Does Gender Diversity Moderate the Nexus Between Board Characteristics and Earnings Management?

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ABSTRACT

Manuscript type: Research paper

Research aims: This study examines the effect of board characteristics on earnings management and the moderating effect of gender diversity over this nexus by investigating 393 Bursa Malaysia listed companies from 2014 to 2018.

Design/Methodology/Approach: This study applies the performance-adjusted Jones model (Dechow et al., 1996) and the performance-matched Jones model (Kothari et al., 2005) to measure accrual-based earnings management.

Research findings: Based on the results, the agency theory fails to illustrate that board characteristics (i.e., defined by the attributes of board independence, board size, and non-CEO duality) are effective in reducing earnings management. On the other hand, the results show that gender diversity in independent directorship and board membership apparently reduces the level of earnings management. However, this research finds no significant moderating effect of gender diversity on the relationship between CEO duality and earnings management.

Theoretical contribution/Originality: This study adds to the literature by demonstrating that the application of agency theory does not have a significant impact on reducing earnings management in the Malaysian context. Applying gender socialisation theory, the findings of this study show successful moderation of gender diversity in terms of reducing the level of earnings management.

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Practitioner/Policy implication: The results on gender diversity are likely of interest to policymakers to come up with regulations related to ensuring an increasing presence of female directors in the boardrooms to increase the board gender diversity.
Research limitation: This study examines only three board characteristics under corporate governance, and measures only accrual-based earnings management. Moreover, the sample is restricted to only non-financial listed companies.

Keywords: Board Characteristics, Corporate Governance, Earnings Management, Gender Diversity, Malaysia
JEL Classification: M14, M41

1. Introduction

A large number of studies demonstrate that accounting manipulation is more prone to exist in a financially distressed company (Shayan-Nia et al., 2017). According to Practice Note 17 of the listing requirements published by Bursa Malaysia Berhad (revised in 2019), a company shall be recognised as financially distressed if auditors express an adverse opinion on its financial statements, more so if the company fails or demonstrates lapses in making payments for its loans or credit facilities. The 'manipulation' above refers to moves initiated to portray a rosy picture of the firm's performance, often using subtle approaches, like earnings management, to prevent being caught (Ding et al., 2007; Harris et al., 2019).

In the context of an emerging economy like Malaysia, this issue is both pressing and vital, given the significant evidence of fraud perpetrated by Malaysian firms using accruals and aggressive earnings management (Nasir et al., 2018; Rahman et al., 2016). The evidence presented in these studies points to the crucial issue of financial reporting misuse. Management may depart from reporting the truth when the results of the firm's performance are unfavourable, and instead resort to the opportunistic use of financial reporting strategies (Barac et al., 2017). According to Kumari and Pattanayak (2014), managerial opportunistic behaviour is firmly dependent on the quality of corporate governance systems. Therefore, earnings reduction can be managed with more effective corporate governance systems (Huynh, 2020; Kumari & Pattanayak, 2014).

In light of the global call for better corporate governance mechanisms following a series of large financial scandals, Malaysia has been directing efforts to improve its corporate governance landscape. This is evident in the amendments of Bursa Malaysia's

listing requirements in 2001, which stipulates that at least one-third of the boardroom should consist of independent directors (Alnasser, 2012). Further amendments were made to the Malaysian Code on Corporate Governance (MCCG) in 2012, which required the majority of directors to be independent if the chairperson is not (SC, 2012). These requirements were introduced to further accentuate the importance of having independent directors on the board as a monitoring mechanism. Apart from board independence, amendments were also introduced pertaining to board size and the roles played by the chairperson and the CEO. According to the MCCG in 2000, a balance of control and authority is required between the chairperson and CEO so no individual can have unrestricted authority on decision-making. In short, different individuals should play the roles of chairperson and CEO (SC, 2012). Despite these amendments, however, the effectiveness of corporate governance mechanisms in Malaysia is impeded by the diverse corporate environment in Malaysia, which is strongly influenced by politics (Mohammad et al., 2016).

The discussion above highlights the increasing involvement of top management in managing earnings and the failure of directors to control top management. Recent studies (e.g., Cohen & Malkogianni, 2021; Durana et al., 2020; El Diri et al., 2020; Kliestik et al., 2021; Li et al., 2020) confirmed earnings management practices in a number of countries. The alarm over the continuing managerial tendency to manage earnings in an attempt to prevent increases in negative earnings surprises leads to the present study, which examines the effect of board characteristics on earnings management practices for Malaysian companies. Accordingly, this study proposes that board characteristics (i.e., board independence, board size, and non-CEO duality) negatively affect earnings management practices.

It is interesting to note that other studies have found that optimal decision-making is the consequence of a proper level of gender diversity in a boardroom, which is not possible if the policy for boardroom homogeneity is maintained (Adams et al., 2015). Around the world, women are poorly represented on boards of directors, and even more so in the context of developing nations. This lack of women representation results in less diversity in the boardroom. In this light, it is interesting to note that according to the suggestions of behavioural, ethical, and social role-based theories, on average, women are more ethical than men in terms of making judgments (Adams & Funk, 2012; Lund, 2008). Women directors are also said to exhibit more altruism, conservatism, independence, objectivity,

responsibility, and risk aversion. Women directors have been found to monitor executives more intensely than their male counterparts (Croson & Gneezy, 2009). Accordingly, the existing literature points to gender diversity being imperative in moderating the relationship between board characteristics and earnings management (e.g., El-Mahdy, 2014; Harris et al., 2019; Ittonen et al., 2013; Na & Hong, 2017; Saona et al., 2020). Studies like Abbott et al. (2012), Ho et al. (2015), and Srinidhi et al. (2011), for example, suggest that a gender diversified board is capable of reducing the opportunistic managerial behaviour that leads to earning management.

In line with global calls for better gender diversity, Malaysia introduced amendments in the MCCG in 2017 that mandated large listed companies to have a 30% gender quota in BODs. Accordingly, companies need to disclose their policy on gender diversity in their annual reports (SC, 2017). Therefore, relating to the issue of corporate governance, this study also proposes that increasing gender diversity has a moderating effect on the nexus between board characteristics and earnings management in Malaysia. This proposition is in line with the context of Malaysia being a multicultural society, where women have equal opportunities to further their education and advance their careers (Lim, 2019). To recap, the research objectives of this study are twofold: first, to see if board characteristics have a significant influence over earnings management practices in Malaysia, and secondly, whether the inclusion of women directors moderates the relationship between board characteristics and earnings management.

In contrast to predictions, the empirical results of this study suggest a significant positive influence of board independence on earnings management. Likewise, increasing board members also significantly increases the level of earnings management. Moreover, having CEO duality does not impact earnings management practices, which are not in accordance with the prediction that it positively impacts earnings management. Additionally, this study finds empirical evidence of decreasing earnings management due to a higher number of women in the boardroom and the percentage of women in independent directorship. However, this study finds no effect of gender diversity in the relationship between CEO duality and earnings management.

This paper is constructed and proceeds in the following manner. Section 2 discusses the relevant literature on earnings management by relating it to board characteristics and the role of gender diversity. Following that, Section 3 describes the development of the

hypotheses based on the literature review. Section 4 exhibits sample construction and the applied research methodology. Section 5 reports and discusses the research findings based on the data analysis, while Section 6 summarises the findings, theoretical contributions, limitations faced, and lists suggestions for future studies.

2. Literature Review

2.1 Corporate Governance and Earnings Management

In corporate governance, the conflict of interest that exists between shareholders and management is generally addressed by the traditional agency approach. Management generally acts as an agent assigned by the principal (shareholders) to make decisions and act on their behalf. However, agency theory assumes that an asymmetry of information exists, since the agent is better informed than the principal. Accordingly, a conflict of interest would then arise, especially when the agent takes vital decisions that serve their own interests over that of the principal (Parker et al., 2018). As managers are managing earnings to gain personal benefit at shareholders' cost, hence, earnings management can be addressed as an agency cost (Davidson et al., 2004). In a study, it was reported that 90% of top executives are rewarded based on bonus and equity-based compensation (Gaver et al., 1995). Executives whose companies' reward systems are based on these two performance-based compensations are then found to profoundly manage earnings (Gong et al., 2019). In this regard, according to Saona et al. (2020), the purposeful interference of top management in the reporting system to gain personal benefit can be acknowledged as earnings management, and this opportunistic behaviour receives large attention due to the absence of effective corporate governance mechanisms. In this light, Dichev et al. (2012) and Harris et al. (2019) add that such incidents happen as managers are more inclined towards putting the firm's short-term performance over long-term performance. According to Stringer et al. (2011), the reason for this is the management reward system, which is grounded in the company's financial performance. Consequently, management is inclined towards meeting financial goals, regardless of whether financial rewards are determined directly or indirectly based on the firm's accounting outcomes. Failing to accomplish these goals will adversely affect managers' personal interests, thereby inducing them to manage earnings (Jamaludin et al., 2015).

The above underscores the need to define earnings management before it is examined. Earnings management is defined as the act of manipulating the reported earnings of a company by hiding the truthful representation of its financial position (Gavious et al., 2012). Accordingly, past studies document that there are three incentives that lie behind managing earnings: to meet or beat the forecasted income analysis, to improve on the previous year's earnings, and to prevent reporting losses. In this regard, Cohen et al. (2008) state that these are the most significant motives that specifically induce earnings management. Similarly, if managers fail to achieve a predetermined earnings target for a particular year, and they respond by delaying revenues and reporting it the following year, this amounts to opportunistic manipulation, which is known as income smoothing, i.e., another form of earnings management (Jensen et al., 2004). According to Gavious et al., (2012), earnings management is commonly practised by way of discretionary accounting. Therefore, firms that are not even close to meeting predetermined benchmarks of profits and earnings increase, or perhaps miss the benchmarks altogether, have a significantly higher level of discretionary accruals. The generally accepted accounting principles (GAAP) permit various accounting choices, and therefore earnings management can be performed by altering approaches, e.g., by changing asset acquisition timing and its nature without violating the roles of GAAP (Teoh et al., 1998). According to Jamaludin et al. (2015), the legal limit of accounting choices is not clearly stated due to the ways in which a firm presents its income, hence it gives management flexibility select how they report earnings as adhering to GAAP. The researchers provide an example of an accounting choice made to show good firm performance, i.e., by extending the depreciable life of a machine to reduce depreciation cost, which in turn maximises income and share price for the future periods. According to Healy and Wahlen (1999), this judgmental approach by management is earnings management, since it reports predetermined performance to mislead stakeholders.

Faced with the inherent limitations of the executive reward system, as discussed above, improved corporate governance mechanisms can arguably act as an effective solution to the misalignment of interests between shareholders and managers (Mohamad et al., 2020). As a part of this mechanism, a BOD mainly acts as the representative of stakeholders to monitor management activities, so that stakeholders' interests are protected (Saona et al., 2020). In this regard, there are a few responsibilities that are assigned to BODs, namely, monitoring top management activities, fixing their

pay, and inspecting the financial reporting procedure. While the corporate governance mechanism could possibly act as a resolution to agency problems, it is important to note that despite the general delineation of the board's responsibilities, in actual fact, there are vast differences in board structures around the globe alongside regulatory and institutional frameworks. Nevertheless, recent globalisation trends and the incorporation of financial markets could influence companies to adopt a more or less similar board structure (Ghosh et al., 2010). Consequently, the composition of a boardroom becomes key to maintaining good corporate governance. Therefore, following Saona et al. (2020), and Kumari and Pattanayak (2014), this study identifies three important characteristics of a BOD that exhibits a vital influence in earnings management: board independence, board size, and CEO duality. According to Parker et al. (2018), the agency theory seeks to identify the agency problem as well as the methods applied to ascertain its existence. Accordingly, this study adopts agency theory to examine the relationship between the BOD and earnings management. The adoption of this theory in this context is relevant, since earnings management is well-documented in the literature as an agency cost, and this study examines the ideal composition of a boardroom to overcome that cost.

2.2 *Gender Diversity on Board of Directors*

According to the literature in business ethics, when it comes to morality, women are more ethical compared to males (Deshpande et al., 2006). With this particular view, gender diversity has received more attention in business and academia in recent years. Therefore, an increasing number of studies illustrate the importance of gender in terms of business ethics and risk-taking behaviour, which eventually have an impact on the firm value (Clikeman et al., 2001). According to gender socialisation theory, gender roles are prescribed throughout childhood and with the help of social norms, it is reinforced over time. Hence, men and women carry different values, attitudes to the workplace, and ethical views (Dawson, 1992). Roxas and Stoneback (2004) add that ethical decision-making, communication skills, and leadership styles differ between men and women. In the context of making valuable financial decisions for companies, extra cautiousness is shown by women due to having higher ethical standards, according to Kouaib and Almulhim (2019). They add that the risk-averse nature of women, along with higher financial reporting quality, results in improved firm performance. However, Adams and Ferreira (2009) find a decrease in firm performance as a

consequence of this risk aversion, but an improvement in corporate governance with the increased presence of women directors, as they behave more ethically. According to Betz et al. (1989), there are differences between men and women, which is significant in terms of dealing with financial matters, where women tend to provide support to others and males are mostly focused on the maximisation of profit that helps them in career development. Therefore, to make a personal profit, males are more inclined towards violating corporate laws and policies that are related to expense reports.

Due to the global trend of increasing corporate gender diversity, BODs are being pressured to include women directors (Ahern & Dittmar, 2012). However, several studies demonstrate the consequences of board gender diversity, where the empirical evidence is contradictory. Studies that encourage gender diversity argue that increasing boardroom gender diversity enhances the board's monitoring power (Adams & Ferreira, 2009) which, in turn, reduces agency conflicts (Adams et al., 2010). Moreover, the findings of Adhikari et al. (2019) exhibit robust evidence of firms adopting strategies that are less risky and litigation-prone, i.e., aggressive investments in R&D and promotional campaigns, when the board contains at least one female executive director. Then again, studies that discourage boardroom gender diversity argue that decision-making processes might consume more time (Ahern & Dittmar, 2012), and create a greater difference in team objectives (Petrovic, 2008), which may make the boardroom inefficient (Usman et al., 2018). Reguera-Alvarado et al. (2017), and García-Izquierdo et al. (2018) provide empirical evidence of good corporate governance practices in Spanish listed companies due to the increase of women directors. Similarly, Faccio et al. (2016) provide an example of women leadership whereby firms with a woman executive director on the board have a higher possibility of survival. Further, it was documented that these firms have much lower leverage and less unstable earnings. The results of this study are consistent with the results reported by Ishak et al. (2016), where it was found that gender diversity can be considered an enhanced corporate governance mechanism that positively affects monitoring quality and consequently decreases agency conflicts.

3. Hypotheses Development

3.1 Board Independence and Earnings Management

According to Saona et al. (2020) and Fama and Jensen (2008), external

directors play a more effective role compared to affiliated directors in terms of invigilating management and policy directives. This happens because external directors take vital decisions in other firms. Therefore, they are concerned about the reputation they hold in the managerial labour market, which induces effectiveness. Braiotta et al. (2015) add that external directors possess greater expertise compared to affiliated directors, as they are likely to be more objective. Hence, a board is assumed to be more independent with the presence of more external directors. Even corporate governance regulations in many jurisdictions, like the Sarbanes–Oxley Act passed in 2002 in the United States, the United Kingdom Corporate Governance Code outlined by the Financial Reporting Council (2014), and the Corporate Governance Guidelines by Canadian Securities Administrators (2015), presume that the board can be more effectively monitored with the presence of more external directors (Saona et al., 2020). The findings of a study on Spanish listed firms by Pucheta-Martínez and García-Meca (2014) provides evidence of the influence of independent directors in ensuring high-quality financial information.

However, Ghosh et al. (2010) finds an insignificant effect of any proportionate change of independent directors on earnings management. In line with this, an empirical study conducted by Fadzilah (2017) on 184 Malaysian family-owned firms exhibits the ineffectiveness of board independence in terms of reducing earnings management. The findings of Jamaludin et al. (2015) on Malaysian government-linked companies, however, show greater earnings management with the proportionate increase of independent directors. A study by Johari et al. (2009) showed that the mandatory one-third composition of independent directors, as required by the MCCG, is ineffective for Malaysian firms to effectively monitor and reduce earnings management practices.

Agency theory proposes that independent directors act as a potential governance system in reducing agency costs that arise due to the separation of ownership and control (Saona et al., 2020). In this manner, Braiotta et al. (2015), Fama and Jensen (2008), and Saona et al. (2020) document that a proportionate increase of independent directors in the board helps to ensure a better quality of financial information and reduces the level of earnings management. These studies accordingly confirm the effective monitoring role of independent directors in this regard. Hence, a board is assumed to be more independent with a higher proportion of independent directors, and is related to downward earnings management. Therefore the following hypothesis, H_1, is developed:

H_1: *An increase in board independence is negatively related to earnings management.*

3.2 Board Size and Earnings Management

In monitoring management, Jensen (1993) believes that a streamlined board of directors is more effective. He further explains that as the number of directors on the board increases, inferior communication and extensive decision-making process increases as well, which eventually overcomes the benefits of a bigger board. Likewise, Forbes and Milliken (1999) mention that higher bureaucracy costs are related to an increase in board size. Consequently, due to the existence of coordination problems among board members, a bigger board produces difficulties for the effective use of knowledge and skills. In contrast, having a smaller board appears to be more beneficial in terms of making more dynamic decisions on time to effectively discourage the opportunistic behaviour of management. Hence, a smaller board successfully reduces earnings management (Forbes & Milliken, 1999). A study conducted by Abdul Manaf et al. (2014) shows the existence of higher accounting conservatism among Malaysian firms with a small board size that works effectively in reducing earnings management. Consistent with these views, studies like Karamanou and Vafeas (2005), Xie et al. (2003), Yermack (1996), and Zgarni et al. (2014) also claim that smaller boards are effective in reducing earnings management through efficient monitoring of financial reporting oversights. Conversely, the findings of Chen et al. (2006) on China and Jamaludin et al. (2015) on Malaysian GLCs show no significant influence of more board members on reducing earnings management. Likewise, Fadzilah (2017) suggests no impact of increasing board size in reducing earnings management practices for Malaysian family-owned companies. A study conducted by Rahman and Ali (2006) based on 100 top companies listed on the Bursa Malaysia Main Board even shows an increase in earnings management due to a greater number of board members.

Cunha and Piccoli (2017), Ghosh et al. (2010), and Saona et al. (2020), however, offer an opposite viewpoint. They contend that an increasing number of board members also increases the chance of having more directors, who are knowledgeable and experienced in financial reporting and audit committee. According to them, a bigger board increases the chance of having more experienced professional independent directors, who play a much more effective role in terms of reducing earnings management. This viewpoint is consistent with the proposition of agency theory, whereby corporate governance is

perceived to be more effective with an increased number of board directors. Similarly, the findings of Byard et al. (2011), Chiu et al. (2013), García-Meca and Sánchez-Ballesta (2009), and Shah et al. (2009) also show that with bigger board size, the level of earnings management declined significantly.

Prior studies on Malaysian companies provide mixed results concerning the relationship between board size and earnings management, which calls for a conclusive result. Thus, it is essential to re-examine the relationship between board size and earnings management in light of agency theory to find out if it still explains the relationships best or otherwise. Therefore, based on the arguments presented, the following hypothesis, H_2, is formulated:

H_2: An increase in board size is negatively related to earnings management.

3.3 CEO Duality and Earnings Management

Another key area of concern to ensure good corporate governance is CEO duality, which has a huge impact on the board as a monitoring system (Saona et al., 2020). Having CEO duality for a company means that both the roles of the chairperson and CEO are performed by the same person. In this regard, it is important to note that the role of the chairperson is to monitor the CEO; thus it is not possible that the chairperson can perform both functions—i.e., as a member of the board of directors as well as monitoring the CEO without conflicts of interest (Jensen, 1993). As a result, this duality constrains the board's independence, making the monitoring system futile and breeding inferior corporate governance (Bliss, 2011).

Opportunistic accounting approaches are practiced by CEOs to exhibit upward trending earnings that help to maximise their bonus compensation (Das et al., 2013) and increase the stock price, which maximises their equity-based compensation (Beneish & Vargus, 2002). In line with this, according to Gong et al. (2019), CEOs might inflate earnings with the help of earnings management to maximise their compensations. Thus, to monitor the CEO and carry out all other critical responsibilities of the board, it is crucial to ensure that the roles of chairperson and CEO are performed by two separate persons. Similarly, the evidence from a study on Shanghai and Shenzhen listed firms by Gulzar and Zongjun (2011) suggest a significant effect of separation among CEO and chairperson roles to reduce the level of earnings management.

In stark contrast, the findings of a study conducted on Malaysian companies by Rahman and Ali (2006) exhibit a negative

but insignificant relationship between CEO duality and earnings management. In line with this finding, Johari et al. (2009) suggest no influence of CEO duality on earnings management practices among Malaysian firms. In this regard, the empirical findings of Fadzilah (2017) report no significant impact of CEO duality on earnings management among family-owned companies in Malaysia. Saona et al. (2020) reveal a comparable scenario of CEO duality for Spanish listed companies. Their study shows that the level of earnings management decreases with the presence of CEO duality. Ghosh et al. (2010) also reports an increase in earnings management with the separation of the CEO and chairperson role.

According to agency theory, however, having CEO duality reduces board monitoring effectiveness and the transparency of mandatory disclosures. Hence, non-duality is preferred in the case of well-performing firms to vigilantly monitor management (Dechow et al., 1996). The 2017 MCCG states that the duty of a CEO is to concentrate on the business and manage the day-to-day activities of the company, while the chairperson guides the board in controlling management. Therefore, a balance of control and authority is required between the chairperson and CEO so that no individual can get access to the unrestricted authority of decision-making. Evidently, the separation of CEO and chairperson simplifies their responsibilities and enhances accountability accordingly. Hence, the MCCG specifies that different individuals should play the role of chairperson and CEO (SC, 2017). Studies by Zouari et al. (2012) and Iraya et al. (2015), in France and Kenya respectively, show that having CEOs with dual roles in listed companies increases earnings management. Parallel to these findings, Jensen (1993) suggests a positive relationship between CEO duality and earnings management. Therefore, the following hypothesis, H_3 is developed:

> H_3: *A board structure with CEO duality is positively related to earnings management.*

3.4 Moderating Effect of Gender Diversity

As a corporate governance mechanism, gender diversity in the boardroom is assumed to have the potential of abolishing or at least moderating the managerial tendency of engaging in earnings management practices, according to Gavious et al. (2012). They state that gender diversity could help improve earnings quality, which will safeguard the interests of both current and potential shareholders. In this regard, several studies suggest that gender diversity in the

boardroom positively influences earnings quality based on empirical evidence, e.g., women are expected to be more cautious (Arun et al., 2015), risk-averse (Barber & Odean, 2001), unlikely to engage in immoral behaviour, make more ethical decisions (Kaplan et al., 2009), unlikely to be involved in fraud (Ho et al., 2015), discourage opportunistic behaviour (Krishnan & Parsons, 2008), and concerned about maintaining company reputation (Srinidhi et al., 2011). According to Bosquet et al. (2014) and Rau (2014), the information quality of financial reporting improves with the presence of female directors, as they are more risk-averse in nature compared to their male peers. Based on these characteristics, female directors are assumed to be more effective monitors (Srinidhi et al., 2011). According to Kaplan et al., (2009), there is less chance of finding women directors being involved in fraudulent financial reporting. Peni and Vähämaa (2010) report that gender-diverse boards are less involved in earnings management practices that mislead shareholders and distract them from making economic decisions.

Abdullah and Ismail (2016), meanwhile, find no significant influence of female presence in the boardrooms of Malaysian listed companies on earnings management. Al-Absy et al. (2019) and Ishak et al., (2016) also show no effect of female directorship on earnings management practices in Malaysian firms. However, the MCCG amendments in 2012 and 2017 precisely promote the gender diversity agenda (SC, 2012, 2017). Accordingly, enhancing the adoption of boardroom gender diversity was in the top five priorities of the Securities Commission's Corporate Governance Strategic Priorities (CG Priorities) published in 2018. In view of the gender diversity mandated in the Malaysian corporate governance landscape, this study seeks to investigate whether it effectively moderates the relationship between board characteristics and earnings management.

The gender socialisation theory suggests an improvement in earnings quality with the presence of women in top positions, given their different risk-taking and ethical attitudes (Harris et al., 2019). According to Masulis and Mobbs (2014), board independence gets stronger with the presence of female directors, and can therefore invigilate the opportunistic behaviour of management more effectively. Similarly, Fan et al. (2019) find female directors to be more capable of taking independent decisions that help to counter earnings management practices. The empirical evidence from El-Mahdy (2014), Na and Hong (2017), and Saona et al. (2020) document a reduction in the level of earnings management due to increasing female independent directorship. Based on these arguments, the following

hypothesis, H_4 is formulated:

> H_4: *An increase of gender diversity in board independence significantly moderates the relationship between board independence and earnings management with a decrease in earnings management.*

Increasing boardroom gender diversity also enhances the board's monitoring mechanism in terms of reducing the opportunistic behaviour of top management that leads to earnings management (Krishnan & Parsons, 2008). García Lara et al. (2017) and Gul et al. (2011) document better financial reporting with more transparent disclosures as a consequence of higher gender diversity on the board, which in turn helps to discourage opportunistic behaviour. Parallel to this, Gull et al. (2018) find that the ethical behaviour, risk-aversion and better decision-making of women play an important role in improving earnings quality and reducing earnings management. Therefore, according to Ittonen et al. (2013) and Saona et al. (2020), an increase in the proportion of female directors successfully results in the reduction of earnings management. Based on these arguments, the hypothesis, H_5 is formulated:

> H_5: *An increase of gender diversity in board size significantly moderates the relationship between board size and earnings management with a decrease in earnings management.*

An empirical analysis that delves into this topic by Harris et al. (2019) produced mixed results. The authors contend that earnings management does not necessarily reduce with female CEOs. They further explained that female CEOs manipulate earnings on a much smaller scale compared to male CEOs at a lower level of equity-based compensation, but eventually, both show greater earnings management behaviour at a higher level of equity incentives. According to Na and Hong (2017), male CEOs use both aggressive discretionary accruals and real activities-based earnings management to report a positive or increase in earnings. On the other hand, female CEOs carry a highly conservative mindset, which helps to ensure better financial reporting for a firm, according to Ho et al. (2015). They add that female CEOs pursue higher ethical leadership that contributes to the enhancement of internal control mechanisms, which eventually counters earnings management. Consequently, there are fewer chances of earnings management with female CEOs compared to their male counterparts (El-Mahdy, 2014). Accordingly, Gull et al. (2018) show that female CEOs are more prone to reduce

earnings management. These arguments led to the development of the following hypothesis, H_6:

> H_6: *Gender diversity in CEO duality significantly moderates the relationship between CEO duality and earnings management with a decrease in earnings management.*

4. Research Methodology

4.1 Sample Construction and Data Collection

The sampling procedure for this study uses the purposive sampling method, with Tables 1 and 2 exhibiting the selection of industries and firms respectively. The sample consists of non-financial firms that trade on Bursa Malaysia. The sampling procedure proceeds industry-wise, as the estimation of earnings management for panel data requires a two-digit industry classification code to estimate discretionary accruals annually for each industry year (Hope et al., 2013; Zalata et al., 2019). Out of 40 industries, this study first excludes all banks and other financial institutions (eight industries) from the sample, as they follow different financial reporting rules (Arun et al., 2015; Harakeh et al., 2019). Then, consistent with the research approach in Ding et al. (2007), industries with less than seven firms were excluded (three industries) from the sample, followed by firms with missing data. These firms did not have financial data that was accessible from Datastream and annual reports. In total, 21 industries are excluded from the sample, making the final sample consist of 19 industries. A total of 219 firms with missing data from these 19 industries were excluded, making the final sample size 393 firms. To capture the most recent changes and information on board characteristics, gender diversity and earnings management, data was collected for the latest available five-year period, from 2014 to 2018. Therefore, the final sample consists of 1,965 firm-years (393 firms × five years). This study uses the database of Thomson Reuters Eikon and annual reports to collect all the required data for the research variables. All financial data related to earnings management, firm revenue, firm size, and firm growth are collected from Eikon Datastream, while data related to board characteristics and gender diversity was collected independently from annual reports.

Table 1: Selection of industries

Total number of industries (a)	Bank and financial institutions (b)	Industries with less than seven firms (c)	Industries with less than seven firms due to missing data (d)	Number of industries selected (a)-(b)-(c)-(d)
40	8	10	3	19

Table 2: Selection of firms

Industries	Number of firms (a)	Number of firms with missing data (b)	Number of total firms (a)-(b)	Percentage (%) of firms in the industry over total number of firms
Automobiles and parts	19	6	13	3.3
Chemicals	21	9	12	3.1
Construction and materials	75	25	50	12.7
Fixed line telecommunications	13	4	9	2.3
Food producers	86	33	53	13.5
Forestry and paper	16	5	11	2.8
Gas, water, and multi-utilities	12	1	11	2.8
General industrials	27	5	22	5.6
General retailers	22	10	12	3.1
Household goods and home construction	30	13	17	4.3
Industrial engineering	38	12	26	6.6
Industrial metals and mining	29	11	18	4.6
Industrial transportation	30	6	24	6.1
Oil equipment and services	24	6	18	4.6
Personal goods	28	11	17	4.3
Software and computer services	58	30	28	7.1
Support services	28	13	15	3.8
Technology hardware and equipment	27	15	12	3.1
Travel and leisure	29	4	25	6.4
Total	612	219	393	100

4.2 *Empirical Estimation*

4.2.1 Measuring Earnings Management

Based on the literature, earnings management can be gauged by accounting measures and stock returns-based, according to Wang and Yung (2011). They state that accounting measures of earnings management are related to the level of accruals, and that the stock returns-based measure of earnings management is related to earnings from stock prices with an assumption of the market being efficient. Past studies show the extensive use of accounting measures and their well-known substantial market effects (Wang & Yung, 2011). Hence, this study employs the accounting measures of earnings management.

Based on the literature (Cohen et al., 2008; Hope et al., 2013; Hsieh et al., 2018; Wang & Yung, 2011), earnings management is proxied by discretionary accruals, which is derived from the most widely used performance-adjusted Jones model, also known as the modified Jones model proposed by Dechow et al. (1995). Using this modified Jones model, Equation 1, which is based on accrual-based earnings management using a cash flow statement-based approach, is used in this study. Further, this study applies Equation 2, which is a cash flow statement based approach of performance-matched Jones model introduced by Kothari et al. (2005).

$$\frac{\text{JODA}_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \left(\frac{1}{A_{it-1}}\right) + \alpha_2 \left(\frac{\Delta S_{it} - \Delta AR_{it}}{A_{it-1}}\right) + \alpha_3 \left(\frac{PPE_{it}}{A_{it-1}}\right) + \varepsilon_{it} \quad \text{(Eq. 1)}$$

$$\frac{\text{KODA}_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \left(\frac{1}{A_{it-1}}\right) + \alpha_2 \left(\frac{\Delta S_{it} - \Delta AR_{it}}{A_{it-1}}\right) + \alpha_3 \left(\frac{PPE_{t}}{A_{it-1}}\right) + \alpha_4 \, ROA_{it} + \varepsilon_{it} \quad \text{(Eq. 2)}$$

Where:

$\text{JODA}_{i,t}$ / $\text{KODA}_{i,t}$	Total accruals of company *i*, during year t, estimated as (EBEI – OCF)
EBEI	Earnings before extraordinary items and discontinued operations
OCF	Operating cash flows
$A_{i,t\text{-}1}$	Total assets of company *i*, at the end of year *t*−1
$\Delta S_{i,t}$	Change in net sales of company *i*, from year *t*−1 to year t
$\Delta AR_{i,t}$	Change in accounts receivable of company *i*, from year t−1 to year t
$PPE_{i,t}$	The gross value of property, plant, and equipment of company *i*, for year t

$ROA_{i,t}$	The net income scaled by the lagged total assets of company *i*, for year t
α_0, α_1, α_2, α_3, and α_4	Regression parameters
$\varepsilon_{i,t}$	Stochastic disturbance term

Following Hope et al., (2013) and Kothari et al., (2005) This study also adopts the balance sheet-based approach for both the performance-adjusted and performance-matched Jones model. Therefore, Equations 3 and 4 are proxied for earnings management in this study as an alternative measure of accrual-based earnings management.

$$\frac{\text{JOAC}_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \left(\frac{1}{A_{it-1}}\right) + \alpha_2 \left(\frac{\Delta S_{it} - \Delta AR_{it}}{A_{it-1}}\right) + \alpha_3 \left(\frac{PPE_{it}}{A_{it-1}}\right) + \varepsilon_{it} \quad \text{(Eq. 3)}$$

$$\frac{\text{KOAC}_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \left(\frac{1}{A_{it-1}}\right) + \alpha_2 \left(\frac{\Delta S_{it} - \Delta AR_{it}}{A_{it-1}}\right) + \alpha_3 \left(\frac{PPE_t}{A_{it-1}}\right) + \alpha_4 \, ROA_{it} + \varepsilon_{it} \quad \text{(Eq. 4)}$$

Where:

$\text{JOAC}_{i,t}$ / $\text{KOAC}_{i,t}$	Total accruals of company i, during year t, estimated as (ΔCA – ΔCash – (ΔCL – ΔSTDebt) – Dep & Amot)
ΔCA	Change in current assets
ΔCash	Change in cash balance
ΔCL	Change in current liabilities
ΔSTDebt	Change in current portion of long-term debt
Dep & Amot	Depreciation and amortisation

For the purpose of robustness, this study adopts both the real value (either positive or negative value) and the absolute value of the four proxies, i.e., JODA, CODA, KODA, and KOAC for earnings management measure.

4.2.2 Variable Measurement and Model Specification

In compliance with Saona et al., (2020), the percentage of independent directors on the board is used to measure board independence (Inde), and the number of directors on the board is used to measure board size (Bsize). This study used value 1 when the role of CEO and chairperson were performed by the same person, and 0 as a proxy for the dummy variable CEO duality (CEOd) (Harakeh et al., 2019). For

the three control variables, firm revenue is measured by the natural logarithm of the annual sales from main operations (Harakeh et al., 2019), firm size is measured by the natural logarithm of firms' total assets (Kouaib & Almulhim, 2019), and firm growth is measured by the natural logarithm of the sum of the market value of equity and the book value of debt scaled by the book value of total assets (Ghosh et al., 2010).

Two empirical models are constructed in this study. Model 1 is developed for testing the relationship between board characteristics and earnings management, and Model 2 for testing the moderating effect of gender diversity over this nexus. Based on the following Model 1 regression framework, this study regresses four earnings management proxies (JODA, CODA, KODA, and KOAC) on the three board characteristics (Inde, Bsize, and CEOd) along with three control variables (LnSales, LnAssets, and LnGrow).

$$EM = \beta_0 + \beta_1(Inde) + \beta_2(Bsize) + \beta_3(CEOd) + \beta_4(LnSales) + \beta_5(LnAssets) + \beta_6(LnGrow) + \varepsilon_t \quad (1)$$

In line with Kouaib and Almulhim, (2019), this study used the percentage of female directorship among the BODs to measure gender diversity (FD). This study further investigated the moderating effect of gender diversity in the relationship between board characteristics and earnings management. Therefore, the moderation between independent and moderating variables is performed creating three new variables, i.e., Inde_FD (interaction of board independence and female directorship), Bsize_FD (interaction of board size and female directorship), and CEOd_FD (interaction of CEO duality and female directorship). Then, based on the Model 2 regression framework, this study further regresses the four earnings management proxies on the three board characteristics, female directorship (FD), and three moderations (Inde_FD, Bsize_FD, and CEOd_FD), along with the three control variables.

$$EM = \beta_0 + \beta_1(Inde) + \beta_2(Bsize) + \beta_3(CEOd) + \beta_4(FD) + \beta_5(Inde\_FD) + \beta_6(Bsize\_FD) + \beta_7(CEOd\_FD) + \beta_8(LnSales) + \beta_9(LnAssets) + \beta_{10}(LnGrow) + \varepsilon_t \quad (2)$$

Where:

Dependent variable

EM Earnings Management: real value (either positive or negative value) and the absolute value of the four proxies, i.e., JODA, CODA, KODA, and KOAC

Independent variable

Inde	Board independence: Percentage of independent directors on the board
Bsize	Board size: The number of directors on the board
CEOd	CEO duality: 1 when the role of CEO and board chairman is performed by the same person and 0 otherwise (dummy variable)

Moderating variable

FD	Female Directorship: Percentage of female directors on the board

Moderation

Inde_FD	Inde × FD: Product of board independence and female directorship, i.e., proxy of female percentage on independent directorship
Bsize_FD	Bsize × FD: Product of board size and female directorship, i.e., number of female directors on the board
CEOd_FD	CEOd × FD: Product of CEO duality and female directorship

Control variable

LnSales	Firm revenue: Natural logarithm of the annual sales from main operations for year t
LnAssets	Firm size: Natural logarithm of firms' total assets for year t
LnGrow	Firm growth: Natural logarithm of the sum of the market value of equity and the book value of debt scaled by the book value of total assets for year t

5. Findings and Discussion

5.1 Descriptive Statistics

Table 3 reports the summary statistics for dependent, independent, moderating, and control variables. The descriptive statistics summarize and report the collected information of data for each variable which includes statistics such as minimum and maximum value, the mean, median, and standard deviation of an individual variable.

Table 3: Descriptive statistics

Variable	Mean	Median	Std. Dev.	Min	Max	Observation
JODA	0.002	-0.001	0.084	-0.466	0.893	1965
KODA	-0.001	-0.002	0.069	-0.349	0.719	1965
JOAC	0.001	-0.002	0.128	-0.841	1.172	1965
KOAC	-0.001	-0.003	0.122	-0.778	1.175	1965
JODA_AV	0.055	0.039	0.064	0.000	0.893	1965
KODA_AV	0.047	0.033	0.050	0.000	0.719	1965
JOAC_AV	0.079	0.050	0.101	0.000	1.172	1965
KOAC_AV	0.075	0.047	0.096	0.000	1.175	1965
Inde	47.806	50.000	12.320	14.290	100.000	1965
Bsize	7.500	7	1.994	4.000	17.000	1965
CEOd	0.199	0	0.400	0.000	1.000	1965
FD	11.709	11.110	12.113	0.000	60.000	1965
LnSales	12.532	12.507	1.661	7.857	17.647	2358
LnAssets	13.136	12.979	1.659	8.767	18.377	2358
LnGrow	1.821	2.171	1.548	-3.912	5.086	1965

Notes: JODA = earnings management measured by cash flow statement-based performance-adjusted Jones model, KODA = earnings management measured by cash flow statement-based performance-matched Jones model, JOAC = earnings management measured by balance sheet-based performance-adjusted Jones model, KOAC = earnings management measured by balance sheet-based performance-matched Jones model, (JODA_AV, KODA_AV, JOAC_AV, KOAC_AV) = absolute value of earnings management proxies, Inde = board independence, Bsize = board size, CEOd = CEO duality, FD = female directorship, LnSales = firm revenue, LnAssets = firm size, LnGrow = firm growth. Observations for balanced panel dataset: The number of firm-year observations and time-period for all variables, except LnSales and LnAssets, is 1,965 and five years respectively. To calculate the lagged value of assets and delta value of sales for 393 firms, the data for assets and sales were collected for a six-year period starting from 2013.

Based on the real value of cash flow statement-based discretionary accruals, the performance-adjusted Jones model (JODA) shows a higher mean value of 0.002 compared to the mean value (-0.001) of the performance-matched Jones model (KODA). Similarly, in terms of balance sheet based discretionary accruals, the performance-adjusted Jones model (JOAC) continues to show a higher mean value of 0.001 compared to the mean value (-0.001) of the performance-matched Jones model (KODA). Likewise, in case of the absolute value, discretionary accruals measured by performance-adjusted Jones model shows a higher mean value (JODA_AV = 0.055 > KODA_AV = 0.047; JOAC_AV = 0.079 >

KOAC_AV = 0.075) compared to the mean value of performance-matched Jones model, considering both cash flow statement and balance sheet-based approach. The first independent variable, board independence (Inde), shows the median of 50% and average 47.81% of independent directorship on the board. It also shows a minimum of 14.29% to a maximum of 100% presence of independent directors among the board. However, 7.48% of the total observation did not comply with the mandatory composition of one-third (33.3%) independent directors in the boardroom required by the MCCG (Alnasser, 2012; Johari et al., 2009). The second variable, board size (Bsize), exhibits the median of seven and on average 7.5 members in the boards for the entire sample with a minimum of four to a maximum of 17 members on the board. The last independent and sole dummy variable CEO duality (CEOd) shows the mean of 0.20, which means that 20% of the total observation has a chairperson who is also the CEO. Accordingly, the remaining 80% separate the CEO and chairperson roles in line with the instructions of MCCG in 2000. For the moderating variable, the female directorship (FD) exhibits the median of 11.11% and on average 11.71% of board directorship represented by female directors. However, the minimum value of 0 indicates that 41.98% demonstrate no female representation on the board, while the maximum value denotes 60% of females participating as board members. Even though the absence of female representation on Malaysian corporate boards diminishes over the years, the percentage is still notably high at 48.60% in 2014, 46.56% in 2015, 43.77% in 2016, 38.17% in 2017, and 32.82% in 2018.

Figure 1: Year wise average female directorship on BOD and board size

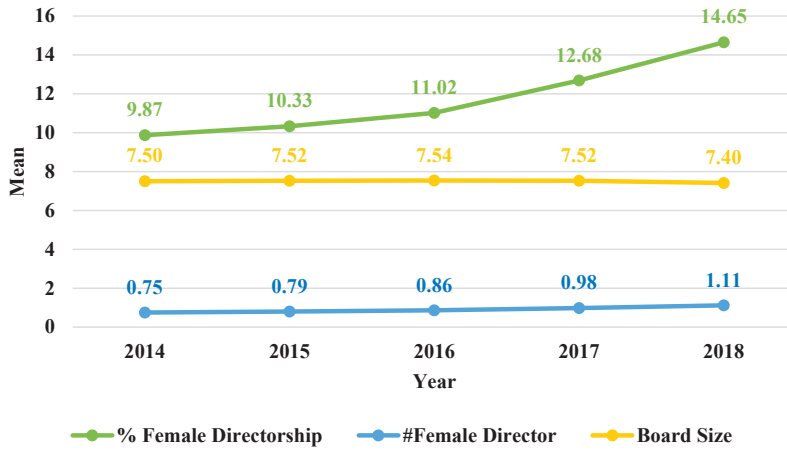

Figure 1 plots the average percentage of female directorship and the average number of women on BODs along with the average number of directors from 2014 to 2018 for Malaysian firms. The green line represents the trend of the average percentage of women on BODs, the blue line shows the trend of the average number of women on BODs, and the yellow line exhibits the trend of the average number of directors on BODs. The green and blue lines demonstrate an upward sloping trend of female directorship, which implies the consciousness of Malaysian firms in reducing earnings management through promoting gender diversity. This increasing trend is the consequence of the 2012 revision of the MCCG by the Securities Commission, which endorses the gender diversity agenda and permits more academically and professionally qualified women to be employed in decision-making processes. The increasing percentage of women is much higher in 2017 and 2018, a consequence of the revised MCCG in 2017 that made the 30% presence of women in the boardroom mandatory for large companies. However, the increasing percentage of women on BODs is higher than the number of women, which is clearly a consequence of the downward trend of board size, represented by the yellow line.

Table 4 reports the results of the Pearson correlation matrix. It shows none of the significant correlations between the independent variables are higher than 50 percent, except for the four proxies that are used to measure earnings management and the control variable LnSales and LnAssets. Thus, it implies no serious multicollinearity problem exists among the independent variables.

Table 4: Pearson correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 JODA	1														
2 KODA	0.81***	1													
3 JOAC	0.31***	0.22***	1												
4 KOAC	0.19***	0.23***	0.95***	1											
5 JODA_AV	0.22***	0.25***	0.02***	0.02	1										
6 KODA_ AV	0.20***	0.17***	0.01***	-0.01	0.74***	1									
7 JOAC_AV	0.10***	0.12***	0.22***	0.25***	0.31***	0.28***	1								
8 KOAC_AV	0.09***	0.10***	0.23***	0.24***	0.24***	0.29***	0.93***	1							
9 Inde	-0.02	0.01	-0.03	-0.01	0.03	0.004	0.04*	0.03	1						
10 Bsize	0.02	-0.03	0.04*	0.02	-0.07***	-0.03	-0.03	-0.008	-0.38***	1					
11 CEOd	-0.001	0.01	0.001	0.02	-0.01	-0.02	0.04*	0.04*	0.06***	-0.13***	1				
12 FD	0.01	-0.01	-0.004	-0.01	-0.01	-0.02	-0.01	-0.015	-0.023	0.10***	-0.012	1			
13 LnSales	-0.02	-0.08	-0.0001	-0.03	-0.13***	-0.10***	-0.17***	-0.15***	-0.12***	0.42***	-0.21***	0.15***	1		
14 LnAssets	0.03	-0.01	0.04*	0.03	-0.14	-0.12***	-0.12***	-0.09***	-0.05**	0.42***	-0.17***	0.17***	0.88***	1	
15 LnGrow	0.02	0.04**	0.06***	0.06***	-0.03	-0.04*	-0.001	0.01	0.04	0.16***	-0.09***	0.003	0.31***	0.42***	1

Notes: JODA = earnings management measured by cash flow statement based performance-adjusted Jones model, KODA = earnings management measured by cash flow statement-based performance-matched Jones model, JOAC = earnings management measured by balance sheet-based performance-adjusted Jones model, KOAC = earnings management measured by balance sheet-based performance-matched Jones model, (JODA_AV, KODA_AV, JOAC_AV, KOAC_AV) = absolute value of earnings management proxies, Inde = board independence, Bsize = board size, CEOd = CEO duality, FD = female directorship, LnSales = firm revenue, LnAssets = firm size, LnGrow = firm growth. Correlation is significant at (* $p < 0.10$), (** $p < 0.05$), (*** $p < 0.01$). Observations for balanced panel dataset: 1,965 firm-year observations of 393 firms for a five-year time period.

5.2 *Multicollinearity and Heteroskedasticity Testing*

To finalise the panel data estimator, following Okhmatovskiy (2010), this study used variance inflation factor (VIF) testing to check if a multicollinearity problem exists among the independent, moderating, moderation and control variables. According to the results of VIF testing in Table 5, the value of moderating variable female directorship (FD), moderation variable Inde × FD (Inde_FD) and Bsize × FD (Bsize_FD), control variable LnAssets along with the mean VIF are above 5. Therefore, these critical values confirm the presence of multicollinearity among these variables.

Table 5: VIF Testing

	Inde	Bsize	CEOd	FD	Inde_ FD	Bsize_ FD	CEOd_ FD	Ln Sales	Ln Assets	Ln Grow	Mean
VIF	2.35	2.89	2.00	55.36	20.54	22.27	2.20	4.67	5.20	1.25	11.87

Notes: Inde = board independence, Bsize = board size, CEOd = CEO duality, FD = female directorship, Inde_FD = Inde × FD, Bsize_FD = Bsize × FD, CEOd_FD = CROd × FD, LnSales = firm revenue, LnAssets = firm size, LnGrow = firm growth.

The presence of heteroskedasticity in the panel data is examined through Breusch-Pagan and White's tests. Table 6 exhibits the results of both tests based on the real and absolute values of the four earnings management proxies. The real and absolute values based on all four earnings management proxies for the Breusch-Pagan test are highly significant at a level of $p < 0.01$, which confirms the presence of heteroskedasticity in the panel dataset. Likewise, the results of White's test are highly significant at a level of $p < 0.01$, except the real and absolute values of earnings management measured by cash flow statement-based performance-matched Jones model. Therefore, it mostly confirms the presence of heteroskedasticity in the panel dataset.

Table 6: Heteroskedasticity testing

	Breusch-Pagan test	White's test
Prob > chi^2 (JODA)	0.0007	0.0059
Prob > chi^2 (JODA_AV)	0.0000	0.0095
Prob > chi^2 (KODA)	0.0012	0.9159
Prob > chi^2 (JOAC)	0.0000	0.0000
Prob > chi^2 (JOAC _AV)	0.0000	0.0000
Prob > chi^2 (KODA_AV)	0.0000	0.9705

	Breusch-Pagan test	White's test
Prob > chi^2 (KOAC)	0.0000	0.0000
Prob > chi^2 (KOAC _AV)	0.0000	0.0000

Notes: JODA = earnings management measured by cash flow statement-based performance-adjusted Jones model, KODA = earnings management measured by cash flow statement-based performance-matched Jones model, JOAC = earnings management measured by balance sheet-based performance-adjusted Jones model, KOAC = earnings management measured by balance sheet based performance-matched Jones model, (JODA_ AV, KODA_AV, JOAC_AV, KOAC_AV) = absolute value of earnings management proxies. P value is significant at (* $p < 0.10$), (** $p < 0.05$), (*** $p < 0.01$)

5.3 Empirical analysis

The results of VIF, Breusch-Pagan and White's tests confirm the presence of multicollinearity among the moderating variables and group-wise heteroskedasticity in the panel dataset. According to Reed and Ye (2011), to avoid generating inefficiency in the coefficient estimation, it is important to properly address the presence of complex errors in a panel dataset. In this regard, Okhmatovskiy (2010) suggests using regression with standard errors cluster in the case of the data that covers fewer time periods but many observations into each. Therefore, in line with Ghaleb et al. (2020) and Al-Absy et al. (2019), this study adopted a feasible generalised least squares (FGLS) estimator using variants of the STATA function "Command = xtgls; options = corr(ar1) panels (heteroscedastic)" (Reed & Ye, 2011) for the panel dataset to make the results robust. FGLS regression analysis is performed to run both Model 1 and 2 as the FGLS regression is capable of handling the existing multicollinearity and heteroskedasticity problem (Reed & Ye, 2011).

Earnings management was measured using the performance-adjusted Jones model, i.e., JODA and JOAC (Dechow et al., 1996) and the performance-matched Jones model, i.e., KODA and KOAC (Kothari et al., 2005). Equations 1 and 2 were used to measure cash flow statement-based discretionary accruals and Equations 3 and 4 were used to measure balance sheet-based discretionary accruals. Table 7 shows the results of FGLS regression analysis for the relationship between board characteristics and earnings management based on Model 1, and Table 8 shows the findings of the moderating effect of gender diversity on this relationship based on Model 2. All four equations were tested and reported separately based on real (either positive or negative) and the absolute values of the four earnings management proxies, i.e., JODA, KODA, JOAC and KOAC.

Table 7: Regression analysis of board characteristics on earnings management (Model 1)

	Real value				Absolute value			
	CF statement based		Balance sheet based		CF statement based		Balance sheet based	
	Eq.1 JODA	Eq.2 KODA	Eq.3 JOAC	Eq.4 KOAC	Eq.1 JODA	Eq.2 KODA	Eq.3 JOAC	Eq.4 KOAC
Inde	-0.001 (-0.10)	0.002 (0.32)	-0.028 (-2.80)***	-0.015 (-1.60)	0.014 (1.83)*	0.009 (1.54)	0.031 (2.95)***	0.018 (1.78)*
Bsize	0.044 (0.86)	-0.049 (-1.08)	-0.009 (-0.14)	-0.109 (-1.59)	-0.003 (-0.06)	0.031 (0.83)	0.155 (2.21)**	0.238 (3.51)***
CEOd	-0.005 (-2.20)**	-0.004 (-2.18)**	-0.001 (-0.42)	0.002 (0.81)	-0.003 (-1.41)	-0.003 (-1.56)	-0.002 (-0.70)	0.001 (0.44)
LnSales	-0.010 (-8.35)***	-0.012 (-11.03)***	-0.009 (-6.64)***	-0.011 (-8.40)***	0.002 (1.34)	0.001 (0.91)	-0.005 (-2.61)***	-0.005 (-2.99)***
LnAssets	0.010 (8.42)***	0.010 (9.58)***	0.010 (7.11)***	0.012 (8.45)***	-0.006 (-5.19)***	-0.004 (-3.98)***	-0.003 (-1.78)*	-0.002 (-1.07)
LnGrow	-0.001 (-1.35)	0.001 (1.07)	0.000 (0.51)	0.001 (1.66)*	0.000 (0.53)	-0.001 (-1.52)	0.002 (3.03)***	0.003 (3.61)***
Constant	-0.007 (-0.89)	0.014 (2.01)**	-0.004 (-0.38)	-0.003 (-0.23)	0.094 (12.4) ***	0.070 (12.04)***	0.131 (12.7)***	0.120 (11.6)***
Chi²	78.94	131.26	58.54	89.08	100.62	75.17	119.33	109.57
P > Chi²	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	1,965	1,965	1,965	1,965	1,965	1,965	1,965	1,965

Notes: JODA = earnings management measured by cash flow statement-based performance-adjusted Jones model, KODA = earnings management measured by cash flow statement-based performance-matched Jones model, JOAC = earnings management measured by balance sheet-based performance-adjusted Jones model, KOAC = earnings management measured by balance sheet-based performance-matched Jones model, Inde = board independence, Bsize = board size, CEOd = CEO duality, LnSales = firm revenue, LnAssets = firm size, LnGrow = firm growth. Beta coefficient and Chi^2 is significant at (* $p < 0.10$), (** $p < 0.05$), (*** $p < 0.01$). Observations for balanced panel dataset: 1,965 firm-year observations of 393 firms for a five-year period.

Table 8: Regression analysis of moderating effect of gender diversity (Model 2)

	Real value				Absolute value			
	CF statement based		Balance sheet based		CF statement based		Balance sheet based	
	Eq.1 JODA	Eq.2 KODA	Eq.3 JOAC	Eq.4 KOAC	Eq.1 JODA	Eq.2 KODA	Eq.3 JOAC	Eq.4 KOAC
Inde	0.015	0.024	-0.015	0.000	0.004	0.000	0.030	0.013
	(1.31)	(2.47)**	(-0.97)	(0.03)	(0.38)	(0.03)	(2.14)**	(1.01)
Bsize	0.256	0.184	-0.013	-0.047	-0.025	0.008	0.276	0.348
	(3.22)***	(2.62)***	(-0.11)	(-0.42)	(-0.34)	(0.15)	(2.64)***	(3.46)***
CEOd	-0.004	-0.001	0.006	0.006	-0.001	-0.003	-0.001	0.004
	(-1.23)	(-0.38)	(1.62)	(1.73)*	(-0.30)	(-1.20)	(-0.31)	(0.89)
FD	0.182	0.210	0.058	0.100	-0.042	-0.046	0.079	0.045
	(3.33)***	(4.40)***	(0.85)	(1.46)	(-0.85)	(-1.21)	(1.17)	(0.67)
Inde_FD	-0.137	-0.189	-0.106	-0.138	0.078	0.069	-0.001	0.036
	(-2.08)**	(-3.37)***	(-1.30)	(-1.71)*	(1.29)	(1.53)	(-0.01)	(0.46)
Bsize_FD	-1.631	-1.665	0.084	-0.312	0.074	0.145	-0.931	-0.818
	(-3.70)***	(-4.21)***	(0.14)	(-0.54)	(0.20)	(0.49)	(-1.67)*	(-1.51)
CEOd_ FD	-0.004	-0.025	-0.072	-0.051	-0.013	0.002	-0.012	-0.015
	(-0.19)	(-1.48)	(-2.94)***	(-2.18)**	(-0.75)	(0.16)	(-0.49)	(-0.67)
LnSales	-0.010	-0.011	-0.008	-0.011	0.001	0.001	-0.004	-0.006
	(-8.49)***	(-11.03)***	(-5.58)***	(-7.76)***	(1.28)	(0.84)	(-2.27)**	(-3.13)***
LnAssets	0.010	0.010	0.009	0.011	-0.006	-0.003	-0.004	-0.002
	(8.48)***	(9.38)***	(5.81)***	(7.65)***	(-5.06)***	(-3.76)***	(-2.16)**	(-0.86)
LnGrow	-0.001	0.000	0.001	0.001	0.000	-0.001	0.002	0.003
	(-1.55)	(0.64)	(0.62)	(1.50)	(0.65)	(-1.58)	(3.15)***	(3.51)***
Constant	-0.032	-0.014	-0.008	-0.014	0.100	0.075	0.122	0.113
	(-3.03)***	(-1.49)	(-0.55)	(-0.96)	(9.80)***	(9.54)***	(8.84)***	(8.29)***
Chi²	97.20	158.72	65.39	92.12	109.71	77.18	128.57	113.34
P > Chi²	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	1,965	1,965	1,965	1,965	1,965	1,965	1,965	1,965

Notes: JODA = earnings management measured by cash flow statement-based performance-adjusted Jones model, KODA = earnings management measured by cash flow statement-based performance-matched Jones model, JOAC = earnings management measured by balance sheet-based performance-adjusted Jones model, KOAC = earnings management measured by balance sheet-based performance-matched Jones model, Inde = board independence, Bsize = board size, CEOd = CEO duality, FD = female directorship, LnSales = firm revenue, LnAssets = firm size, LnGrow = firm growth. Beta coefficient and Chi^2 is significant at (* $p < 0.10$), (** $p < 0.05$), (*** $p < 0.01$). Observations for balanced panel dataset: 1,965 firm-year observations of 393 firms for a five-year time period.

Based on the real value of earnings management proxies, Model 2 exhibits a higher value of chi-square in comparison to Model 1, i.e., 97.20 (M2:Eq.1) > 78.94 (M1:Eq.1); 158.72 (M2:Eq.2) > 131.26 (M1:Eq.2); 65.39 (M2:Eq.3) > 58.54 (M1:Eq.3); 92.12 (M2:Eq.4) > 89.08 (M1:Eq.4). In terms of absolute value, similarly, Model 2 exhibits a higher value of chi-square compared to Model 1, i.e., 109.71 (M2:Eq.1) > 100.62 (M1:Eq.1); 77.18 (M2:Eq.2) > 75.17 (M1:Eq.2); 128.57 (M2:Eq.3) > 119.33 (M1:Eq.3); 113.34 (M2:Eq.4) > 109.57 (M1:Eq.4). All these values of chi-square for both models show a higher significant level of acceptance at $p < 0.01$. However, this study accepted the findings based on Model 2, as it shows a higher chi-square value compare to Model 1.

The chi-square value of Model 2 regression analysis based on real value of four earnings management proxies, i.e., KODA = 158.72 > JODA = 97.20 > KOAC = 92.12 > JOAC = 65.39 exhibits a higher chi-square value of 158.72 for the cash flow statement-based approach of performance-matched Jones model (KODA). Whereas the chi-square value of Model 2 regression analysis based on the absolute value of the four earnings management proxies, i.e., JOAC = 128.57 > KOAC = 113.34 > JODA = 109.71 > KODA = 77.18 exhibits a higher chi-square value of 128.57 for the balance sheet-based approach of performance-adjusted Jones model (JOAC). Therefor this study only accepted the findings of these two higher chi-square values, one from the real value approach (KODA = 158.72) and another from the absolute value approach (JOAC = 128.57).

5.3.1 Board Characteristics on Earnings Management

Based on the results in Table 8, Inde shows a significant ($p < 0.05$, $t = 2.47$) positive ($\beta = 0.024$) impact on the real value of KODA and the result is robust with the absolute value of JOAC. This means that increasing board independence also increases earnings management, and therefore, hypothesis H1 is not supported. The findings are in line with Fadzilah (2017), Jamaludin et al. (2015), and Mahad et al. (2015). Unlike other studies conducted internationally, the effective monitoring role of independent directors in reducing earnings management practices may not apply to Malaysian listed companies due to strong government ownership and different ethnic and family structures, as Mohammad et al., (2016) state. They add that the appointment of independent directors might result from their affiliation with the firm, where individuals may not have the required technical expertise to effectively monitor the preparation of the financial statements and ensure high ethical practices.

Based on the results in Table 8, the impact of Bsize on the real value of KODA is positive (β = 0.093) at a higher level of significance ($p < 0.01$, $t = 2.62$). The result is robust with the absolute value of JOAC. This implies that increasing board size also increases the level of earnings management. Thus, it is clear from this result that H2 is not supported. The results are similar to the findings of Ishak et al. (2011), Mohammad et al. (2016), and Rahman and Ali (2006) on Malaysian firms that show an increase in earnings management with more board members. A possible reason for this outcome could be the inferior communication and coordination between board members, extensive decision-making processes, and higher bureaucracy costs due to the larger size of the board (Forbes & Milliken, 1999; Jensen, 1993). Consequently, this increases the possibility of conflicts of interest arising among directors, which is likely to hinder the board's effective monitoring of the opportunistic behaviour of management. In this regard, a smaller board is likely to be more beneficial in terms of making more dynamic decisions on time to effectively discourage this opportunistic behaviour (Forbes & Milliken, 1999; Jensen, 1993).

The results in Table 8 show an insignificant ($p > 0.10$, $t = -0.38$) negative (β = -0.001) effect of CEOd on the real value of KODA and the result is robust with the absolute value of JOAC. This insignificant relationship shows that having CEO duality does not have any impact on earnings management practices. Hence, H3 is not supported, which is in line with the findings of Fadzilah (2017) and Mahad et al. (2015). CEO duality is generally confined to the individual values of a particular person, unlike the other two characteristics of BODs, i.e., board independence and board size, which involve the combined influence of more than one individual. Therefore, a possible reason behind the insignificant impact of CEO duality towards increasing earnings management practices in the Malaysian scenario could be explained by individuals demonstrating a strong sense of responsibility and exercise of stewardship, which could restrict them from practising earnings management. An individual might be collective-minded and pro-organisational rather than individualistic and self-interested when it comes to performing the dual role of CEO and chairperson.

Accordingly, this rejection of H1, H2 or H3 reflects the failure of board characteristics in reducing earnings management for Malaysian firms. Hence, board characteristics are proven to be an ineffective corporate governance mechanism in terms of reducing earnings management practices among Malaysian firms. Consequently, it indicates the ineffective application of agency theory and rejects the outlined presumption of this theory for Malaysian listed companies.

5.3.2 Moderating Effect of Gender Diversity

Based on the results in Table 8, FD shows a highly significant ($p < 0.01$, $t = 4.40$) positive ($\beta = 0.210$) effect on the real value of KODA. Thus, it implies that a higher percentage of female directorship also increases the level of earnings management. However, the result is not robust, as the FD shows no significant effect on the absolute value of JOAC. Interestingly, the results in Table 8 show that gender diversity successful moderates the relationship of board independence and board size with earnings management for Malaysian firms.

Based on the results, Inde FD shows a highly significant ($p < 0.01$, $t = -3.37$) negative ($\beta = -0.189$) impact on the real value of KODA. Accordingly, Inde_FD, as a proxy of female percentage of independent directorship, indicates that an increase successfully reduces earnings management, and therefore, H4 is supported. The findings are parallel with the findings of El-Mahdy (2014), Ittonen et al. (2013), Na and Hong (2017), and Saona et al. (2020). In a recent study of earnings management in the US banking sector, Fan et al. (2019) show female directors are more capable of taking independent decisions to counter the opportunistic behaviours of top management compared to their male counterparts. However, the result is not robust, as the Inde_FD shows no significant effect on the absolute value of JOAC.

The results in Table 8 exhibit a higher significant ($p < 0.01$, $t = -4.21$) negative ($\beta = -1.665$) effect of Bsize_FD on the real value of KODA, and the result is robust with the absolute value of JOAC. This shows that the higher the number of female directors on the board successfully reduces the level of earnings management practices and thus, H5 is supported. The findings are in line with the findings of Kouaib and Almulhim (2019) in the European context, Damak (2018) in the French context, and Harakeh et al. (2019) in UK public companies. According to these three studies, the demonstration of higher ethical behaviour from female directors in providing better supervision over management activities is the reason behind this downward earnings management. Differentiating the findings on Bsize_FD (i.e., number of female directors in the board) with the results on FD (i.e., percentage of female directors on the board), the findings lean toward increasing the number of female directors in the boardroom rather than their percentage in terms of reducing earnings management.

The results in Table 8 show an insignificant ($p > 0.10$, $t = -1.48$) negative ($\beta = -0.025$) impact of CEOd_FD on the real value of

KODA, and the result is robust with the absolute value of JOAC. This insignificant relationship implies that the presence of female directors has no effect on the dual role of CEO and chairperson on earnings management. Therefore, H6 is not supported. The result supports the claim of Harris et al. (2019), who found that women who inhabit both CEO and chairperson roles does not necessarily reduce earnings management. The limited presence of females playing these dual roles might be a possible explanation. Whereas the successful application of gender socialisation theory is reflected by H4 and H5, and the first and third amendments in the MCCG that firmly endorses the gender diversity agenda. Consequently, it shows the findings are in line with the presumption in gender socialisation theory that the different workplace and ethical views of female directors compared to their male counterparts reduces earnings management practices among Malaysian listed firms. Therefore, it can be concluded that increasing female leadership in the Malaysian boardroom for roles like CEO and chairperson will enhance stewardship function and counter against earnings management approaches. Accordingly, the acceptance of H4 and H5 reflects that the boardroom gender diversity works as an effective governance mechanism in terms of reducing earnings management. Therefore, the findings of this study on gender diversity repudiate the findings of earlier studies like Abdullah and Ismail (2016), Al-Absy et al. (2019), and Ishak et al. (2016) conducted on Malaysian listed companies which exhibit no influence of board gender diversity on earnings management.

5.3.3 Control Variables on Earning Management

The first control variable, LnSales, shows a highly significant ($p < 0.01$, $t = -11.03$) and negative ($\beta = -0.011$) impact on the real value of KODA and the result is robust with the absolute value of JOAC. Therefore, firms with upward sales experienced downward earnings management, similar to the findings of Harakeh et al. (2019). However, the second control variable, LnAssets, has a more significant ($p < 0.01$, $t = 9.38$) positive ($\beta = 0.010$) relationship with the real value of KODA, but the effect of LnAssets on the absolute value of JOAC is significantly ($p < 0.05$, $t = -2.16$) negative ($\beta = -0.004$). Hence, no absolute verdict can arise out of this mixed result. The third and last control variable, LnGrow, exhibits a highly significant ($p < 0.01$, $t = 3.15$) positive ($\beta = 0.002$) impact on the absolute value of JOAC. Thus, an increase in firm growth also increases earnings management. However, the result is not robust, as LnGrow shows no significant effect on the real value of KODA.

6. Conclusions

This study examines the relationship between board characteristics and earnings management, and finds that board independence, board size, and non-CEO duality are not capable of reducing earnings management, and that increasing board independence and size also significantly increases earnings management practices in the Malaysian context. These findings on board characteristics imply the ineffectiveness of corporate governance mechanisms in Malaysia. Contrary to the earlier prediction, the findings show that CEO duality has an insignificant effect on increasing earnings management, which could be the consequence of a diverse corporate environment in Malaysia, where individual values play a greater prominence, besides giving the impression of a 'stewardship' role. Taken together, these findings imply that what seems like the ineffectiveness of corporate governance mechanisms could be attributed to the 'strong prominent role' of the chairperson, which could be an avenue to explore in future research. Meanwhile, the findings of the investigation on the moderating role played by gender diversity on board characteristics and earnings management shows that it does work in reducing earnings management in terms of board independence and size. These findings are the consequence of the caution, risk-aversion and ethical behaviour of female directors, making gender diversity as an effective corporate governance mechanism for Malaysian listed firms. However, gender diversity fails to influence the relationship between earnings management and the dual role of CEO and chairperson. A possible reason for this could be the limited presence of women in these positions, whose viewpoints appear to be less effective in reducing the extent of earnings management.

The significant positive relationship of board independence with earnings management could be an outcome of management's dominance over matters related to the board that makes independent directors ineffective in monitoring management activities due to their lack of knowledge of the company's affairs (Rahman & Ali, 2006). In the case of board size, it is difficult for a larger board to control the possible conflicts of interest among board members, which affects proper management monitoring process that could then lead to higher earnings management (Rahman & Ali, 2006). The insignificant impact of CEO duality on increasing earnings management practices could be the consequence of CEOs having a strong sense of responsibility on the safeguarding of the firm's assets and well-being, which perhaps restricts them from practicing earnings management. The findings on the moderating role played

by gender diversity demonstrate a reduction in the level of earnings management, which is partly confirmed for board independence and robust for board size. Accordingly, gender diversity is represented by the increasing female directorship in the boardroom, which confirms the effectiveness of promoting boardroom gender diversity through the 2012 and 2017 amendments in the MCCG.

The practical implications of this study are to increase the female directorship in the board and ensure the mandatory composition of 33.3% independent directors in the boardroom required by the MCCG (Alnasser, 2012; Johari et al., 2009). Given that the results show that the independent directors are not significantly reducing earnings management, this study proposes that specific attributes of independent directors need to be further investigated. Appointing independent directors with expertise in monitoring earnings management practices needs to be ensured as a control mechanism towards the top management's hegemony over the board's affairs, even if in this context it appears that CEO duality does not increase earnings management. Further, given that the Malaysian corporate environment comprises diverse forms of ownership, it would be enlightening to investigate the impact of CEO duality on earnings management for firms with different ownership structures. Meanwhile, the results on gender diversity are likely of interest to policymakers to come up with strong regulations related to ensuring the 30% presence of women in the boardroom, as mandated by the revised MCCG in 2017. However, it should be mandatory for all listed companies regardless of their size.

This study adds to the literature by addressing this nexus between board characteristics and earnings management using agency theory. The findings demonstrate that the application of agency theory does not have a significant impact on reducing earnings management in the Malaysian context. In this light, it will be interesting to perform a future study that investigates the characteristics of independent directors, board size, and CEO duality using agency theory to discover the roots of this ineffectiveness, apart from also studying the impact of different ownership structures on CEO duality and earnings management, as suggested above. The findings on gender diversity among independent directors partly confirm the acceptance of the gender socialisation theory perspective in reducing earnings management for Malaysian firms as the robustness is denied. However, this study uses the interaction of board independence and female directorship as a proxy of the percentage of female independent directorship. Therefore, a future

study could be performed considering the percentage of female independent directorship by quantifying the percentage of women directors over the total number of independent directors on the boards of Malaysian firms to examine the validity of the findings of this study and the relevance of the gender socialisation perspective. In terms of increasing the number of women directors in the boardroom, the findings confirm the robustness of the application of gender socialisation theory in reducing earnings management in the Malaysian context.

Despite the enlightening findings, some limitations are inherent in this study. This study examines only three board characteristics under corporate governance, and only focuses on boardroom gender diversity. Moreover, only accruals-based earnings management is measured, and the sample is restricted to only non-financially listed companies. A possible extension of this study could be to examine the moderating effect of gender diversity on other board committees and top management in reducing earnings management. Moreover, the sample can be divided into state-owned enterprises (SOEs) and privately-owned enterprises (POEs) to observe the difference. This could further deepen our understanding of whether ownership structure has any influence over earnings management practices, given the scenario of an increased number of female directors in the boardroom following the revised regulations in the MCCG.

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