage → Firm value</i>	(+)	(+)	Supported at 5%

Source: Research results.

The fifth hypothesis (*H5*) proposing a positive relation between the firm profitability and firm value is fully supported by the fixed effect results ( $p$ -value  $< 0.01$ ). Our results are matching the findings of Jayanti et al. (2023), Uddin et al. (2021), Jonnius and Marsudi (2021), Dang et al. (2019), and Alghifari et al. (2013) who had almost a consensus about the positive relation between the firm profitability and its corporate value. This relationship will always hold as long as the investors will be continually buying the shares of the company as a result of its good profitability indicators.

The results in Table 4 fully support the sixth hypothesis (*H6*) suggesting a positive relation between leverage and firm value ( $p$ -value  $< 0.05$ ). The previous research of Brinette et al. (2023), Anas et al. (2022), and Salem et al. (2019) are consistent with our findings and imply that additional leverage will improve the firm value. A possible explanation here is that GCC firms tend to keep on borrowing and investing in value-creating projects as long as their return on investment exceeds their incremental cost of borrowing. Conversely, the studies of Jayanti et al. (2023), Koji et al. (2020), Dang et al. (2019), and

Ciftci et al. (2019) refuted our findings identifying a significant negative relation between the firm's leverage and corporate value. This suggests that highly levered firms are exposed to higher financial risk and interest costs resulting in depressed profits and cashflows; and consequently, lower firm value. Moreover, other studies by Aqabna et al. (2023), Pucheta-Martinez and Gallego-Alvarez (2020), and Nguyen et al. (2016) obtained an insignificant relation between leverage and firm value. Finally, Table 5 provides a summary of the results of the research hypotheses while comparing them to the expected results formulated in subsection 3.2.

## 5. CONCLUSION

The study explores the relation between board characteristics and firm value for 354 non-financial companies listed on the GCC stock markets. The dataset was retrieved from the Refinitiv Eikon platform and the annual reports of the corresponding firms for the period 2010-2022. Using panel regression (fixed and random effect), this paper has empirically tested the relation



between the board size and gender diversity and the firm value including several control variables such as firm age, firm size, profitability, and leverage. Following the significance of the Hausman test, the fixed effect model was favored over the random effect model.

The results revealed that both variables the firm's board size and board gender diversity impact positively the firm value. This suggests that additional board members serving on the corporate board along with the female presence contribute towards a higher firm value through sharing new business ideas and know-how. Also, investors consider that gender diversity offers better firm internal controls and reputation. Besides, the firm size, profitability, and leverage proved to positively influence the firm value too. This infers that large-sized firms have more resources to expand their operations and penetrate new markets. Similarly, additional leverage and higher profitability are anticipated to enable any business to target further value-creating opportunities; thus, maximizing the value of the company.

However, the empirical findings failed to prove a significant relation between the firm age and its corporate value.

Despite the interesting findings of this paper, a few limitations were identified and could help in future research. Firstly, some crucial board-related variables such as CEO duality, board compensation, board independence, and number of board meetings were not considered due to missing panel data for these variables. Secondly, another firm value proxy, such as market-to-book, could have been used to check the robustness of our findings. Thirdly, this research excludes all financial companies listed on the GCC capital markets. Fourthly, the study focuses solely on the six GCC countries. Henceforth, future research could be extended to incorporate additional board-related variables in addition to different measurements for firm value. Further research is also encouraged to examine the impact of board characteristics on the value of financial companies. Besides, future studies should be extended to encompass firms from North Africa and Europe.

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