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Women pathway to the board, Director's Interlock, and Its Implications for Corporate Financial Performance

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Abstract: Women taking active part equally in job market, their access to productive resources, agency, and meaningful participation in economic decision making at all levels. For positive development, empowerment of women is necessary such as boosting productivity, increases economic diversification, and income equality. This study mainly focuses on the female representation on the board in the Asian context and examines the effect of gender diversity on corporate financial performance in Malaysian listed firms. This study explores the various aspects of governance mechanisms that influence the likelihood of an entity. This study used traditional static models and upgraded dynamic models. This study used gender socialization theory to support the findings of the study. The results indicate that female representation on the board contributes positively to corporate performance. The findings show that female directors have a domineering role in improving corporate performance. The findings of the study also reveal that static models are biased due to ignoring the effect of endogeneity and most of the corporate governance

variables are endogenous. The findings have important insights for academia, policymaker, researchers, industries, regulatory bodies, and the government.

Keywords: Gender diversity, corporate governance, board attributes, firm performance, dynamic model.

JEL Classification: G10, G14, F10, F14

1. INTRODUCTION

In the last ten years, demands have intensified for greater diversity in the management boards. Investors have been skeptical of company diversity efforts, including some outspoken retail owners. A critical consideration is that the participation of women in boards of directors will enhance the consistency of board decisions (Adams and Ferreira, 2009; Faccio et al., 2016). In the United States, where 21% of the board members are female, many have complained that the boards are also far from inclusive of workers and investors (Catalyst, 2020).

Workforce diversity is a subject that was highly attracted by academics (Triana et al. 2013) and practitioners (Huber and O'Rourke 2017). Much of this emphasis originally focused on advancement barriers and the salaries of lower and medium-sized women. More recently, corporate governance analysis has reduced its emphasis on corporate board results and determinants of women's representation. In reality, the possible economic and social advantages of increasing gender diversity in corporate boards are well established (Chen et al., 2017), and the drivers of board gender diversity. Advances in the inclusion of women in business boards are sluggish but far from the gender parity ratio of 1 (Zahid et al., 2020).

From the last decade, the focus on women's education, empowerment, and participation in the field has increased. Women are also taking an active part and performing their roles much better than before. On different grounds, women proved that they are equal to men and can perform any kind of duties and responsibilities in a much better way. Women's education, emancipation, and empowerment help in removing barriers and difficulties facing by women due to gender discrepancies. Besides all encouragement, women still facing problems in approaching and appointing at higher positions such as the board of directors of a firm due to cultural, norms, and religious factors in a particular country. Aripin et al. (2016) stated that there is a perception that in a private or public job, the higher the rank refers to the lowest involvement of women. This kind of gender difference results in different forms of discrimination and economic imbalances like health-care discrimination, lower access toward basic needs, unequal opportunities toward education, and low power in all domains of life (Choudhry, Mutalib, & Ismail, 2019).

Boardroom gender diversity is recommended by the Malaysian codes of corporate governance (MCCG) in 2012 and revised in 2017. These codes were structured as required by the business environment and change in the corporate sector, which helps the firms to define the roles, improve transparency, secure the rights of shareholders, and adopt newly introduced international policies such as recommended to have at least 30% female directors on the board. While the rules and recommendations are still not in practice, but it has injected a sense of urgency among researchers, corporations, and policymakers. In Asian countries, mechanisms of corporate governance (CG) gain importance in the 19th century after the AFC – 1997/98 "Asian Financial Crisis." Gupta & Sharma (2014) reported that "failure in governance practice, lack of

transparency, and audit structure were the main reason behind theses crisis which affect the performance of listed companies negatively in Asian countries particularly Malaysia and Thailand, very severely" (Abdifatah, 2014).

This study mainly focused on female directorship (gender diversity) in a firm. Abrar et al. (2019) reported that "the discrimination always remains open in the life of women, including restricted mobility, lack of education and health facilities, non-availability of economic opportunities, unpaid jobs, the wage gap, workplace harassment, intimate partner violence, inflexible long working hours, double working shift (at the workplace as well as at homes), absence in the political process, conflicts with intimate partner and overburdened household responsibilities along with extra care work". All these factors discourage a woman to take an active part in society and approach a higher position in an organization. From the corporate perspective, the governance mechanism provides various principles and recommendations that help the firm to manage the duties of the firm and adopt the policies and procedures to improve corporate performance. The financial crisis, misconduct, corporate scandals, and scam lead the investors, the general public, board of directors, and shareholders to focus more on the audit structure, transparency, and the compliance of governance principles in the firm.

The paper will report the results in light of the associated theories and empirical evidence. In this study, the independent variable includes gender diversity (female directorship on the board) and other governance attributes that include "board size (BS), non-executive directors (NED), CEO duality (CEOD)." This paper, therefore, makes some contribution to the CG and FP relationship nexus from an empirical methodology perspective by employing the valid two-step System GMM panel regression model. Employing the system GMM estimator provides an opportunity to treat FP as a dynamic variable by adding the lag dependent variable.

The practice of good corporate governance (CG) and its concept are introduced early 90's, while it is taken into consideration by the developing economies after Asian Financial Crisis (1998). The absence of a good governance structure in the listed firms was considered as one of the main reasons for the event of AFC (1998). CG focused on transparency, accountability, and audit of the firm, monitoring and controlling function and expectation of good performance from the executive directors on the board(Bhardwaj et al., 2014). In Asian countries, CG started gaining momentum in 2000 by introducing and codes of corporate governance in the listed firms after various unforeseen events and scandals in the business and industrial sectors (Shehata, 2015).Several corporate failures, financial scandals, and scams such as Malaysia Berhad, PKFZ, and Megan media, had taken place due to the ignoring and non-compliance with the recommended governance structure introduced by MCCG. The enigma of how governance mechanism affects corporate performance remains unsolved. There could be numerous elucidations for the inconsistencies (Norwani et al., 2011).

Stakeholder theory posits that BOD is solely responsible for managing operations and decision-making decisions for the betterment of corporate performance. The firm needsa diverse board to make a strategic decision and meet the demand of the day such as experience, knowledge to understand and implementation of governance principles, industrial relationships and supporting behavior towards the stakeholders of the firm that helps in making a strategic decision. Diverse boards are considered most efficient in regards to decision-making as recommended by resource dependence theory. To boost and integrate the corporate performance (CP), Malaysian codes of corporate governance (MCCG)

recommended having at least 30% female representation in their revised codes in 2017 to meet the international standards of corporate governance established by OECD. Liu (2018) argued that the women as a director respect the environmental concern as per the recommendations of gender socialization theory (GST). Furthermore, women are more likely to take a step forward and promote social welfare as they are found more kind, humble, sympathetic, and concerned with people's welfare, which assists the interest of the stakeholders (Zahid et al., 2020). Liu (2018) stated that women have positive behavior towards charitable and ethical issues, concerned with the people's welfare, act friendly, and show interest in philanthropic activities and community services.

Different developed and developing economies acknowledge the positive impact of female directorship and implemented regulations to improve female directorship (Eversheds Report, 2013). MCCG recommended having at least 30% female representation on the board as per revised codes of governance (Khanet al., 2019).Hence, due to inconsistent and incongruent results, previous research did not explain the effect of a female director on corporate performance. This study also considers some other board attributes as the proxy for corporate governance to examine their impact on corporate performance.

The main objective of the study is to examine the association mentioned above between gender diversity and corporate performance in light of the recommendations by previous studies. Therefore, firstly, the current study answers the research questions about the role of female directors and other governance attributes in improving the corporate performance in non-financial listed firms in Malaysia. Secondly, this study provides essentials insights for the policymaker, fills the exhibit gap in the extant literature, and contributes to the existing literature. The majority of the studies were conducted in Western economies and overlooked Asian countries, which needs more attention to highlight the role of female directors (Boulouta, 2013). Third, this study uses a dynamic model that helps to mitigate the issue of endogeneity, heterogeneity, and omitted variable bias, and will report the effect of past firm performance as well. This paper will also examine and report the results of the relationship using static model techniques that were adopted by previous studies. This paper constructed empirically to illuminate the dynamic association between various governance attributes-corporate performance in light of the associated theories and empirical evidence.

Previous studies examined the relationship using the static model "OLS, FE, and RE," which are considered biased due to the significant reason of ignoring the dynamic endogeneity between regressors and the potential effect of past performance, company's effect, and country effect (Nguyen et al., 2015). This paper mainly contributes to the current literature in the following ways; first, it offers an ample acquaintance regarding the issues and problems associated with the failure of CG. It delivers detailed information about the compliance of governance codes in the Malaysian listed firms. This paper has a theoretical contribution by applying the related theories to the Malaysian business and industrial environment. This paper's findings are beneficial for the investor, policymaker, and stakeholders of Bursa Malaysia by understanding the current level of adoption of codes in the emerging economy.

2. Multiple Theoretical Approach

2.1 Gender Socialization Theory

This theory mainly focused on the difference in the behavior of men and women. Che-Ahmed (2017) argued that women have different attitudes and preferences regarding social iterations, and hence,

women are more interested and concerned with other's needs and being considered sensitive to ethical issues. Empirical evidence was also reported by various scholars regarding the difference between men's and women's consideration and decision-making related to ethical issues and social interactions (Liu, 2018). Gender differences have different opinions that affect the firms' policies, and thus the presence of female directors will strengthen the monitoring and will not likely to indulge in unethical practices, tax evasion, and frauds (Liu, 2018). Adams et al. (2012) reported that "women directors are less power-oriented as compared to men by having strong traits of kindness and passion which encourage the understanding and protection of people and nature" (Adams et al., 2012).

It is concluded that female directors and staff have comparatively more concern and interest in the stakeholders rather than specific shareholders, which helps in decreasing the environmental and managerial violations by formulating and implement the policies and strategies in the company. Therefore, a significant relationship exists between a female director and corporate performance and contributes positively to the performance as postulated by this theory, which is also reported by the prior extant literature (Nguyen et al., 2015).

2.2 Stakeholder Theory

The relationship between the firm and its stakeholder was briefly discussed initially by Freeman in 1984 in stakeholder theory. This theory argued that a firm performs its operations in society. Therefore, it has various responsibilities towards its betterment, and if any damage made to the environment, then it must be reimbursed in a better way (Freema, 1984). In light of this theory, directors, CEO, shareholders, suppliers, employers, creditors, suppliers, society, and government all are stakeholders of the firm. Agency theory argued that the stakeholder must work to improve the firm to improve performance while, stakeholder theory argues that for the success and improve performance. The firm mainly depends on it to serve its stakeholders and thus shifting the focus from shareholders to stakeholders. This theory considers both perspectives, including the satisfaction of stakeholders and the wealth maximization of shareholders.

Moreover, stakeholder theory assumes that board gender diversity contributes positively and improves the performance of a firm as female directors contribute a diverse and non-traditional approach to the board that helps in understanding customer needs and the marketplace. Jiao (2010) argues that "the new and divergent perspective increase sales and profits of the firms by enriching the quality of their corporate strategies, products, and services as well as stakeholders' welfare" (Zahid et al., 2020).

3. Corporate Governance Attributes & Study Hypothesis

This paper hypothesized the relationship based on associated theories and empirical evidence, and then it will be tested by using static and dynamic panel models in the Malaysian context.

3.1 Board Size

The Board of directors controls the affairs and decision-making in a firm. Sheikh and Kareem (2013) argued that a small number of BOD are effective" because some of the directors may free-ride and takes advantage of the exertions of other board members." Hence, limiting the director on the board or choosing

the favorable board members might boost corporate performance. Corporate governance codes in any country do not recommend any specific number of boards of directors in different economies and industries. Previous studies reported positive relationships such as Sheikh & Kareem (2014) argued that larger boards contribute significantly to firm performance, as suggested by resource dependence theory. Al-Malkawi & Pillai (2012) stated that "the board of directors are a valuable asset that possesses the resources that firms can use in a critical situation." Extant literature described the adverse effect of a larger number of BOD(Rahim, 2015).

Hypothesis 1 *"Board size is expected to have a significant negative relationship with firm performance in the non-financial listed firms in Malaysia."*

3.2 Board Composition

MCCG specified 33% external non-executive directors as the listing requirements for a corporation in Malaysia and expecting to contribute positively to corporate performance. External independent NED can better perform board practice, decision making, and monitoring function without any influence of politics and other authorities. Some studies found a negative association between NED and corporate performance and justified that the external director in a firm sometimes unable to monitor and perform their duties independently and influenced by different authorities. Incorporations, NEDs on the board are influenced by the third party, and hence they cannot perform their job as active NED on the board and sometimes only fulfill the requirements of listing a firm in the stock exchange (Tam, Tam, &Tan, 2007).

Hypothesis 2: *"Non-executive directors are expected to have a significant positive relationship with firm performance in the non-financial listed firms in Malaysia."*

3.3 Leadership Structure

MCCG recommended that the listed firms must specify and define the responsibilities of the CEO and chairperson (Ponnu, 2008). CEOs perform an essential and dynamic role in a firm for the execution of corporate governance practice (Shrivastav & Kalsie, 2016). Infirm, there are mainly two types that include duality and non-duality structure. Duality structure in affirm refers to the situation where the CEO and the Chairman (President) are one person, and in non-duality, the job is performed by different persons. There are two schools of thought, and one is agency theory that opposes the duality structure and argues that if the power goes to one hand, then it might influence the monitoring and controlling function and work for self-interest, which may affect the performance negatively.

Hypothesis 3: *"CEO duality is expected to have a significant negative relationship with firm performance in the non-financial listed firms in Malaysia."*

3.4 Gender Diversity

Directors are mainly appointed on the board by shareholders, and they contribute significantly to run the operations of the firm. BOD is having different skills, education levels, and experience, knowledge,

and market reputation is called diversity, which helps to increase the value of the firm in the long run. This paper focused on gender diversity. MCCG (2017) increases the ratio of gender diversity up to 30% on the board by each firm listed on Bursa Malaysia (Julizaerma & Mohamad, 2012). In compliance with the MCCG (2017), all the listed corporate firms are required to disclose the company's policy regarding the appearance of female directors on the board. Most of the scholar reported the significant effect of gender diversity on firm performance such as Nguyen, Locke, & Reddy (2014) and Tu, Loi, & Yen (2015) but some of them witnessed insignificant or negative relationship such as Abdullah (2014), and Julizaerma & Mohamad (2012). There is a vast diversity in Malaysia based on beliefs, customs, rituals, languages, and religion.

Hypothesis 4 *"Female directors on the board are expected to have a significant positive relationship with firm performance in the non-financial listed firms in Malaysia."*

5. CONCEPTUAL FRAMEWORK

Based on previous discussions and associated theories, a framework is advanced that is known as a conceptual framework to describe the background theories, various governance attributes, and its association with corporate performance in one clear diagram. To understand the relationship, a conceptual framework, Figure 1, reported the expected relationship between the internal mechanism of CG and corporate financial performance, as discussed in Section 3 of the study.
(Insert Figure I here)

6. RESEARCH DESIGN

6.1 Sample and data sources

This study selects to collect the data from the non-financial listed firm from a different sector. Previous studies used various a sample of listed firms form a specific sector or companies from the top 100 indexes, where most of the valuable firms were ignored and not appear on the investor's radar. To address this issue, CBRS was launched to facilitate the listed firms in Malaysia from different sectors and to aware and attract international and local investors about the listed firms in various sectors. The data is collected from secondary sources that include annual reports and data stream online.

6.2 Measurement of study variables

To examine the association, this study considers various proxies for governance attributes and corporate performance variables, which measurements are depicted in Table I. Dependent variables include Tobin's q (TQ) and return on equity (ROE). The Independent variable includes board size (BS), non-executive directors (NED), CEO duality, and gender diversity (female directorship). This study used several control variables that include firm size, firm age, and leverage to control the various characteristics of the firm and industrial effects.
(Insert Table I about here)

6.3 EMPIRICAL MODEL OF STUDY

Abdifatah (2014) had examined the association using traditional static models, and generalized least squares. To examine the relationship, this study used the basic regression model, as given below.

$$Y_{it} = a_0 + \sum_{k=1} \beta_k X_{k,it} + \varepsilon_{it} \quad \text{..... (Eq: 1)}$$

When we assume that variables are strictly exogenous, then we have the Eq: 2

$$E(X'_{it} \in_{is}) = 0 \ \forall \ (ts) \quad \text{..... (Eq:2)}$$

In this study, we used both static and dynamic models. Suppose the independent variable is endogenous and proved by the DWH test of endogeneity. The research then explores the complex relationship between a dependent variable and an independent variable of the study endogeneity problem in the model using a panel model known as a Framework GMM. Now we relax the assumption of exogeneity and suppose that the independent variable is predetermined;

$$E(X'_{it} \in_{is}) = 0 \ if \ t \leq s \quad \text{..... (Eq:3)}$$

In this case, we have;

$$E(q_{it}\Delta\in_{is}) = 0 \quad t = 2 \ldots\ldots T \text{..... (Eq:4)}$$

$$q_{it} = (y_{i0}, y_{i1}, \ldots, y_{it-2}, x'_{i1} \ldots, x'_{it})' \text{.....(Eq:5)}$$

If the explanatory variables are predetermined, there are T(T-1) (K_1 + 1)/2 moment conditions that can be presented as;

$$E\left(W_i \Delta\varepsilon_i\right) = 0$$

$$W_i = \begin{pmatrix} q_{i2} & 0 & \ldots & 0 \\ (1+K_1,1) & & & \\ 0 & q_{i3} & & \\ & (2+2K_1,1) & & \\ & & .. & \\ 0 & & .. & q_{iT} \\ & & & (T-1+(T-1)K_1,1) \end{pmatrix}$$

Now in case, we have any assumption for the independent variable, we have more orthogonal conditions than parameters.

$E(W_{it}\Delta\in_{is}) = 0$ .....(Eq:6)

And we can use GMM to estimate;

$\Delta y_i = \Delta y_{i,-1\,\gamma} + \Delta X_i\beta + \Delta e_i \quad i = 1, \ldots\ldots N$ .....(Eq:7)

Extant literature argued that governance variables are endogenous by nature and also reported that previous static models are considered as biased estimation approaches due to ignoring the issue of endogeneity, and hence the issue of endogeneity is being ignored. To solve the issue of heterogeneity, simultaneity, and dynamic endogeneity, this study usedsystem GMM to control for the firm past performance and dynamic endogeneity (Khan, Jabri & Saif, 2019). The study used a dynamic model, which is given in equations2 and 3 below for both the dependent variables as the proxy for corporate performance.

$$TBQ_{it} = a_0 + a_1 LTBQ_{i,t-1} + \beta_1 BSIZE_{it} + \beta_2 NED_{it} + \beta_3 CEOD_{it} + \beta_4 FEMALE_{it} + \beta_5 LEV_{it} + \beta_6 FS_{it} + \beta_7 FAGE_{it} + \mu_i + \eta_t + \varepsilon_{it} \text{..... (Eq: 7)}$$

$$ROE_{it} = a_0 + a_1 LROE_{i,t-1} + \beta_1 BSIZE_{it} + \beta_2 NED_{it} + \beta_3 CEOD_{it} + \beta_4 FEMALE_{it} + \beta_5 LEV_{it} + \beta_6 FS_{it} + \beta_7 FAGE_{it} + \mu_i + \eta_t + \varepsilon_{it} \text{..... (Eq: 8)}$$

In the above model in an equation,

LTBQ/LROE = lag of dependent variable
μ_i = "unobserved firm fixed effects."
η_t = "time-specific effects that are time-variant."
ε_{it}= "the classical error term."
To investigate the relationship in equation 2 and 3, this paper employee the most suitable model as a panel regression model.

7 | DATA ANALYSIS & DISCUSSION

The results of the initial descriptive analysis, bivariate correlation analysis (to check the autocorrelation), DWH test (to check the issue of endogeneity), results of the regression analysis using OLS and System GMM to examine the relationship and its post-estimation tests such as Arellano-Bond test and Sargan and Hansen Test are discussed in detail in this section.

7.1 | Descriptive statistics

This section presents the first view of the study variables, and the main feature is described quantitatively, which includes central tendencies, mean, standard deviation, maximum, and minimum. The detail of the descriptive analysis is reported in Table II of the paper.Table II of this paper explores the essential characteristics of the dataset for each deponent, independent, and control variable of the study. For the first dependent variable TBQ, the mean value is 0.71, with a standard deviation of 0.43, ranging from 2.18 to a minimum value of 0.02. The TBQ value is considered as the replacement cost and draws an accurate picture of the firm. The median value is 0.59, which means that more than half of the observations have a TBQ value is 0.59 or above in the listed firms. If the value is greater or equal to 1 then it is considered profitable. In this study, the value is less than one due to the previous global financial crises in 2008/09, which severely affect the firm performance of the Asian listed firms. The value of 0.71 is lesser than the favorable value of 1, which means that the stock of the listed firm is undervalued (Fauzi & Locke, 2012). However, after these crises, the firms are growing well and improving their performance. For the second dependent variable ROE, the mean is 6.87 with a median of 3.40, which means that for the 100 ringgits and equity holder will take 7-ringgit profit. The standard deviation for the ROE is 27.91, from a minimum value of 45.0 to a maximum value of 57.
For the variables BSIZE, the value ranging from 4 to 12 directors, with the mean value of 8, which is considered as the most favorable number of directors (Abdifatah, 2014). For the second independent variable non-executive directors' mean is 63%, which is far better than the recommended 33% by Malaysian Codes of Corporate Governance (MCCG). For the third independent variable CEO duality, this paper reported that only 6% of the listed firms from the selected sample have a duality structure, where the CEO is also a board chairman. Of the rest of the listed firms, about 94% of listed firms have a non-duality structure on the board as recommended by MCCG and suggested by agency theory.
For the next independent variable gender diversity, this study takes the percentage of a female director to the total number of directors. MCCG (2017) recommended having at least 30% of women on the board. The results show that, on average, only 9% of females are directors for the years 2010 to 2015.

The value is ranging from 0 to 40%, which means that some of the listed firms do not have at least a single female director, while some of the listed firms have 40% female directors on the board. The main reason for avoiding the female directorship on the board is the religion, norms, and values of Malaysia. Shukeri, Shin, & Shaari (2012) reported a mean of 9.82% in their study regarding Malaysian firms as well. The institutional environment in a particular economy has a high impact on the societal role of female representation as a director on the board.
(Insert Table II here)

7.2 | Correlation analysis

Table III of the study depicted the bivariate analysis between various variables used in this study for the 226 listed firms from the year 2010 to 2015. According to Gujarati (2004), multicollinearity is not a severe issue until and unless the correlation coefficients exceed the standard of 0.70 in regression analysis. The Pearson correlation matrix in Table III indicated that the highest correlation among the variables is between Tobin's Q (TBQ) and firm size (FSIZE), which is (0.38), which is also significant at 1%. The rest of the correlation is less than the standard of 0.70.
(Insert Table III here)
Moreover, the results of the VIF test show no autocorrelation, presented in below Table IV. Results show that there is no issue of multicollinearity as the maximum value in Table IV is 1.65 for the firm size, which is less than the standard value of 5 (Belsley, Kuh, & Welsch, 2005).
(Insert Table IV here)

7.3 | Results of multivariate regression analysis using static models (OLS/FE)

The results of the regression analysis are depicted in Table V of the study. The results for the relationship using OLS for model 1 using TBQ as dependent variable shows the significant positive relationship with BSIZE (p-value, 0.0004), NED (p-value, 0.0009) at 1% significant level, while with control variables it has a significant relationship with LEV (p-value, 0.059) and FSIZE (p-value, 0.000) and FAGE (p-value, 0.000). The results for CEOD FEMALE and FAGE are insignificant with corporate financial performance (TBQ).
This study used the second model using ROE as the second dependent variable. In the case of ROE, the results show the positively significant effect of BSIZE (p-value, 0.060) at a 10% significant level only. For the rest of the corporate governance attributes that include NED, CEOD, and FEMALE, the results in Table 6 show an insignificant impact on corporate financial performance (ROE). Applying the OLS model to examine the relationship not only failed to undertake the effect of past firm performance but also has omitted variables biased and ignore the issue of endogeneity.
(Insert Table V here)
Table VI depicted the results using the static model fixed effect (FE), between governance attributes and corporate financial performance. Table VI shows the results for both models using two dependent variables TBQ and ROE. The first model shows the results for using TBQ as the dependent variable

during ROE as the second dependent variable. The results in the table show the significant negative relationship between BSIZE and TBQ is negatively significant (p-value, -0.047), which means that a large board size creates problems on the board and decreases performance. For model 1, the results show an insignificant relationship between the dependent variable TBQ and corporate governance. The results for model 2 show an insignificant relationship with ROE and all corporate governance variables of the study. While for the control variables, the results in both the column show a significant association with TBQ and ROE. The value for R-square for TBQ is 0.15, while the second dependent variable ROE is 0.011 in this study. Table VI depicted that only board size (BSIZE) has a negatively significant impact on TBQ and an insignificant effect on all other independent variables in both dependent variables TBQ and ROE. However, the objective of the study does not meet with the results obtained from the fixed-effect model, because the FE model ignores the effect of dynamic endogeneity between regressors, and consider all independent variable as exogenous, which is not the case in reality (Wintoki et al., 2012).

(Insert Table VI here)

7.4 | The Problem of Endogeneity and Pre-Estimation Tests

Before performing the multivariate regression, this paper first conducted the pre-estimation test known as the DWH test of endogeneity to confirm the issue of endogeneity. Once the results show the issue of endogeneity that this study will examine the relationship using a dynamic panel model. This study considers the following linear regression model;

$$Y_{it} = a_0 + \sum_{k=1} \beta_k X_{k,it} + \varepsilon_{it}$$

This study has conducted the endogeneity test to confirm the endogeneity between variables. The significant results reject the null hypothesis **H0** at 1% significant level of the p-value (0.00) it means that "the variables are exogenous, and therefore the rejection confirms the endogeneity between corporate governance variables in this study." The results of the endogeneity test using STATA are depicted in Table VII of this study.

(Insert Table VII here)

7.5 | Multivariate-Regression Analysis

The Table depicted the significant impact of LTBQ on the dependent variable and the significant negative impact on LROE on ROE at 1% significant level, which means that it has an important implication. The results of the study are similar to Matthew et al. (2017) and reported the significant impact of past performance on the current dependent variable. The independent variable BSIZE has an insignificant impact on TBQ and a significant negative impact on ROE that accepts the **H1** of the study. The results regarding the board size (BSIZE) are in line with the findings of Yusoff, Mohammed, & Lame (2015). For non-executive directors (NED), results show a significant positive effect on TBQ and ROE and accept hypothesis **H2** of the study. The results of the study are in line with the results of

Javed et al. (2013) and Sheikh & Kareem (2014), among others, which also reported that external NED contributes to the firm performance positively. For CEO duality, a significant association with TBQ is found, as suggested by resource dependence theory, which accepts hypothesis **H3**. The findings are similar to the results of (Shrivastav & Kalsie, 2016). While for the ROE, the results show an insignificant association. Table VIII depicted the results of the relationship between board gender diversity and corporate performance, which shows a significant relationship with both dependent variable TBQ and ROE, which accept the **H4** of the study. The results and findings are consistent with the assumptions of gender socialization theory.The results also have similaritieswiththe study of Iannotta, Gatti, & Huse (2015) and Nguyen, Locke, & Reddy (2014), which argued that feminine appearance on the board improves the monitoring and controlling function and hence improve the firm performance.

Control variables in the study, such as Leverage (LEV) and firm age (FAGE), have a significant impact on firm performance, as suggested by prior empirical and theoretical literature. To check the validity, this study conducted the post-estimation tests that include Sargan and Hansen and Arellano-Bond (AR) test. The summary of the results depicted in Table VIII, as the results of the Sargan test, supports the null hypothesis, which means that the instruments that are being used in the estimations are valid. The results show the significance for the first order and insignificant for the second-order serial correlation. The results show that the number of groups exceeds the number of instruments that are considered valid and, in the end, the "F" test results for the estimated model also yielded significant results with the p-value is 0.00.

(Insert Table VIII here)

8 | SUMMARY AND CONCLUSION

The findings of the study reveal that CG attributes have a significant influence on corporate performance and contribute significantly to its performance. This study considered various CG proxies that include gender diversity,the board size, non-executive directors, and CEO duality. The findings show the significant impact of these attributes on corporate performance. Results show a significant role of gender diversity on performance. The results of this study are in line with the postulates of agency theory, resource dependence theory, gender socialization theory, and stakeholder theory that assume a significant impact of governance attributes,precisely gender diversity on corporate performance. The results show that Malaysian listed firms adopted the minimum practice of corporate governance in practice (Zahid et al., 2020). MCCG (2017) increase gender diversity by up to 30% on the board to meet the international standard.

This study recommended that the principles of governance mechanism must be review yearly, and the firm adopts the advanced and newly established principles in their practices. Codes and principles are easy to make but very difficult to adopt in the long run. To gain the capital and trust of institutional investors, the firm must adopt the principles of corporate governance in the company practice as almost all the institutions and banks know the value of corporate governance and prefer the firm that complies with these codes as these principles protect the rights of the shareholders. At the same time, regression analysis confirms the significant impact of governance attributes on corporate performance.

This study used both the static model and dynamic panel model to better address the affiliation between governance structure and corporate performance in the Malaysian listed firms after controlling the endogeneity and solve the issue of omitted variable bias. Besides these, the selection of the estimation model and tests has significant implications on the findings. In some cases, the results of the static model are the opposite of the dynamic model. This study recommends usinga valid model and estimation procedure to analyze the relationship as the previous model.

The study has critical implications for investors, policymakers, and academic researchers. Emerging economies that have already adopted the codes of corporate governance in their company's structure need to consider the necessary conditions such as social values, norms, beliefs, and religious factors and modify the principle that can be quickly adopted and gives benefits to the firms and economy of the country. In this regard, a future study must be conducted and increase the circle by examining the relationship in more than one economy and do comparative analysis by taking the national governance structure into account.

9. Limitation of the Study

There isa various limitation of the study as well. The results of the study are limited to the Malaysian listed firms only. A country may adopt the corporate governance mechanisms in its company's practices by abandoning its national standards altogether or may adopt after some form of modifications to meet its peculiar context. This study did not consider all the corporate governance-related variables, as it is challenging to consider all corporate governance proxies in a single study. This study examined the association sings some specific techniques while ignoring the other, which may have an impact on the relationship. This study used a dynamic model to solve the issue of omitted variable biased, but still,some variables and proxies need to be identified. Table IX depicted the hypothesized relationship between

governance mechanism and corporate performance in the Malaysian listed firms "with the expected and empirical sign".

(Insert Table IX here)

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Tables of the Study

TABLE I: Measurement of the variables

Variables	Acr	Definitions		Sources
Dependent Variables				
Tobin's Q	TBQ	"Ratio of total assets minus book value of equity plus market value (mv) of equity to total assets in a financial year".	(Saharan et al. 2016)	Online Database
Return on Equity	ROE	"Ratio of net income to total owner's equity"	(Thanh, Loi, Yen, 2015)	Annual Report
Independent Variables				
Board Size	BSIZE	"The total number of directors on the board"	(Ibrahim, 2011; Wintoki et al., 2012)	Annual Report
Non-executive directors	NED	"Percentage (%) of total non-executive directors to the total board of directors".	(Nguyen et al., 2015b)	Annual Report
CEO duality	CEOD	"A dummy variable that takes a value of one if BOD chairperson is also CEO, and zero otherwise".	(Hewa-Wallalage & Locke, 2011)	Annual Report
Gender Diversity	FEMALE	"Percentage (%) of female directors to the total directors on the board"	(Adams et al., 2011)	Annual Report
Control Variables				*Annual Report*
Leverage	LEV	"Percentage of total debt to total assets in a financial year"	(Salim & Yadav, 2012; Wei & Ting, 2016)	Online Database
Firm Size	FSIZE	"Firm size is the natural log of the market value of the company"	(Dang & Li, 2015)	Annual Report
Firm Age	FAGE	"Firm age (Age) is measured as the number of years since the company is incorporated".	(Ibrahim, 2011)	Annual Report

TABLE II: Summary of descriptive statistics of all variables for all sampled firms

Variable	Accr.	Observations	Mean	Median	Std. dev	Min	Max
Dependent variables							
Tobin's Q	*TBQ*	1,025	0.71	0.59	0.43	0.02	2.18
Return on Equity	*ROE*	1,025	6.87	-3.94	27.91	-57	45.26
Independent variables							
Board size	*BS*	1,025	7.66	7	1.81	4	12
Non-executive directors	*NED*	1,025	63.51	60	17.69	20	100
CEO duality	*CEOD*	1,025	0.06	0	0.24	0	1
Gender Diversity	*FEMALE*	1,025	9.44	0	11.24	0	40.05
Control Variables							
Leverage	*LEV*	1,025	0.10	06	0.11	0	0.65
Firm Size	*FSIZE*	1,025	8.38	15	0.55	7.15	9.68
Firm Age	*FAGE*	1,025	16.13	0.84	5.70	5	29

TABLE III: Correlation Matrix for the variables

	TBQ	ROE	BSIZE	NED	CEOD	FEMALE	LEV	FAGE	FSIZE
TBQ	1.00								
ROE	0.13***	1.00							
BSIZE	0.16***	0.07***	1.00						
NED	0.11***	0.01	-0.10***	1.00					
CEOD	-0.01	-0.00	-0.03	-0.15***	1.00				
FEMALE	-0.01	0.00	0.00	0.04*	0.09***	1.00			
LEV	0.14***	-0.06**	0.07***	0.11***	0.02	-0.02	1.00		
FAGE	0.00	0.04*	0.07***	0.23***	-0.04*	0.00	-0.09***	1.00	
FSIZE	0.38***	0.16***	0.22***	0.18***	-0.02	-0.00	0.15***	0.34***	1.00

*Note: *, ** and *** refers to the significant level of 10%, 5% and 1%.*

TABLE IV: VIF Statistics

Variables	Acronyms	VIF	1/VIF
Firm Size	*LFSMV*	1.25	0.801442
Firm Age	*FAGE*	1.22	0.820784
Non-executive directors	*NED*	1.16	0.864224
Board size	*BSIZE*	1.09	0.918472
Leverage	*LEV*	1.07	0.931752
CEO duality	*CEOD*	1.04	0.959492
Gender Diversity	*FEMALE*	1.01	0.985821
Mean VIF		1.12	

TABLE V: Multivariate Regression Analysis Using OLS

		Model 1: Tobin's Q (TBQ)			Model 2: Return on Equity (ROE)			
Variables	**Accr.**	**Coef**	**S.Err**	**P.value**	**Accr**	**Coef**	**S.err**	**P.value**
Board size	*BSIZE*	0.02	0.0061	0.000	*BSIZE*	0.72	0.3858	0.060

Non-executive directors	*NED*	0.002	0.0006	0.000	*NED*	0.04	0.0408	0.279
CEO duality	*CEOD*	0.01	0.0447	0.637	*CEOD*	0.83	2.8201	0.767
Gender Diversity	*FEMALE*	-0.00	0.0009	0.639	*FEMALE*	0.02	0.0601	0.674
Leverage	*LEV*	0.17	0.0928	0.059	*LEV*	-22.65	5.8781	0.000
Firm Size	*FSIZE*	0.30	0.0212	0.000	*FSIZE*	9.02	1.3414	0.000
Firm Age	*FAGE*	-0.01	0.0020	0.000	*FAGE*	-0.19	0.1299	0.0125
Constant	C	-1.96	0.1649	0.000	C	-72.10	10.426	0.000
R Square	R^2		0.1837		R^2		0.0473	
Number of Observations			1354				1351	

TABLE VI: Multivariate Regression Analysis Using FE

		Model 1: Tobin's Q (TBQ)				Model 2: Return on Equity (ROE)		
Variables	**Accr.**	**Coef**	**S.Err**	**P.value**	**Accr**	**Coef**	**S.err**	**Pvalue**
Board size	*BSIZE*	-0.01	0.0061	0.047	*BSIZE*	-0.16	0.8572	0.851
Non-executive directors	*NED*	-0.00	0.0007	0.738	*NED*	0.17	0.1085	0.108
CEO duality	*CEOD*	-0.05	0.0466	0.270	*CEOD*	7.08	6.7055	0.291
Gender Diversity	*FEMALE*	-0.00	0.0016	0.705	*FEMALE*	-0.10	0.1519	0.480
Leverage	*LEV*	0.40	0.0707	0.000	*LEV*	11.29	9.8368	0.251
Firm Size	*FSIZE*	0.78	0.0337	0.000	*FSIZE*	12.00	4.6376	0.010
Firm Age	*FAGE*	-0.01	0.0027	0.000	*FAGE*	-1.18	0.3766	0.002
Constant	C	-5.63	0.2763	0.000	C	-85.5	38.750	0.027
R Square	R^2		0.1584		R^2		0.0112	
Number of Observations			1354				1351	
Number of Groups			226				226	

TABLE VII: Test for Endogeneity for the model confirmation

Test of endogeneity (orthogonality conditions)		
Ho: Variables are exogenous		
H1: Variables are endogenous		
GMM C	statistic chi2(1) = 23.2594	(p = 0.0000)

TABLE VIII: Multi-Variate Regression analysis using Dynamic Panel Model

		Model 1: Tobin's Q (TBQ)			Model 2: Return on Equity (ROE)			
Variables	**Accr.**	**Coef**	**Std.Er**	**P.value**	**Accr**	**Coef**	**Std.Er**	**Pvalue**
Past Performance (-1)	LTBQ	-0.06	0.028	0.015	LROE(-1)	-0.02	0.0077	0.000
Board size	*BSIZE*	-0.00	0.0081	0.996	*BSIZE*	-0.96	0.4078	0.018
Non-executive	*NED*	0.00	0.0012	0.005	*NED*	0.117	0.0565	0.038

directors		3						
CEO duality	*CEOD*	-0.06	0.0159	0.000	*CEOD*	0.145	1.4251	0.919
Gender Diversity	*FEMALE*	0.000	0.0010	0.009	*FEMALE*	0.092	0.0500	0.064
Leverage	*LEV*	0.83	0.0886	0.000	*LEV*	-23.84	9.0985	0.009
Firm Size	*FSIZE*	0.75	0.0548	0.000	*FSIZE*	-7.27	2.9241	0.013
Firm Age	*FAGE*	-0.01	0.0034	0.001	*FAGE*	-0.44	0.2113	0.036
Constant	*C*	-5.92	0.4418	0.000	*C*	-72.91	24.429	0.003
Number of Observation			902				1124	
Number of Groups			226				226	
Number of Instruments			50				64	
Sargan J statistics		50.89		0.115		52.71		0.562
AR(1)		-3.06		0.002		-1.65		0.0297
AR(2)		-0.54		0.585		0.73		0.460

*Significant level: ***1%, **5% and *10% significance level*. The table also reported the results of post-estimation test that includes 2 tests, Sargan tests and Arrellano-Bond test for AR1 and AR2. The results of both test reported in the table shows the validity of the model as per GMM theory.

TABLE IX: Summary of the relationship

No	Hypothesis	Tested Relationship	Expected Sign	Empirical Sign TBQ	Empirical Sign ROE	Support Theory
1	H1	Board size – Firm performance	_*	_*	_*	Agency
2	H2	Non-executive directors – Firm performance	+*	+*	+	Agency
3	H3	CEO duality – Firm performance	-*	-*	+	Agency
4	H4	Gender Diversity – Firm performance	+*	+*	+*	Agency

The sign "+" refers to the positive relationship between dependent and independent variables and "-" sign reefers to the negative relationship while "+*" and "-*" refers to significant positive and significant negative relationships respectively.

Short running title: Women on Board. and Corp. Perf.

Conflict of Interest Statement: AS the main author and on the behalf of all co-authors I confirm that we have no conflict of interest.

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